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Independent Associations Between Personality Traits and Clinical Characteristics of Depression

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Abstract

Few studies have examined age of onset and chronicity of depression in the same subject sample. The present study sought to determine whether personality traits related to early onset depression were different from those related to chronic depression. We tested the associations between personality self-reports and clinical characteristics of depression by conducting multiple and logistic regression analyses to determine whether personality uniquely predicted clinical characteristics and whether clinical characteristics uniquely predicted personality, after adjusting for depression severity. We also analyzed data at six-month follow-up to determine whether age of onset and chronicity maintained their associations with personality. The study found that low levels of positive personality traits had unique associations with chronicity of depression, whereas elevated levels of negative personality traits had unique associations with an earlier onset of depression. Furthermore, associations were generally maintained over time, suggesting that associations between personality and these depression subtypes are stable.

Keywords

early-onset depression; chronic depression; personality; positive emotionality; negative emotionality

Increasing evidence suggests that depression is a heterogeneous condition with regard to symptoms, course, and treatment efficacy (Akiskal, 1983; McCullough et al., 2003). Two characteristics that have been used to parse depression into more homogeneous subtypes are chronicity and age of onset (Klein et al., 1999; Parker et al., 2003). Furthermore, chronicity and age of onset are related to and perhaps caused by long-standing personality traits (Harkness et al., 2002; Ramklint & Ekselius, 2003; Riso et al., 2002). In the present paper we sought to explore the associations between depression and personality by examining whether particular personality abnormalities co-occurred differentially with certain depression subtypes and whether these personality variables retained their relation to depression over time.

Chronic Forms of Depression

DSM-IV identifies the presence of symptoms for two or more years as the main feature of chronic depression and recognizes two forms of the condition: dysthymic disorder and chronic major depressive disorder (MDD). Some research suggests that chronic forms of depression possess greater similarities than differences and may be best conceptualized as part of a single chronic depressive condition as these subtypes present with similar symptomatology, level of

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psychosocial functioning, response to treatment, likelihood of having an episode of MDE and rates of comorbid personality disorders (Klein et al., 1995; McCullough et al., 2003). Furthermore, there are similar rates of psychopathology in first-degree relatives of individuals with chronic forms of depression (Klein et al., 1995), suggesting a common etiological underpinning.

Whereas chronic depressive conditions are similar to each other, they also have different biological and clinical characteristics than nonchronic forms of depression. Compared to those with nonchronic depression, individuals suffering from chronic depressions are likely to have higher levels of social impairment (Klein et al., 2000; Pincus & Pettit, 2001), worse response to treatment (Klein et al., 1988), lower rates of recovery (Klein et al., 2000), and higher familial rates of MDD and chronic MDD (Klein et al., 1995; Klein et al., 2004).

In addition to its association with a more pernicious course and negative outcome, chronic depression has been associated with elevated rates of personality abnormalities, such as higher levels of neuroticism and introversion (McCullough et al., 1994), and these traits may contribute to depression's chronicity (Duggan et al., 1990; Hirschfeld et al., 1986a). Research also indicates that even after recovery from the major depressive episode those with chronic major depression have higher neuroticism and introversion in comparison to those with nonchronic major depression (Hirschfeld et al., 1986b). Thus, high levels of neuroticism and low levels of extraversion may represent stable personality characteristics of individuals with chronic depression (Harkness et al., 2002; Ormel et al., 2004; Riso et al., 2002).

Early vs. Late Onset of Depression

Although some research has suggested depression is best categorized as either chronic or nonchronic (McCullough et al., 2003), another body of research suggests that depression may best be differentiated by age of onset (Akiskal et al., 1980; Akiskal, 1981; Klein et al., 1999). DSM-IV specifies that an early onset refers to depression occurring before age 21, with symptoms typically beginning during childhood or adolescence. Clinicians and researchers frequently use the specifiers 'early onset' and 'chronic' interchangeably to indicate depression with a protracted course, which contributes to some lack of clarity about the specificity of each label. However, early onset is discernible from chronicity, as both chronic and nonchronic major depression may have an early or late onset. Figure 1 represents the course and timeline of depression for four hypothetical depressed patients. Each patient has current MDD with recurrent episodes, but the first person has a late onset and chronic depression, the second person has an early onset and chronic depression, the third person has a late onset and nonchronic depression, and the fourth person has an early onset and nonchronic depression.

