Major Depression, Chronic Minor Depression, and the Five-Factor Model of Personality

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Abstract
Fifty-eight outpatients with major depression completed the NEO Personality Inventory at intake (time 1) and after up to three months of anti-depressant treatment (time 2). Within this group, 26 patients met additional Research Diagnostic Criteria for chronic minor depression. Repeated-measures analyses revealed significant decreases in Neuroticism scores, and significant increases in Extraversion and Conscientiousness scores, from time 1 to time 2 for both patient groups. In addition, despite similar symptom severity at time 2, the patients with major depression + chronic minor depression scored significantly higher on the Angry Hostility facet of Neuroticism and significantly lower on Agreeableness than those with major depression alone. We suggest from these findings that Angry Hostility and low Agreeableness may represent a trait vulnerability in individuals with chronic minor depression that persists even following remission of the major depressive state, and that this may help to explain their high rates of relapse and recurrence. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION
Approximately 26% of individuals with major depression also suffer from an underlying chronic minor depression (Keller, Hirschfeld, & Hanks, 1997; Keller & Shapiro, 1982). A number of terms have now been developed to describe this subsyndromal condition, including dysthymia (American Psychiatric Association, 1994), chronic minor depression (Spitzer, Endicott, & Robins, 1978), and depressive personality (Chodoff, 1972; Weissman, 1980). Individuals with major depression superimposed upon chronic minor depression have a poorer prognosis than those with episodic major depression in terms of

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lower recovery rates and higher risk for relapse and recurrence (Keller & Shapiro, 1982; Keller, Lavori, Endicott, Coryell, & Klerman, 1983; Miller, Norman, & Dow, 1986). In addition, the subsyndromal symptoms of their chronic minor depression are so intertwined with their personality that it is difficult to distinguish trait from state in this group (Akiskal, 1983; Akiskal, Hirschfeld, & Yerevanian, 1983; Widiger, 1993). For this reason, investigation into the personality profiles that distinguish this high-risk group from those with episodic major depression may help to better understand its phenomenology and course.

Studies that have examined differences in personality characteristics between those with major depression + chronic minor depression and major depression alone have been inconsistent in their findings. Klein, Taylor, Harding, and Dickstein (1988) found that those with so-called ‘double depression’ (major depression + dysthymia, as defined by DSM criteria; Keller & Shapiro, 1982) manifested higher Neuroticism scores, as measured by the Differential Personality Questionnaire (DPQ; Tellegen, unpublished manuscript) and lower Extraversion scores, as measured by the Eysenck Personality Questionnaire (EPQ; Eysenck, Eysenck, & Barrett, 1985) than those with major depression alone. By contrast, two studies found no differences between these two diagnostic groups on the EPI Neuroticism or Extraversion scales (McCullough et al., 1990; Miller et al., 1986). Furthermore, McCullough and colleagues (1988) found a significant reduction in Neuroticism scores, as measured by the EPI, over time among dysthymia patients who had remitted from their major depressive episode and suggested that Neuroticism may simply be a marker of state depression.

Assessing Neuroticism independently of the depressed state has proven to be very difficult, especially since Neuroticism scores correlate highly with scores on state measures of depression, such as the Beck Depression Inventory (BDI; Beck & Steer, 1987). As a result, many researchers argue that the high Neuroticism scores observed in depressed individuals represent a complication of their depressed state rather than a stable personality pattern (Barnett & Gotlib, 1988; Meyer & Shack, 1989; Watson & Clark, 1984). These points underscore the importance of longitudinal research that examines (i) changes within diagnostic groups on trait measures upon remission from the major depressive state and (ii) differences between diagnostic groups on trait measures from baseline to remission from major depression.

