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THE ROLE OF PATIENT PERSONALITY IN THE IDENTIFICATION OF DEPRESSION IN OLDER PRIMARY CARE PATIENTS

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SUMMARY

Background—Our aim was to evaluate whether personality factors significantly contribute to the identification of depression in older primary care patients, even after controlling for depressive symptoms.

Methods—We examined the association between personality factors and the identification of depression among 318 older adults who participated in the Spectrum study.

Results—High neuroticism (unadjusted odds ratio (OR) 2.36, 95% confidence interval (CI) [1.42, 3.93]) and low extraversion (adjusted OR 2.24, CI [1.26, 4.00]) were associated with physician identification of depression. Persons with high conscientiousness were less likely to be identified as depressed by the doctor (adjusted OR 0.45, CI [0.22, 0.91]).

Conclusion—Personality factors influence the identification of depression among older persons in primary care over and above the relationship of depressive symptoms with physician identification. Knowledge of personality may influence the diagnosis and treatment of depression in primary care.

Keywords

aged; depression; diagnosis; personality; primary health care

KEY POINTS

- Older adults with high neuroticism and those with low extraversion were more likely to be identified as depressed by the primary care doctor. Persons with high conscientiousness were less likely to be identified as depressed.
- Awareness of how stable personality characteristics may influence the identification of depression may inform the accurate diagnosis and treatment of depression among older adults in primary care.

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INTRODUCTION

Research has established that personality traits are associated with the diagnosis and course of depression. Persons with depression and anxiety are more likely to have high neuroticism, or the tendency to have negative emotions or a pessimistic outlook on the world, compared to persons who are not depressed or anxious (Bienvenu et al., 2004; Chopra et al., 2005; Cuijpers, van Straten, & Donker, 2005). Persons with high neuroticism are at greater risk then those with low neuroticism for the development of depression (Boyce, Parker, Barnett, Cooney, & Smith, 1991) and endure a more severe course of depressive illness (Clark, Watson, & Mineka, 1994). Little is known about the influence of personality factors on physician decision making and the diagnosis of mental illness in the primary care setting.

Depression and other mood disorders have long been associated with personality, defined as an "enduring emotional, interpersonal, experiential, attitudinal, and motivational style that determines the person's reaction to his or her environment" (Allport, 1937; McCrae, 1991). The current study utilizes the five factor model of personality, which includes the personality traits neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Table 1) (McCrae & Costa, 1987). Costa and McCrae's model posits that each of the five major personality factors are personal attributes that may be expressed along a continuum. Individuals may have different levels of each of the five personality traits, influencing the way in which they interact with their environment. The five factor model has been extensively studied in multiple settings, across multiple instruments and observers (Costa & McCrae, 1997; McCrae, 1991; McCrae & Costa, 1987).

No known studies have specifically looked at the influence of personality on the identification of depression by the primary care doctor. Previous studies have examined the influence of patient characteristics, such as age, race, and sex, on physician's decision making and clinical care (Schulman et al., 1999; Sheifer, Escarce, & Schulman, 2000). These studies suggest that diagnosis is not a completely objective process and may be influenced by stable patient characteristics above and beyond the clinical presentation of depression. The current study is an attempt to examine the influence of patient personality on depression identification in primary care. Our aim was to evaluate whether personality factors significantly contribute to the identification of depression, even after controlling for potentially influential covariates, including depressive symptoms.

We hypothesized that older patients with high neuroticism and those with low extroversion would be more likely to be identified as depressed by their primary care physician. The negative outlook on life associated with high neuroticism and the isolation or introversion associated with low extraversion may be interpreted as symptoms of depression, leading to identification of depression by the primary care doctor beyond what might be expected due to depressive symptoms alone.

METHODS

The Spectrum study

The objective of the Spectrum survey was to describe the correlates of depression in older adults. Non-academic physician practices were recruited from the membership list of the Maryland Academy of Family Physicians (MAFP) and included practices from Baltimore City, Maryland, and the four surrounding counties. In all, 47 physicians (28 family physicians and 19 internists) from 13 practices participated in the study. Persons aged 65 and older were approached by trained interviewers and asked several screening questions to determine eligibility for the study.