Similar to chronicity, an early onset of depression is associated with numerous negative course and outcome variables for patients. Individuals who experience depression at an early age experience greater psychosocial impairment and increased risk for suicidality in comparison to a late onset of depression (Zisook et al., 2004). In addition, early onset depression is associated with a more debilitating course, more psychiatric hospitalizations, greater symptom severity, and higher numbers of recurrent depressive episodes (Giles et al., 1989; Zisook et al., 2007; Lewinsohn et al., 2000; Ramklint & Ekselius, 2003). Family studies have found that individuals with early onset depression have higher familial rates of depression (Kupfer et al., 1989; Mondimore et al., 2006) as well as higher familial rates of early onset depression more specifically (Todd & Botteron, 2001), suggesting that early onset depression may have a heritable component.

Furthermore, early-onset depression is associated with more personality abnormalities than late-onset depression (Ramklint & Ekselius, 2003). Early-onset depressives have been found to exhibit lower levels of extraversion and higher levels of gloominess, quietness, and self-

criticism, than those with a later onset (Fava et al., 1996). In addition, individuals with early onset depression were more likely to exhibit disordered personality functioning prior to the onset of depression than were individuals with late onset depression (Parker et al., 2003).

The negative effects of an early onset of depression may be exacerbated when an early onset is combined with a chronic course of depression. Two studies have shown that early-onset chronic depression is associated with longer episodes, higher rates of recurrence, comorbidity, hospitalization, and greater psychiatric comorbidity than late-onset chronic major depression (Barzega et al., 2001; Klein et al., 1999). In sum, an early onset of depression is associated with a more pernicious course and negative outcome than a late onset of depression, but these negative features may be particularly severe among chronic depressives.

Present Study

Few studies have looked at depression onset age and chronicity variables and their associations with personality abnormalities within the same subject sample. For the present study, we examined whether age of onset and chronicity of depression had unique associations with self-reports of personality. Specifically, we focused on the traits of positive emotionality/extraversion and negative emotionality/neuroticism because these traits have been robustly associated with depression (Chioqueta & Stiles, 2005; Clark et al., 1994; Duggan et al., 1995; Kendler et al., 2006). We also assessed whether the personality factors associated with each subtype of depression were consistent over time.

We note that self-report indices may be influenced by state effects rather than just trait characteristics because depressed participants may unintentionally respond to questions in ways that reflect their current mood states (Reich et al., 1987). However, previous research suggests that self-reports of depressed individuals are significantly different from controls' before the onset of depression, during the depressed episode, and after recovery from depression (Costa et al., 2005; Fanous et al., 2007; Harkness et al., 2002; Ormel et al., 2004). Thus, whereas self-reports of personality obtained concurrently with depression diagnoses may not be optimal for assessing causality, we presume that personality abnormalities present during the disorder provide an adequate proxy of personality abnormalities before the onset of the disorder. In the present study we accounted for potential state effects, as well as the differences in depression severity among participants, by entering a measure of current depression severity as a covariate in all analyses.

Method

Participants

Participants were drawn from a longitudinal study of emotion, personality, and depression (McFarland et al., 2006; Shankman et al., 2007). Seventy individuals with current DSM-IV major depression (MDD) were recruited through advertising in the community as well as from psychiatric and psychological clinics in the New York metropolitan area. At baseline measurement, 53% ($N = 37$) of the participants presented with chronic depression (chronic MDD, MDD with incomplete recovery, or MDD superimposed on dysthymia), and 47% ($N = 33$) presented with nonchronic depression (duration of current MDE < 18 months). These three chronic depressive diagnoses have been shown to be indistinguishable on demographic, clinical, psychosocial, family history, and treatment response (McCullough et al., 2000). Participants qualified as suffering from nonchronic depression only if they had never experienced past bouts of chronic depression. Both groups had varying ages of onset of first affective disorder (either dysthymia or MDD), with an overall mean age of onset of 19.6 ($SD=10.29$). Individuals were not eligible to participate in the study if they had a lifetime

diagnosis of a psychotic disorder, Bipolar Disorder, Dementia, or were unable to read and write English.