To date, research has investigated the first of these issues in individuals with chronic minor depression (McCullough et al., 1990) and with episodic major depression (Boyce et al., 1989; Hirschfeld & Klerman, 1979; Hirschfeld, Klerman, Clayton, & Keller, 1983a; Hirschfeld et al., 1983b). All of these studies found that the Neuroticism scores of remitted patients were within normal limits, supporting the contention that the high Neuroticism scores of depressed patients reflect the clinical state of depression rather than stable and chronic personality traits. By contrast, in a more recent study using patients drawn from the present database, we observed that, although the Neuroticism scores of those with remitted major depression decreased from the index episode, they still remained more than one standard deviation above those of the normative sample (Santor, Bagby, & Joffe, 1997). By contrast, scores on Extraversion increased to normal limits upon episode remission. These results suggest that individuals prone to experience depressive episodes may possess higher Neuroticism scores even when not depressed, while low Extraversion is more dependent on the state of depression.

None of the above studies examined differences in personality traits from baseline to depression remission between patients with major depression alone and those with major depression + chronic minor depression.
depression + chronic minor depression. Therefore, the present design provides a much-needed investigation into the traits that normalize with treatment in both groups (i.e. are state dependent) versus the traits that continue to distinguish major depression + chronic minor depression from episodic major depression even upon remission of the acute major depressive episode.

The goal of the present study is to compare those with major depression + chronic minor depression to those with major depression alone on the dimensions and facets of the Five-Factor Model of personality of Costa and McCrae (1992), both (i) during the acute major depressive episode and (ii) upon episode remission. While we do not expect differences in depression symptom severity between the two diagnostic groups upon remission, we predict that those with major depression + chronic minor depression will score higher on Neuroticism and lower on Extraversion than those with major depression alone during the state major depressive episode. In addition, we expect differences on the Neuroticism dimension to persist even upon major depression episode remission, thereby suggesting that Neuroticism is a trait, or personality, marker that remains elevated in those with chronic minor depression even upon complete remission of the acute depressive state.

METHOD

Participants

Patient protocols were selected from an existing database of the Depression Clinic at the Clarke Institute of Psychiatry, University of Toronto. Following the receipt of written informed consent for participation in a research study, and prior to treatment, all patients were administered the Schedule for Affective Disorders and Schizophrenia—Lifetime version (SADS-L; Spitzer & Endicott, 1979), and the 17-item Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967). The SADS-L and the HRSD interviews were conducted by a psychiatric nurse who was trained in the administration of these instruments and was blind to the patients’ responses on the self-report measures. Based on the information obtained from the SADS-L interview, 115 patients (38 men, 77 women) fulfilled Research Diagnostic Criteria (RDC; Spitzer et al., 1978) for unipolar, non-psychotic major depression and agreed to participate in a study of personality and depression. These patients also scored 16 or more on the HRSD. Of these patients, 61 fulfilled RDC for major depression alone, while 54 fulfilled the additional RDC for chronic minor depression. None of the patients had a concurrent medical illness and all were medication free for a minimum of two weeks prior to the study.

Procedure

Prior to the initiation of treatment, all subjects completed the NEO Personality Inventory (Costa & McCrae, 1989). All patients received, in open fashion, a 5 week trial of either desipramine or imipramine at a dose of 2.5 mg/kg body weight/day, or less if not tolerated, with therapeutic plasma levels, as defined by clinical laboratory, measured during the fifth week. Patients who failed to respond to the first tricyclic then received other adequate trials.

1Data from some of these patients were used in two earlier studies (Bagby et al., 1995; Santor et al., 1997). 2In 1998 the Clarke Institute of Psychiatry merged with several other clinical and research institutions, and is now referred to as the Centre for Addiction and Mental Health.
of antidepressants, including augmentation with lithium, triiodothyronine (T3), substitution with a serotonin re-uptake inhibitor, and then, after adequate washout, a trial of a monoamine oxidase inhibitor. Consistent with standard treatment response protocols, response was defined as a 50% or more reduction, and a final score of less than 10, on the HRSMD at the end of the 5 week desipramine/imipramine trial. If, on the basis of the HRSMD, the patients responded, they were classified as recovered and the NEO-PI was re-administered. If they did not respond at the end of the 5 week treatment period, they were classified as non-responders and were followed up to 12 weeks at which point the HRSMD and the NEO-PI were re-administered and recovery status was assessed for the last time.