Details of the study design, including physician and patient recruitment, can be found elsewhere (H.R. Bogner et al., 2004; Gallo et al., 2005). Experienced lay interviewers were trained in screening and interviewing by the study investigators in conjunction with the Battelle Memorial Institute's Center for Public Health Research and Evaluation in Baltimore, Maryland. Older adults were invited to participate in the study based on sampling probabilities based on a standard screening instrument. This sampling technique was employed to enrich the sample with patients who had significant depressive symptoms and with persons who may be at risk for the development of depression (Gallo et al., 2005).

Participants who agreed to be part of the study were scheduled for an in-home interview which consisted of a 90 minute survey questionnaire. In-home interviews were obtained for 357 people, but two persons broke off the interview before it was completed, leaving a sample of 355 persons. Complete information on personality factors was available for 318 participants, constituting the final sample. The research protocols were approved by the Institutional Review Board of the University of Pennsylvania School of Medicine.

Measurement strategy

We used standard questions to obtain information from the respondents on age, gender, self-reported ethnicity, and education. Physicians were asked to provide their assessment of patient's depression at the index visit as "none, mild, moderate, or severe." For this investigation, physician rating of depression was coded '0' for no depression and '1' for mild, moderate, or severe depression.

Personality was assessed using the NEO-FFI (Five Factor Inventory), a 60-item scale which has been validated in multiple settings (Costa & McCrae, 1997; McCrae, 1991; McCrae & Costa, 1987). Performance on this scale has been shown to be independent of physical and cognitive change and is relatively stable over time (Costa & McCrae, 1997; Hogan, Johnson, & Briggs, 1997; Weiss et al., 2005). The scale is designed to produce a score for each of the five personality factors (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness).

Scores for each personality factor are standardized according to population norms (mean=50, standard deviation=10) and then grouped into five categories (very low, low, average, high, and very high) according to standard protocol (Costa, 2003). For the purposes of this study, we grouped the scores into three levels: low, average, and high, for each of the personality factors. Our rationale for the use of three categories was that very few participants fell within the "very low" and "very high" categories for each of the personality factors. We therefore combined "very low" and "low" into one "low" category, and similarly, "very high" and "high" into one "high" category. We retained standard thresholds according to established population norms (Costa, 2003).

The Centers for Epidemiologic Studies Depression (CES-D) scale is a 20-item scale designed to measure depressive symptoms in the general population (Radloff, 1977). The CES-D has been employed in multiple samples including older persons (Gatz, Johansson, Pedersen, Berg, & Reynolds, 1993; Newmann, Engel, & Jensen, 1991). The total number of medical conditions, as self-reported by participants, was used as a measure of medical co-morbidity, as in other work (H. R. Bogner, Ford, & Gallo, 2006; Perkins et al., 2004).

Analytic strategy

After descriptive analysis, sociodemographic characteristics, number of medical conditions, CES-D score, and NEO-FFI personality scores were compared between persons who were rated as "not at all" depressed with persons who were rated as depressed, employing χ^2 or t

tests as appropriate to the form of the data. Next, multivariable logistic regression was performed to estimate associations between each personality factor and our dependent variable, physician identification of depression. Based on bivariate associations with our main outcome, we included covariates in multivariate models that we found were associated at the $P < .20$ level ("model 1"). We added CES-D scores separately in "model 2," to assess the relationship of identification of depression to personality factors independently from the association of identification with depressive symptoms. Stratified logistic regression provided a sensitivity analysis to account for the sampling strategy employed (Gallo et al., 2005).

RESULTS

Sample Characteristics

Sociodemographic characteristics of the sample are presented in Table 2. Significant differences were found for age, ethnicity, and number of medical conditions between those with and without identification of depression by the primary care doctor. Respondents with and without depression, as identified by the primary care doctor, were similar in the proportion of women and persons with less than a high school education. Using a threshold value of p <0.20, younger patients, and those with a greater number of medical conditions, were more likely to be identified as depressed. African Americans were less likely to be identified as depressed (p <.001) as previously reported (Gallo et al., 2005).

