Dimensions of temperament and bright light response in seasonal affective disorder

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Abstract

Scale scores on the Tridimensional Personality Questionnaire (TPQ)—novelty seeking (NS), harm avoidance (HA), and reward dependence (RD)—can predict response to antidepressants. This study examined 89 patients with Bipolar Disorder (I, II) or Major Depressive Disorder, both with recurrent winter seasonal pattern. The TPQ was administered while the patients were depressed, following 10–14 days of bright light therapy (30 min, 10,000 lux) and after spontaneous springtime remission. The Structured Interview Guide for the Hamilton Depression Rating Scale—Seasonal Affective Disorder Version (SIGH-SAD) assessed the severity of depression. At baseline, there were no significant differences between diagnostic subgroups or responders and non-responders on the TPQ or SIGH-SAD scales, though baseline RD scores were significantly higher in women than men. Furthermore, neither severity of depression nor magnitude of post-treatment clinical improvement was significantly correlated with baseline TPQ scores. Only HA scores decreased after treatment, with responders showing the greatest effect. HA scores also decreased from the baseline to springtime assessments for the group as a whole, with no difference between responders and non-responders. This is the first study to demonstrate that HA is state- rather than trait-dependent in seasonal affective disorder. The TPQ dimensions of temperament do not predict response to light therapy.
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1. Introduction

Temperament has been associated with mood and response to treatment in seasonal and non-seasonal depression. The Tridimensional Personality Questionnaire (TPQ; Cloninger et al., 1991)

is a 100-item self-report inventory that consists of three scales—novelty seeking (NS), harm avoidance (HA) and reward dependence (RD). Each scale has been proposed to measure different aspects of temperament associated with distinct neurotransmitters (NS, dopamine; HA, serotonin; and RD, norepinephrine; Cloninger, 1987) and putative heritable behavioral systems. For example, individuals with high NS scores show exploratory or risky activity; individuals with high HA scores

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avoid aversive stimuli; and individuals with high RD scores seek out and maintain positive responses to rewards.

Several studies have investigated whether TPQ temperament dimensions or personality traits derived from other scales predict treatment response in seasonal affective disorder (SAD). One study found significantly higher HA scores in non-responders to bright light (Reichborn-Kjennerud and Lingjærde, 1996). Neuroticism scores, as measured by the NEO Five Factor Personality Inventory (NEO-FFI), significantly decreased following 6 weeks of bright light therapy or dawn simulation and correlated with decreases in depression scores (Sachs et al., 1996). In a related study, Neuroticism significantly decreased, Extraversion significantly increased and Openness remained unchanged following 6 weeks of bright light therapy or dawn simulation (Jain et al., 1999). By contrast, Geerts et al. (2000) reported that higher extraversion scores predicted better outcomes to light treatment. Finally, Lilie et al. (1990) found a winter-to-summer reduction in personality scale scores that fell in the abnormal range.

In addition, several studies found small but significant relationships between personality traits and seasonality. Significant correlations between neuroticism, and seasonality in SAD patients (Murray et al., 1995) and normal twins (Jang et al., 1997, 1998; Sher et al., 2000) have been found using the Eysenck Personality Questionnaire or various versions of questionnaires that measure the Five-Factor model of personality. However, Gordon et al. (1999) failed to find a significant correlation between Neuroticism and seasonality, or Neuroticism and depressive severity.

Several studies also have found significant personality trait differences between SAD patients and other clinical populations. For example, Schuller et al. (1993) found that SAD patients differed from non-seasonally depressed patients on the schizotypal, narcisstic, avoidant, dependent and passive–aggressive Millon Clinical Multiaxial Inventory-derived traits; these traits, except for avoidance, correlated significantly with seasonality (Jang et al., 1997). In addition, Bagby et al. (1996) reported significant differences between the afore-mentioned two groups on the Openness dimension. Similarly, unipolar SAD patients differed from bipolar non-seasonally depressed patients on the Openness, Neuroticism, Extroversion and Conscientiousness dimensions (Jain et al., 1999).

TPQ dimensions also have been investigated as predictors of treatment response in non-seasonal depression. Several studies found that higher HA scores predicted poorer response to tricyclic and tetracyclic antidepressants and selective serotonin reuptake inhibitors (Joffe et al., 1993; Nelson and Cloninger, 1995; Tome et al., 1997; Hirano et al., 2002), although one study reported a positive association in which higher HA scores predicted a better response to desipramine (Joyce et al., 1994). Other studies, however, found no significant differences in TPQ scores between responders and non-responders to a variety of antidepressants (Chien and Dunner, 1996; Sato et al., 1999; Newman et al., 2000).

The HA scale, but not the NS or RD scales, has been consistently associated with mood changes and with depressive symptomatology. HA scores positively correlated with depression scale ratings in SAD (Reichborn-Kjennerud and Lingjærde, 1996) and non-seasonal depression (e.g. Brown et al., 1992; Strakowski et al., 1995; Nelson and Cloninger, 1997; Tanaka et al., 1997; Newman et al., 2000; Hirano et al., 2002). Furthermore, compared with normative (Cloninger et al., 1991) or control population data, higher HA scores during baseline depression, but not higher RD or NS scores, have been found in SAD (Reichborn-Kjennerud and Lingjærde, 1996), non-seasonal depression (e.g. Brown et al., 1992; Joyce et al., 1994; Strakowski et al., 1995; Nelson et al., 1996; Hirano et al., 2002) and dysthymia (Dunner et al., 1996; Hellerstein et al., 2000).

Similarly, HA scores, but not RD or NS scores, decreased following remission of depressive symptoms in non-seasonal depression (e.g. Joffe et al., 1993; Mulder and Joyce, 1994; Chien and Dunner, 1996; Hirano et al., 2002) and dysthymia (Dunner et al., 1996; Hellerstein et al., 2000). Such changes in TPQ scores with mood state have not previously been investigated in SAD.