Forty patients did not complete the full treatment protocol and, hence, were not included in the present analyses. These patients dropped out for a number of reasons (e.g. lack of motivation for treatment, poor side effect tolerance), and this attrition rate of 35% is comparable to that of many other treatment outcome studies in depression (e.g. Elkin et al., 1989). No significant differences emerged between completers and non-completers on age \((M = 39.44, 36.00; \text{SD} = 9.92, 9.64)\), percentage of women (67 versus 68%), baseline HRSMD scores \((M = 19.31, 18.55; \text{SD} = 3.76, 3.07)\), or percentage of patients with chronic minor depression (49 versus 42%). As expected, completers \((M = 43.36; \text{SD} = 10.39)\) scored significantly higher than the non-completers \((M = 37.62; \text{SD} = 10.98)\) on the Conscientiousness dimension of the NEO-PI \((t[113] = 2.76, p < 0.05)\). In addition, completers \((M = 48.60; \text{SD} = 8.42)\) scored significantly lower than the non-completers \((M = 45.30; \text{SD} = 6.79)\) on the Agreeableness dimension \((t[113] = 2.13, p < 0.05)\).

**RESULTS**

**Preliminary analyses**

Seventeen of the 75 patients who completed the treatment protocol failed to meet criteria for remission by the end of 12 weeks. Since the present study is concerned with differences between diagnostic groups who responded to treatment, these non-responders were excluded from analyses. Responders versus non-responders did not differ in age \((M = 38.69, 42.00; \text{SD} = 10.57, 6.95)\), percentage of women (66 versus 71%), or percentage of patients with chronic minor depression (45 versus 65%). As expected, on baseline HRSMD scores, the group still meeting criteria for major depression (i.e. the non-responders) \((M = 22.47; \text{SD} = 4.12)\) scored significantly higher than the responders \((M = 18.38; \text{SD} = 3.12; t[73] = 4.40, p < 0.05)\). In addition, the non-responders \((M = 116.83; \text{SD} = 23.21)\) scored significantly higher on baseline Neuroticism scores than the responders \((M = 130.12; \text{SD} = 19.41; t[73] = 2.15, p < 0.05)\). A somewhat counterintuitive finding was that non-responders \((M = 41.34; \text{SD} = 9.37)\) also scored higher on the Conscientiousness dimension of the NEO-PI than the responders \((M = 50.24; \text{SD} = 11.03; t[73] = 3.30, p < 0.05)\).

Therefore, the final sample included in the analyses below comprised 58 patients (26 major depression + chronic minor depression, 32 episodic major depression). As demonstrated in Table 1, preliminary independent-group \(t\)-tests and chi-square analyses revealed no differences between the patients with major depression + chronic minor depression and those with major depression alone on age, percentage of women, HRSMD scores at T2, the number of previous major depressive episodes, age at first onset, or the duration of the current episode in weeks. However, those with major depression + chronic...
minor depression scored significantly higher than those with episodic major depression on their HRSD scores at time 1.

**Primary analyses**

Table 2 displays the mean T-scores for each of the domains and facet scales of the NEO-PI for the major depression + chronic minor depression and episodic major depression groups separately for time 1 and time 2. All analyses were conducted using raw scores. Separate one-way repeated measures analyses of variance (RM ANOVAs) were conducted for each of the five factors of the NEO-PI. For each analysis, time (time 1 versus time 2) was analysed as a within-subjects factor, and group (major depression + chronic minor depression versus episodic major depression) was analysed as a between-subjects factor.

**Neuroticism**

The analysis of Neuroticism revealed a significant main effect of time, $F(1, 56) = 43.49$, $p < 0.001$. Referring to Table 2, scores for both groups on Neuroticism decreased upon remission from the index depressive episode. In addition, the main effect of group approached significance, $F(1, 56) = 3.36$, $p = 0.07$. Consistent with hypotheses, those with major depression + chronic minor depression scored higher on Neuroticism than those with episodic major depression. There was no evidence for a significant group by time interaction.