Multivariable analysis

Results from logistic regression analyses for the individual personality traits are presented in Table 3. Sensitivity analyses that adjust for the probability of selection showed no substantial change from the point estimates reported here. Compared to those with average neuroticism, persons with high neuroticism were significantly more likely to be identified as depressed by their primary care doctor (unadjusted odds ratio (OR) = 2.36, 95% confidence interval (CI) [1.42, 3.93]). Persons with low extraversion were more likely to be identified as depressed by their primary care doctor compared to those with average extraversion (unadjusted OR = 2.47, CI [1.47, 4.16]). After adjustment, persons with high conscientiousness, compared to persons with average conscientiousness, were less likely to be identified as depressed (adjusted OR = 0.45, CI [0.22, 0.91].

DISCUSSION

The principle finding of this study was that persons with high neuroticism and those with low extraversion were more likely to be identified as depressed by the primary care physician, than persons with average levels of these personality factors. Persons with high conscientiousness were less likely to be identified as depressed, even while controlling for severity of depressive symptoms.

We acknowledge that there are several limitations to this study. There may have been sample bias in physician and patient recruitment, limiting the generalizability of our findings. For instance, patients with higher agreeableness or openness to experience may have been more likely to engage in the study. We tried to mitigate information bias by allowing patients to complete the NEO-FFI personality instrument in private, prior to the face-to-face interview. Sensitivity analyses were performed using stratified logistic regression to adjust for the probability of selection. Despite limitations, our results deserve attention because this is the first known attempt to examine the relationship between individual personality factors and the identification of depression by the primary care doctor.

We found that persons with high neuroticism were more likely to be identified as depressed by the primary care doctor. Because persons who have high neuroticism are more likely to endure a chronic and more severe course of depression (Clark, Watson, & Mineka, 1994), it might be important to target such persons for more intensive treatments, such as combined medication and psychotherapy. Depressed persons with high neuroticism may also benefit from interventions such as cognitive behavioral therapy which could address their negative cognitions (Beck, 2005).

Participants with low extraversion were more likely to be identified as depressed by the primary care physician, even while controlling for depressive symptoms. Primary care physicians should pay close attention to persons who appear to be socially isolated, introverted, or less outgoing, when screening for depression. Physicians may want to employ more rigorous diagnostic tools to avoid over-diagnosis of depression in persons who appear to have low extraversion. If persons with low extraversion are diagnosed as depressed, treatments may be tailored to address behavioral activation, which may be particularly important to their recovery (Barbour & Blumenthal, 2005; Thompson, 1996).

We found that high conscientiousness was associated with decreased odds of identification of depression by the primary care doctor. These patients may appear to be well-organized, and to "have it all together," while they may indeed be experiencing significant levels of depressive symptoms (the "good patient" (Wittink, Barg, & Gallo, 2006)). Primary care physicians should be aware of these findings, as to not miss the diagnosis of depression in patients who appear to have high conscientiousness.

Our findings may have important implications for the diagnosis and management of depression in older persons in primary care. Basic knowledge of personality factors and their association with the identification of depression may influence the accurate diagnosis of depression in older patients with certain personality characteristics and may also influence the physician's choice of therapy. Future, longitudinally based studies can address the implications of personality on treatment decisions and outcomes in primary care.

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Table 1

The Five Factor Model of Personality

Examples of adjectives which define each personality factor along its continuum (McCrae, 1991; Wiggins, 2003).