Sixty-one of the original participants (87%) completed follow-up assessments at six months. Among the participants who remained in the study at 6-month follow-up, 51% ($N = 31$) had chronic depression and 49% ($N = 30$) had nonchronic depression at baseline. The participants who remained in the study did not differ from the participants who dropped out of the study on age, age of onset, gender, ethnicity, Hamilton Rating Scale for Depression (HRSD) scores, or personality measures ($p > .10$). All participants gave informed consent and received payment for their participation in the study at both time points.

Measures

Diagnoses and clinical characteristics (chronicity, age of onset) were determined at baseline using the Structured Clinical Interview for DSM-IV (SCID; First et al., 2002), a standard assessment instrument for Axis-I psychopathology. From the SCID, the interviewer also determined each participant's current level of functioning using the Global Assessment of Functioning (GAF) scale. At baseline and follow-up, experimenters employed the 24-item HRSD (Hamilton, 1960) to assess the severity of the participants' depressive symptoms during the past week. The assessments were made by one of us (S.A.S.) and a Master's-level diagnostician. The latter diagnostician has demonstrated high levels of inter-rater reliability in the past and has trained numerous diagnosticians on the SCID and HRSD for 10 years (Keller et al., 1995). She trained S.A.S. to criterion, and they discussed and confirmed diagnoses regularly in best-estimate meetings (Klein et al., 1994).

Participants completed paper-and-pencil self-report personality questionnaires. At baseline, the following self-report personality inventories were administered: the Global Temperament Survey (GTS), Eysenck Personality Questionnaire (EPQ), and Behavioral Inhibition and Behavioral Activation Scales (BIS/BAS). The GTS measures Negative Emotionality (NE) and Positive Emotionality (PE; Clark & Watson, 1990). NE assesses the tendency to experience negative emotions, such as anger, anxiety, and sadness. PE assesses the tendency to experience positive emotions, such as feeling enthusiastic or excited. The EPQ measures Neuroticism (N) and Extraversion (E; Eysenck et al., 1985). N assesses the tendency to react to stress. E assesses the tendency to be outgoing and experience positive affect. BIS/BAS (Carver & White, 1994) measures Gray's (1990) behavioral inhibition system (BIS; sensitivity to punishment and non-reward stimuli and inhibition of movement toward goals) and behavioral activation system (BAS; sensitivity to signals of reward, likelihood of engaging in goal-directed behaviors). At 6-month follow-up, participants completed the GTS and BIS/BAS, but did not complete the EPQ as it was correlated highly at baseline with the GTS.

Due to the high degree of similarity in the conceptual underpinnings of the personality variables, we ran a factor analysis with baseline personality variables (GTS, EPQ, and BIS/BAS) to see whether distinct factors emerged. Using principal axis factoring with varimax rotation, we found that a two-factor solution accounted for 73% of the variance in the data at baseline with the negative personality dimensions loading highly on factor 1 (factor 1 loadings: GTS-NE = .92, EPQ-N = .90, and BIS = .65), and the positive personality dimensions loading highly on factor 2 (factor 2 loadings: GTS-PE = .95, EPQ-E = .67, and BAS = .42). Moreover, none of the variables that loaded on factor 1 loaded highly on factor 2 and vice versa. A similar factor structure was shown using follow-up personality. Therefore, for a more parsimonious data analytic strategy, we concatenated the personality scales by creating a 'trait positive emotionality' dimension (average of Z-scores of GTS-PE, BAS, EPQ-E) and 'trait negative emotionality' dimension (average of Z-scores of GTS-NE, BIS, and EPQ-N). Because the EPQ was not given at follow-up, only the GTS and BIS/BAS scales were used for the follow-up concatenated variables.

Data Analyses

All analyses included data from the 61 participants who completed baseline and follow-up personality assessments. One participant did not complete one item on the BAS at baseline assessment, so we took the average of the participant's other BAS responses on that scale and entered this value in our BAS calculations for this participant. In order to determine whether depressed subtypes differed in their responses to self-report personality questionnaires, we first examined responses to personality questionnaires at baseline among individuals with early versus late onset of depression and chronic versus nonchronic forms of depression. Rather than using age of onset of MDD, we used age of onset of earliest affective disorder (either dysthymia or MDD) as our age of onset variable, as this was the age at which the affective disturbance began (though analyses using onset of MDD were nearly identical). Whereas age of onset of depression was treated as a continuous variable, chronicity was treated as a dichotomous variable because the distribution of length of depressive episodes was bimodal, with a large separation between the mean number of months of current major depressive episode for chronic ($M = 58.65$, $SD = 113.92$) and nonchronic groups ($M = 4.43$, $SD = 3.42$), $t(61) = -2.61$, $p < .05$. Additionally, the maximum duration of episode for nonchronic MDD participants was set to be 18 months, and the minimum duration of episode for chronic MDD was set to be 24 months. We thus excluded any participant during recruitment whose episode was 18–24 months in length in order to further differentiate chronics from nonchronics.