In order to further investigate the significant effect of time, six additional RM ANOVAs were conducted on the facet scales within Neuroticism. Alpha was set at 0.008 (0.05/6) to correct for multiple comparisons. Groups experienced a significant decrease in their scores from time 1 to time 2 on the facets of Anxiety, $F(1, 56) = 25.87$, $p < 0.001$, Depression, $F(1, 56) = 47.65$, $p < 0.001$, Self-Consciousness, $F(1, 56) = 10.19$, $p < 0.005$, and Vulnerability, $F(1, 56) = 35.36$, $p < 0.001$.

In addition, a significant effect of group emerged for the Angry Hostility facet, such that those with major depression + chronic minor depression scored significantly higher on Angry Hostility than those with major depression alone, $F(1, 56) = 9.38$, $p < 0.005$ at both time points. There was no evidence for a group $\times$ time interaction for any of the facet scales. This group difference persisted even after controlling for time 1 HRSD scores, $F(1, 55) = 8.28$, $p < 0.008$. **Table 1. Demographic and clinical characteristics of major depression + chronic minor depression and major depression alone groups**

<table>
<thead>
<tr>
<th></th>
<th>MD + CMD ($n = 26$)</th>
<th>MD alone ($n = 32$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
<td><strong>M</strong></td>
</tr>
<tr>
<td>Age</td>
<td>38.38</td>
<td>8.47</td>
</tr>
<tr>
<td>T1 HRSD</td>
<td>19.38</td>
<td>3.62</td>
</tr>
<tr>
<td>T2 HRSD</td>
<td>4.15</td>
<td>2.68</td>
</tr>
<tr>
<td>Age of first onset</td>
<td>26.45</td>
<td>10.91</td>
</tr>
<tr>
<td>Current episode duration</td>
<td>35.56</td>
<td>36.52</td>
</tr>
<tr>
<td>% women</td>
<td>18</td>
<td>69</td>
</tr>
<tr>
<td>% &gt; 3 previous episodes</td>
<td>13</td>
<td>46</td>
</tr>
</tbody>
</table>

*p* $< 0.05$. Note: MD + CMD, major depression + chronic minor depression; MD alone, major depression alone.
The analysis of Extraversion also revealed a significant main effect of time, $F(1, 56) = 30.25, p < 0.001$. Referring to Table 2, scores for both groups on Extraversion increased upon remission from the index depressive episode. However, there was no evidence for either a significant effect of group or a significant group × time interaction.

In order to further examine the significant effect of time, the six facet scales within Extraversion were analysed with RM ANOVA. Alpha was set at 0.008 (0.05/6) to correct for multiple comparisons. Both groups experienced a significant increase in their scores from time 1 to time 2 on the following Extraversion facets: Warmth, $F(1, 56) = 10.55, p < 0.005$, Assertiveness, $F(1, 56) = 11.06, p < 0.005$, Activity, $F(1, 56) = 8.97, p < 0.005$, and Positive Emotions, $F(1, 56) = 24.93, p < 0.001$.

There was no evidence for a significant group effect for any of the facet scales. However, those with major depression + chronic minor depression scored lower than those with major depression alone, as a trend, on Excitement-Seeking, $F(1, 56) = 5.85, p < 0.05$. There was also no evidence for a significant group × time interaction for any of the facet scales. However, the interaction effect approached significance for the Positive Emotions facet, $F(1, 56) = 2.77, p < 0.10$. Descriptively, the group means revealed that, while those with major depression + chronic minor depression scored lower than those with major depression alone on Positive Emotions at T1, the group differences had diminished almost entirely by T2.

### Table 2. T-scores of the domains and facets of the NEO-PI for major depression + chronic minor depression and major depression alone groups at time 1 and time 2