PERSONALITY FACTOR	HIGH (+)	LOW (−)
Neuroticism	Negative affect, pessimistic outlook towards the world, self-blame	Unemotional, overly calm, lack of concern for potential problems in health
Extraversion	Sociable, friendly, talkative	Isolated, passive, unfeeling, quiet
Openness to Experience	Daring, imaginative, original, broad interests	Down to earth, conventional, conservative, dislikes change
Agreeableness	Cooperative, sympathetic, trustful	Ruthless, inability to trust, stingy, manipulative, irritable
Conscientiousness	Thorough, well-organized, careful, hard-working	Disorganized, lazy, negligent, lack of self-discipline

Table 2

Sociodemographic characteristics

Comparison of patients identified by physicians as “not at all” depressed with patients identified as depressed, among patients with complete information (n = 318). Data from the Spectrum Study (2001–2003). Unless otherwise indicated, data are expressed as mean (SD). CES-D, Centers for Epidemiologic Studies Depression Scale.

Variable	“Not at all” depressed (n = 141)	Depressed (n = 177)	p value
Sociodemographic			
Age in years	75.7 (6.4)	74.7 (5.6)	0.12
Women, n (%)	109 (34.3)	137 (43.1)	0.98
African American, n (%)	63 (19.8)	44 (13.8)	<0.001
White, n (%)	78 (24.5)	130 (40.9)	<0.001
Education less than high school, n (%)	58 (18.2)	67 (21.1)	0.55
Physical health			
Number of medical conditions	6.57 (3.16)	7.91 (3.75)	<0.001
Depressive Symptoms			
CES-D score	11.06 (9.56)	17.74 (11.41)	<0.001
Personality traits			
Neuroticism	51.04 (6.80)	54.34 (7.81)	<0.001
Extraversion	49.71 (8.63)	44.80 (10.37)	<0.001
Openness to experience	44.92 (7.69)	44.56 (9.21)	0.71
Agreeableness	50.85 (10.70)	49.64 (11.06)	0.33
Conscientiousness	47.90 (9.04)	45.36 (9.30)	0.02

* p- values generated for comparison of groups with χ^2 or t test, as appropriate.

Table 3

Association between personality and identification of depression by the primary care doctor

OR, odds ratio. 95% confidence interval shown in brackets. Model 1 includes terms for self-identified ethnicity, number of medical conditions, and age; Model 2 includes all terms from Model 1 plus the Centers for Epidemiologic Studies Depression Scale score.

	Unadjusted OR	Model 1	Model 2
NEUROTICISM			
Low (n=32)	0.80 [0.37, 1.70]	0.70 [0.31, 1.56]	0.81 [0.35, 1.87]
Average (n=180)	1.00	1.00	1.00
High (n=106)	**2.36** [1.42, 3.93]	**2.02** [1.19, 3.45]	1.46 [0.82, 2.58]
p value	0.002	0.012	0.327
EXTRAVERSION			
Low (n=129)	**2.47** [1.47, 4.16]	**2.42** [1.39, 4.22]	**2.24** [1.26, 4.00]
Average (n=122)	1.00	1.00	1.00
High (n=67)	0.66 [0.36, 1.20]	0.59 [0.31, 1.11]	0.65 [0.34, 1.26]
p value	<0.001	<0.001	0.001
OPENNESS TO EXPERIENCE			
Low (n=157)	1.49 [0.94, 2.40]	1.57 [0.95, 2.58]	1.58 [0.94, 2.65]
Average (n=128)	1.00	1.00	1.00
High (n=33)	1.81 [0.82, 3.98]	1.62 [0.70, 3.72]	1.74 [0.73, 4.16]
p value	0.150	0.172	0.174
AGREEABLENESS			
Low (n=100)	1.31 [0.77, 2.22]	1.41 [0.79, 2.49]	1.00 [0.54, 1.83]
Average (n=130)	1.00	1.00	1.00
High (n=88)	1.20 [0.70, 2.07]	1.14 [0.64, 2.03]	1.11 [0.61, 2.02]
p value	0.580	0.505	0.935
CONSCIENTIOUSNESS			
Low (n=119)	1.46 [0.89, 2.39]	1.24 [0.74, 2.11]	1.00 [0.57, 1.74]
Average (n=146)	1.00	1.00	1.00
High (n=53)	0.54 [0.29, 1.03]	**0.50** [0.25, 0.98]	**0.45** [0.22, 0.91]
p value	0.014	0.037	0.062