At baseline, we examined zero-order associations between clinical variables and demographic characteristics and personality traits. Next, we used multiple and logistic regression analyses to assess whether chronicity and age of onset of affective disorders had independent associations with trait positive and negative emotionality. Given our goal of determining whether there were unique associations between personality and clinical characteristics of depression, we tested the associations in two directions: first, we used baseline reports of personality as predictor variables and age of onset and chronicity of depression as criterion variables; second, we used chronicity and age of onset of depression as predictor variables and personality as criterion variables. In each set of analyses, we covaried personality variables or clinical characteristics by entering them in the same block of the multiple regression. As stated earlier, all predictor variables were adjusted for depression severity.

Next, we used multiple and logistic regression to analyze participant data at 6-month follow-up and test whether the associations between age of onset, chronicity, and personality remained stable over time. Similar to the baseline analyses, we conducted these analyses in two directions – personality predicting age of onset and chronicity, and age of onset and chronicity predicting personality. We averaged reports of trait positive and negative emotionality across baseline and 6-month follow-up in order to obtain more reliable indicators of trait positive and negative emotionality and reduce the impact that depressed mood state may have had on personality reports. Analogous to the baseline analyses, we adjusted predictor variables for average depression severity ratings from baseline to 6-month follow-up.

Results

Clinical Characteristics and Baseline Associations

The demographic characteristics of the sample and mean ratings for depression and personality measures at baseline and 6-month follow-up are summarized in Table 1. The participants' average age at baseline was 35. Consistent with the population from which the sample was taken, the sample was predominantly white (78.7%) and employed (82.0%). Nearly half of the participants were taking psychiatric medication (47.5%) at baseline, and their baseline Global Assessment of Functioning (GAF) ratings were 54.0 on average, indicating moderate

impairment. Participants were primarily female (67.2%), which is consistent with the higher prevalence rates of depression among women in the general population (Kessler et al., 1993).

Table 1 also presents the bivariate associations between the participants' clinical characteristics of chronicity and age of onset and their demographic characteristics, depression severity, and composite personality variables. Participants with chronic depression had an earlier age of onset of affective disorders [$t(61) = 2.53, p < .05$, Cohen's $d = 0.65$]. Participants with an earlier age of onset were also more likely to be younger at the time of the study [$r(61) = .44, p < .001$] than those with later onsets. However, analyses that included age at the time of the study as a covariate demonstrated that our findings for age of onset could not be accounted for by differences in age.

Participants with chronic depression differed significantly from participants with nonchronic depression on baseline personality measures. Those with chronic depression reported lower trait positive emotionality and higher trait negative emotionality than nonchronic depressives. On the other hand, age of onset was only associated with trait negative emotionality, with participants with a younger age of onset reporting higher levels of trait negative emotionality. As expected, participants' depression severity ratings were highly correlated with reports of trait positive and negative emotionality. Thus, we adjusted predictor variables for depression severity by including HRSD score as a covariate in all subsequent analyses.

Baseline Personality Variables Uniquely Predicting Clinical Characteristics

Our next set of analyses tested the independent associations between personality and depression characteristics using baseline reports of trait positive and negative emotionality as predictor variables and age of onset and chronicity of depression as criterion variables (see top of Table 2). First, we conducted a multiple regression with age of onset as the dependent variable and in block 1 entered HRSD and in block 2 entered both trait positive and negative emotionality. Results showed that reports of negative emotionality uniquely predicted age of onset ($\beta = -.39, p < .01$); but trait positive emotionality did not. Second, we conducted an analogous logistic regression using chronicity as the dependent variable. Adjusting for HRSD depression severity in block 1, trait positive emotionality uniquely predicted chronicity of depression [Odds Ratio = .33 (95% C.I. = .13 – .86), $p < .05$], but negative emotionality did not.