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th></th>
<th>Time 2</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>MD + CMD</td>
<td>MD alone</td>
<td>MD + CMD</td>
<td>MD alone</td>
</tr>
<tr>
<td>Neuroticism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1</td>
<td>Anxiety</td>
<td>70.11</td>
<td>65.98</td>
<td>63.00</td>
</tr>
<tr>
<td>N2</td>
<td>Hostility</td>
<td>61.83</td>
<td>52.02</td>
<td>58.46</td>
</tr>
<tr>
<td>N3</td>
<td>Depression</td>
<td>73.15</td>
<td>69.41</td>
<td>63.63</td>
</tr>
<tr>
<td>N4</td>
<td>Self-Consciousness</td>
<td>62.95</td>
<td>64.79</td>
<td>60.52</td>
</tr>
<tr>
<td>N5</td>
<td>Impulsiveness</td>
<td>55.60</td>
<td>50.04</td>
<td>53.41</td>
</tr>
<tr>
<td>N6</td>
<td>Vulnerability</td>
<td>72.62</td>
<td>70.07</td>
<td>62.00</td>
</tr>
<tr>
<td>Extraversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>Warmth</td>
<td>36.10</td>
<td>43.53</td>
<td>42.06</td>
</tr>
<tr>
<td>E2</td>
<td>Gregariousness</td>
<td>45.12</td>
<td>44.72</td>
<td>48.60</td>
</tr>
<tr>
<td>E3</td>
<td>Assertiveness</td>
<td>42.08</td>
<td>41.11</td>
<td>45.12</td>
</tr>
<tr>
<td>E4</td>
<td>Activity</td>
<td>42.51</td>
<td>46.07</td>
<td>46.96</td>
</tr>
<tr>
<td>E5</td>
<td>Excitement-Seeking</td>
<td>53.52</td>
<td>46.97</td>
<td>54.54</td>
</tr>
<tr>
<td>E6</td>
<td>Positive Emotions</td>
<td>31.67</td>
<td>38.60</td>
<td>40.37</td>
</tr>
<tr>
<td>Openness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O1</td>
<td>Fantasy</td>
<td>52.00</td>
<td>50.84</td>
<td>51.38</td>
</tr>
<tr>
<td>O2</td>
<td>Aesthetics</td>
<td>51.50</td>
<td>49.95</td>
<td>52.87</td>
</tr>
<tr>
<td>O3</td>
<td>Feelings</td>
<td>49.96</td>
<td>48.90</td>
<td>49.24</td>
</tr>
<tr>
<td>O4</td>
<td>Actions</td>
<td>48.91</td>
<td>48.16</td>
<td>51.12</td>
</tr>
<tr>
<td>O5</td>
<td>Ideas</td>
<td>48.62</td>
<td>48.34</td>
<td>51.71</td>
</tr>
<tr>
<td>O6</td>
<td>Values</td>
<td>54.21</td>
<td>53.70</td>
<td>55.24</td>
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<tr>
<td>Agreeableness</td>
<td></td>
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</tr>
<tr>
<td>42.72</td>
<td>51.62</td>
<td>46.80</td>
<td>51.81</td>
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<tr>
<td>Conscientiousness</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>37.55</td>
<td>41.50</td>
<td>40.99</td>
<td>44.08</td>
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</tr>
</tbody>
</table>

Note: T-scores calculated from Costa and McCrae (1989, p. 3, Table 1).

MD + CMD, major depression + chronic minor depression; MD alone, major depression alone.

**Extraversion**

The analysis of Extraversion also revealed a significant main effect of time, $F(1, 56) = 30.25, p < 0.001$. Referring to Table 2, scores for both groups on Extraversion increased upon remission from the index depressive episode. However, there was no evidence for either a significant effect of group or a significant group × time interaction.

In order to further examine the significant effect of time, the six facet scales within Extraversion were analysed with RM ANOVA. Alpha was set at 0.008 (0.05/6) to correct for multiple comparisons. Both groups experienced a significant increase in their scores from time 1 to time 2 on the following Extraversion facets: Warmth, $F(1, 56) = 10.55, p < 0.005$, Assertiveness, $F(1, 56) = 11.06, p < 0.005$, Activity, $F(1, 56) = 8.97, p < 0.005$, and Positive Emotions, $F(1, 56) = 24.93, p < 0.001$.

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**Openness**
The analysis of Openness failed to find evidence for significant time, group, or time × group interaction effects. In addition, there was no effect of time, group, or time × group on any of the facet scales of Openness.

**Agreeableness**
The analysis of Agreeableness revealed a significant main effect of group, $F(1, 56) = 4.37, p < 0.05$. Referring to Table 2, those with major depression + chronic minor depression scored significantly lower on Agreeableness than those with episodic major depression. This group difference remained significant even after controlling for time 1 HRSD scores, $F(1, 55) = 5.33, p < 0.05$. There was no evidence for a significant effect of time or a significant group × time interaction.3

**Conscientiousness**
The analysis of Conscientiousness revealed a significant main effect of time, $F(1, 56) = 11.07, p < 0.005$. Referring to Table 2, scores for both groups on Conscientiousness increased upon remission from the index depressive episode. There was no evidence for significant differences between groups on Conscientiousness, nor was there a group × time interaction.

**DISCUSSION**
Despite remission of the depressive episode, patients with major depression + chronic minor depression exhibited significantly lower Agreeableness scores, and higher Neuroticism scores, as a trend, than patients with major depression alone. The effect of Neuroticism was located specifically in the Angry Hostility (N2) facet scale. Therefore, despite the fact that those with major depression alone and those with major depression + chronic minor depression did not differ on an index of state mood at time 2, and despite a relative absence of major depressive symptomatology among both groups at time 2, the patients with major depression + chronic minor depression still exhibited significantly higher trait hostility and lower Agreeableness scores. This particular personality profile mirrors what we have experienced clinically with these patients, and may define a group who are pessimistic, disaffected, and frustrated, perhaps because they see their illness as an intractable and enduring part of their selves.

In the present study, no significant differences in depression severity emerged between patients with major depression alone and those with major depression + chronic minor depression at time 2. Therefore, the elevated Angry Hostility scores in the present group of patients with major depression + chronic minor depression even upon episode remission cannot be attributed to higher levels of state depressed mood. In fact, at time 2, both diagnostic groups exhibited negligible levels of major depression symptomatology. In addition, group differences on Angry Hostility remained significant even after controlling for time 1 HRSD scores, which differed between groups. Therefore, these results support the hypothesis posed in this report that chronic minor depression involves an enduring personality vulnerability that is characterized by high Neuroticism, specifically trait anger.

These results highlight the importance of taking a trait approach to the study of individual differences. Differences between the diagnostic groups in this sample only approached significance on the Neuroticism domain because only the trait of Angry

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3We were unable to pursue multivariate analyses for Agreeableness and Conscientiousness, since, at the time this study was conducted, the NEO-PI did not divide these domains into separate facet scales.
Hostility differentiated between the groups, whereas no group differences emerged on the remaining five Neuroticism facets. Therefore, the null results reported by previous studies examining differences in Neuroticism between those with ‘double depression’ and episodic major depression may be accounted for by a failure to examine more fine-grained trait differences (see also Bienvenu et al., 2001; Reynolds & Clarke, 2001). Future research along these lines with the revised version of the NEO-PI is required to determine which specific facets of the Agreeableness domain most strongly discriminate between diagnostic groups. The traits of Trust, Altruism, and Tender-Mindedness may be particularly important given the link with Angry Hostility.

Another intriguing question for future longitudinal research involves determining whether the traits of Angry Hostility and low Agreeableness that persist in those with chronic minor depression predict the increased risk for relapse or recurrence frequently observed in this vulnerable group. There are a number of possible mechanisms by which this could occur. For example, a personality profile characterized by high levels of hostility could lead to tension in interpersonal relationships and social rejection, which could then precipitate a recurrent major depressive episode. If so, such results would have important clinical implications, suggesting the need for interventions that target anger among those with major depression + chronic minor depression. The clinical implications of the present findings are highlighted even more strongly by the fact that, among those with chronic minor depression, scores on Agreeableness and Angry Hostility did not improve significantly upon remission from the major depressive episode. Perhaps these traits represent the ‘true’ personality vulnerability associated with chronic minor depression and, hence, are refractory to treatment. Alternatively, perhaps standard treatments for depression simply do not target these unique features of chronic minor depression. It would be very interesting to see whether treatments that include direct intervention for anger would result in a change in scores on these dimensions upon depressive episode remission.