Clinical Characteristics Uniquely Predicting Baseline Personality Traits

Next, we tested the independent associations between personality and depression using age of onset and chronicity of depression as predictor variables and trait positive and negative emotionality as criterion variables (see bottom of Table 2). For each multiple regression model, we entered the HRSD score in block 1 and covaried age of onset and chronicity of depression by entering them together in block 2. Age of onset uniquely predicted baseline reports of trait negative emotionality ($\beta = -.32, p < .01$), but chronicity did not. Chronicity of depression uniquely predicted baseline reports of trait positive emotionality ($\beta = -.28, p < .05$), but age of onset did not.

To summarize, results showed that reports of trait negative emotionality uniquely predicted an earlier age of onset, and reports of lower positive emotionality uniquely predicted chronicity. “Flipping” the IV and DV also showed consistent results. An earlier age of onset of depression uniquely predicted baseline trait negative emotionality and chronicity of depression uniquely predicted baseline reports of trait positive emotionality.

Stability of Associations Between Depression and Personality Over Time

Personality scores at baseline and follow-up were significantly correlated ($r = .78, p < .01$ for negative emotionality; $r = .65, p < .01$ for positive emotionality). The baseline clinical

characteristics of age of onset and chronicity of depression also had weaker associations with follow-up reports of personality than with baseline reports of personality; however, the directions of the associations were maintained (see table 1).

As shown in Table 1, despite stability in rank order, participants' depression severity ratings decreased significantly from baseline to 6-month follow-up [$t(61) = 26.19, p < .001$]. These changes in depression severity ratings are consistent with what would be expected from an acutely depressed sample, some of whom were beginning treatment around the baseline assessment. We also found that a decrease in depression severity from baseline to 6-month follow-up was associated with a decrease in negative emotionality [$r(61) = .28, p < .05$] and an increase in positive emotionality [$r(61) = -.39, p < .01$]. Given this effect of state on reports of traits, the next set of analyses examined the association between clinical characteristics and personality using average reports of positive and negative emotionality from baseline to follow-up as these would provide more stable indices of personality. Baseline clinical characteristics were used, as they remained unchanged at follow-up (i.e., no nonchronic depressive became chronic, and age of onset of the disorder, of course, could not have changed over time). We adjusted our predictor variables for the average depression severity ratings across baseline and follow-up.

In multiple regression analyses that used average personality reports as predictor variables, average reports of trait negative emotionality uniquely predicted age of onset ($\beta = -.37, p < .01$); but average reports of trait positive emotionality did not. In the logistic regression analyses that used average personality reports as predictor variables, average reports of both trait positive and trait negative emotionality showed trends toward uniquely predicting chronicity.

In multiple regression analyses that used age of onset and chronicity of depression as predictors, age of onset uniquely predicted average reports of trait negative emotionality ($\beta = -.28, p < .05$), but not average reports of trait positive emotionality. On the other hand, chronicity of depression showed a trend toward uniquely predicting average reports of trait positive emotionality, but not average reports of trait negative emotionality.

Discussion

This paper sought to extend previous research findings linking personality abnormalities to chronicity (Duggan et al., 1990; Hirschfeld et al., 1986a) and age of onset (Fava et al., 1996; Ramklint & Ekselilus, 2003) by examining them in the same sample. The goals of this study were twofold: 1) to determine whether there were unique associations between chronicity and age of onset of depression and reports of personality traits at baseline, 2) to evaluate whether the associations between clinical characteristics and reports of personality traits would remain consistent over time.

The results suggested that people who reported higher levels of trait negative emotionality were more likely to have developed affective disturbance at an early age. Results also suggested that depressed people who reported lower levels of trait positive emotionality were more likely to have a chronic course. This pattern of findings was maintained regardless of whether personality was the predictor or the criterion, thus strengthening our argument for unique associations.

Furthermore, findings from the present study suggested that the associations between personality and age of onset and chronicity of depression were consistent across time, in that chronicity of depression retained its association with trait positive emotionality (albeit at a trend level) and early onset of depression retained its association with trait negative emotionality at 6-month follow-up. Together, these findings accentuated the unique associations between reports of personality traits and age of onset and chronicity of depression.

We found that age of onset and chronicity possessed unique associations with personality reports over and above depression state effects. It was essential to adjust our participants' reports for current depressive severity because even though depressives exhibit personality irregularities before, during, and after a depressive episode compared to controls (Ormel et al., 2004), their reports of personality are affected by their depressive state (Reich et al., 1987). Indeed, we found that over time, a change in depressive symptoms led to a medium change in personality ratings. Thus, our study argues for the importance of considering state effects on depressed individuals' ratings of their personality (Klein et al., 2002; Rohde et al., 1990).

Because our measures of depression and personality were assessed concurrently, we were unable to determine whether personality *caused* the clinical characteristic or whether the clinical characteristic *caused* the personality characteristic. Indeed, the relation between depression and personality is complex, with some studies showing that personality predicts later onset of depression and others showing that depression has 'scar' effects on personality (Fanous et al., 2007; Kendler et al., 1993; see Klein et al., 2002). Thus, it was important in the present study to examine personality as both the predictor and the criterion. It is interesting, however, that in both sets of analyses, the pattern of unique associations was maintained.

Given that elevated levels of negative emotions both uniquely predict and are uniquely predicted by an early age of onset of depression, negative emotionality/neuroticism may play an etiological role in depression occurring early in life. Research has established links between stressful life events and onset of depression (Kendler et al., 1995; Kessler, 1997), and studies have found that people with higher levels of stress reactivity or tendency to experience negative emotions are more vulnerable to stress (van Os & Jones, 1999) and more prone to develop depression when stressful events occur (Kendler et al., 2006). Thus, our results may suggest that a person with high trait negative emotionality may have a predisposed lower threshold (or higher sensitivity) to the depressogenic effects of stress.

Our study also found that low levels of positive emotions both predict and are predicted by a chronic course of depression. That is, an individual who has low positive emotionality may be less likely to engage in pleasurable experiences than someone who reports a normal level of this trait (Gable et al., 2000). With this in mind, it is possible that a depressed individual with low levels of positive emotions may neglect to seek social experiences or interpersonal contact, which may in turn contribute to the maintenance (and thus, the chronicity) of their depressive symptoms. Cognitive-behavioral therapeutic techniques for depression that focus on behavioral activation may thus be particularly important to use with these individuals as behavioral activation seeks to increase a patient's social activities and interpersonal communication and thus increase the likelihood that they would experience positive emotions (Dimidjian et al., 2006; Jacobson et al., 2001).

The notion that reports of elevated negative emotionality and lowered positive emotionality are relatively consistent over time among individuals who experience depression is not new (Cox et al., 2004; Hirschfeld et al., 1986b; Ormel et al., 2004), nor is the examination of the roles of onset age and chronicity (McCullough et al., 2003; Parker et al., 2003; Ramklint & Ekselius, 2003). However, our finding of unique, consistent associations between particular clinical characteristics and particular personality traits is an important contribution to the literature on depression and personality and increases the validity of the distinction between early onset and chronic depressions. Researchers tend to equate early onset of depression with chronicity of depression, suggesting that both are persistent and pernicious subtypes of the disorder (Waslick et al., 2003). However, this study suggests that there are different emotional processes associated with these clinical characteristics. It is, of course, necessary to replicate these findings with a larger sample.

The present study had several limitations. First, self-report personality inventories may not adequately assess underlying personality features of individuals. Depressed individuals may feel motivated to make their responses correspond to the way they think they should describe their feelings according to their present diagnoses (i.e., demand characteristics). Second, the current study focused exclusively on measuring personality traits, as opposed to using idiographic personality assessments (Cervone, 2004). Third, our cross-sectional data collection methodology did not allow us to draw causal conclusions regarding personality and depression. Fourth, reliabilities on depressive diagnoses, ages of onset, and chronicity were not obtained; however, the lab has obtained adequate reliabilities in the past, and all diagnosticians went through extensive training (Klein et al., 2000). Lastly, due to our small sample size, we had only moderate statistical power (69%) to test our hypotheses and inadequate statistical power to detect interactions between age of onset and chronicity of depression, a combination that we expect to present an increasingly negative personality profile.

However, the present study also had several strengths. First, by examining the unique personality factors associated with early onset and chronicity of depression, we were able to identify early vulnerability factors for onset and maintenance of a depression episode. Second, the longitudinal design enabled us to examine the stability of personality and depression over time. Third, we used multiple personality assessment measures (GTS, EPQ, and BIS/BAS scales) of similar constructs, which enabled us to obtain more valid measures of positive and negative emotionality.