Research along these lines may help to resolve some of the controversy regarding the trait nature of chronic minor depression. Historically, chronic minor depression was thought to exist on a spectrum with normal personality traits (Kraepelin, 1921) as an inherent part of a lifelong personality problem (Schildkraut & Klein, 1975). The third edition of the Diagnostic and statistical manual of mental disorders (DSM-III; American Psychiatric Association, 1980) broke with this tradition by introducing the category of ‘dysthymia’ in the mood disorders section, and this diagnostic category persists in the current DSM-IV (American Psychiatric Association, 1994). The DSM system has been criticized, however, for ignoring the trait nature of dysthymia (Hirschfeld et al., 1989; McCullough et al., 1988). Levy (1983) defines a trait as ‘a relatively stable, chronic, and enduring disposition of a person to behave in a characteristic or consistent manner across time and situations’. Chronic minor depression, by definition, is a chronic, enduring, and stable condition, and Widiger (1993), speaking of ‘early-onset’ dysthymia (i.e. chronic minor depression that precedes the first major depressive episode and has an onset prior to age 21), stated that this condition is ‘indistinguishable from the concept of a personality trait’ (p. 82). We suggest that the traits of Angry Hostility and low Agreeableness are potential candidates for defining the unique personality vulnerability of chronic minor depression. However, further studies that consistently demonstrate particular traits associated with chronic minor depression that persist upon remission of state depression symptoms and are refractory to standard treatments are required to support these contentions.

Remission of major depression in the present study was associated with large and significant decreases in Neuroticism scores and increases in Extraversion scores among
patients with both major depression + chronic minor depression and major depression alone. The specific facets within Neuroticism and Extraversion that were associated with significant change included Anxiety, Depression, Self-Consciousness, and Vulnerability (decreases), as well as Warmth, Assertiveness, Activity, and Positive Emotions (increases). We previously reported significant changes from time 1 to time 2 on these identical traits in a larger sample that included patients drawn from the present protocol who both responded and did not respond to treatment (Santor et al., 1997). In addition, in the present sample we found significant increases in Conscientiousness scores, to within normal limits, associated with major depression remission in both groups. Future research with the revised NEO-PI is required to determine which facets of Conscientiousness are most strongly associated with treatment response. Competence, Achievement-Striving, and Self-Discipline are likely candidates given individuals’ increased motivation to engage in achievement-oriented activities, and their increased sense of self-worth and self-efficacy related to these activities, following remission from major depression.

In the present sample of patients who all achieved remission status, scores on most of the facets of Extraversion increased to within normal limits in both diagnostic groups. However, scores on Conscientiousness and the Neuroticism facets, while significantly changing from T1 to T2, remained outside the normal 45–55 range, especially for the group with major depression + chronic minor depression. Therefore, as we have suggested previously (Bagby et al., 1995; Santor et al., 1997), Neuroticism may represent a mood-dispositional trait that remains high in individuals prone to experience chronic negative affect despite a remitted depressed state. Further research is required to investigate the role of Conscientiousness in distinguishing diagnostic groups upon remission. By contrast, low Extraversion (or introversion) may be specifically a state marker of depressed mood (Akiskal, 1983; Bagby et al., 1995). These findings are also consistent with Tellegen (1985) and others who theorize that the absence of positive emotions—what they conceptualize as a state of low Extraversion—is strongly and uniquely related to the state of depression (Tellegen, 1985; Watson & Clark, 1984, 1992). Interestingly, a group × time interaction for the Positive Emotions facet of Extraversion emerged at a trend level in the present sample, such that significant differences on this facet emerged at time 1, but both groups’ scores were in the normal range by time 2. This pattern should be pursued in future research with a larger sample.

The present study was limited by a small sample size, and some trends may have emerged as significant given increased statistical power. Nevertheless, a number of study strengths are also evident. In particular, this study improves upon previous reports by comparing the personality patterns of a group diagnosed with state depression only (major depression alone) to a group with state depression + chronic subsyndromal depression (major depression + chronic minor depression) both in the acute major depressive episode and upon major depression remission. This longitudinal design is crucial to observing changes in the relationship between state depression and personality traits over time. As a consequence, results in this area have important implications for refining diagnostic categories and predicting individual differences in longitudinal course and treatment response.

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REFERENCES


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