Conclusions

The findings from the present study help us to better understand depression, personality, and the connections between the two. Our results suggest that separate personality traits or emotional tendencies may contribute to specific clinical characteristics of depression. In sum, it appears that a) people who possess tendencies toward high levels negative emotionality are more likely to develop depression earlier in life and b) people who possess tendencies toward low levels of positive emotionality are more likely to develop chronic depression.

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Chronic depression (late onset)

Chronic depression (early onset)

Nonchronic depression (late onset)

Nonchronic depression (early onset)

Figure 1.
How early onset is different from chronicity in four hypothetical patients with MDD.

Table 1

Sample Characteristics and Associations with Chronicity and Age of Onset

	Participants	Chronicity ^a	Age of onset ^b
Demographic variables			
Age	34.53 (13.19)	−1.04	.44***
% Caucasian	78.7%	.37	−.19
% Female	67.2%	.21	−.16
% Working	82.0%	2.56	.04
Clinical variables			
Global assessment of functioning (GAF)	54.03 (6.62)	6.31***	.02
% Taking medication	47.5%	17.95***	−.05
Age of onset of affective disorders	19.56 (10.29)	−2.53*	
Baseline self-report measures			
HRSD	25.59 (7.63)	2.36*	.04
Trait Positive Emotionality	−.00 (.80)	−3.55***	.16
Trait Negative Emotionality	.01 (.89)	2.64*	−.35**
6-Month follow-up self-report measures			
HRSD	13.90 (10.64)	1.66	−.05
Trait Positive Emotionality	−.00 (.88)	−1.48	−.03
Trait Negative Emotionality	.00 (.93)	2.26*	−.27*

Note: N = 61 for all measures. HRSD = Hamilton Rating Scale for Depression.

^a Associations with chronicity are shown as chi-squares for dichotomous characteristics (e.g., gender) and *t*-tests for continuous measures (e.g., HRSD). Chronic depression is the higher value in the dichotomous dummy code.

^b Associations with age of onset of affective disorders are shown as Pearson *r*'s.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Summary of Regression Analyses for Baseline Personality Predicting Clinical Characteristics and Clinical Characteristics Predicting Baseline Personality (N = 61)

Predictor Variable	Age of onset of affective disorders	Chronicity of depression
	β	Odds Ratio
Block 1:		
HRSD	.04	1.09 [*] (1.01 – 1.18)
Block 2:		
Trait Positive Emotionality	.17	.33 [*] (.13 – .86)
Trait Negative Emotionality	-.39 ^{**}	1.75 (.88 – 3.45)
<hr/>		
Predictor Variable	Trait positive emotionality	Trait negative emotionality
	β	β
Block 1:		
HRSD	-.46 ^{***}	.35 ^{**}
Block 2:		
Age of onset	.09	-.32 ^{**}
Chronicity	-.28 [*]	.13

Note. In each regression, the personality or clinical variables are adjusted for the participant's severity of depression by entering HRSD score in Block 1. Depending on the predictor variables, either trait positive and trait negative emotionality or clinical characteristics were entered together in Block 2 in order to adjust for shared variance between the two. Chronic depression is the higher value in the dichotomous dummy code.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Summary of Regression Analyses for Average (Baseline and Follow-up) Personality Predicting Clinical Characteristics and Clinical Characteristics Predicting Average Personality

Predictor Variable	Age of onset of affective disorders	Chronicity of depression
	β	Odds Ratio
Block 1:		
HRSD	-.02	1.08* (1.01 – 1.16)
Block 2:		
Avg. trait positive emotionality	.03	.46+ (.20 – 1.09)
Avg. trait negative emotionality	-.37**	1.85+ (.92 – 3.70)
Predictor Variable	Avg trait positive emotionality	Avg trait negative emotionality
	β	β
Block 1:		
HRSD	-.36**	.37**
Block 2:		
Age of onset	-.02	-.28*
Chronicity	-.25 ⁺	.14

Note. In each regression, the personality or clinical variables are adjusted for the participant's severity of depression by entering HRSD score in Block 1. Depending on the predictor variables, either trait positive and trait negative emotionality or clinical characteristics were entered together in Block 2 in order to adjust for shared variance between the two. Chronic depression is the higher value in the dichotomous dummy code.

⁺ $p < .10$

* $p < .05$.

** $p < .01$.

*** $p < .001$.