Published in final edited form as:

Behav Res Ther. 2010 May ; 48(5): 347–358. doi:10.1016/j.brat.2009.12.008.

The Northwestern-UCLA Youth Emotion Project: Associations of cognitive vulnerabilities, neuroticism and gender with past diagnoses of emotional disorders in adolescents

Richard E. Zinbarg^{1,2}, Susan Mineka¹, Michelle G. Craske³, James W. Griffith¹, Jonathan Sutton¹, Raphael D. Rose³, Maria Nazarian³, Nilly Mor¹, and Allison M. Waters³

Richard E. Zinbarg: rzinbarg@northwestern.edu; Susan Mineka: mineka@northwestern.edu; Michelle G. Craske: craske@psych.ucla.edu

¹ Northwestern University, Department of Psychology, 2029 Sheridan Road, Swift Hall 102, Evanston, IL 60208

² The Family Institute at Northwestern University, 618 Library Place, Evanston, IL 60201

³ University of California at Los Angeles, Department of Psychology, UCLA, 405 Hilgard Ave., Los Angeles, CA, 90095-1563

Abstract

Neuroticism has been hypothesized to be a nonspecific risk factor for both anxiety and unipolar mood disorders whereas some cognitive and personality-cognitive vulnerabilities have been hypothesized to be more specific to depression. Using a retrospective design with a sample of 575 high school juniors, we tested three competing models of the associations among these variables. Both neuroticism and the cognitive and personality-cognitive vulnerabilities had significant zero-order associations with rates of past diagnoses of both anxiety and unipolar mood disorders. Neuroticism had significant unique associations with past anxiety disorders and comorbid anxiety and unipolar mood disorders whereas the other vulnerabilities did not. In addition, gender interacted with neuroticism but not with the other vulnerabilities in associating with past diagnoses of mood disorders, showing that neuroticism is more highly associated with past unipolar mood diagnoses in males than in females. Finally, the cognitive and personality-cognitive vulnerabilities overlapped with substantial portions of the variance that neuroticism shared with diagnoses. These results suggest that, at least for retrospective associations with past anxiety and unipolar mood disorders, the cognitive and other personality-cognitive vulnerabilities are non-specific facets of neuroticism.

Keywords

neuroticism; cognitive vulnerability; anxiety disorders; mood disorders

Correspondence concerning this article should be addressed to either Richard Zinbarg, Department of Psychology, Northwestern University, 2029 Sheridan Rd., Evanston, Illinois 60208; rzinbarg@northwestern.edu, or Susan Mineka, Department of Psychology, Northwestern University, 2029 Sheridan Rd., Evanston, Illinois 60208; mineka@northwestern.edu. James Griffith is now at the Department of Medical Social Sciences, Northwestern University, Feinberg School of Medicine, Department of Medical Social Sciences, Chicago, Illinois. Allison Waters is now at the School of Psychology, Griffith University, Australia. Nilly Mor is now at the Hebrew University of Jerusalem.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Several personality and cognitive vulnerability models for anxiety and unipolar mood disorders have been proposed in the past few decades. Some variables such as neuroticism (N) have been proposed as a common vulnerability for all, or nearly all, of these emotional disorders, but others such as inferential style have been proposed as specific vulnerabilities for unipolar mood (but not anxiety) disorders. However, very few studies have examined more than one or two of these highly overlapping vulnerability variables, or more than one or a few of these emotional disorders. Thus it is unclear whether any of these vulnerability measures have unique associations (above and beyond the other vulnerabilities) with any of these disorders, or whether their associations are specific to a particular disorder (and not to other disorders).¹ The present study was designed to begin to take a comprehensive look at these issues in a large and diverse sample of older adolescents.

Neuroticism as a non-specific vulnerability

Several theories hypothesize that N (or a trait disposition to experience negative affect) is a vulnerability factor common to most if not all emotional disorders (e.g., Eysenck, 1967; Gray, 1982). Indeed, there is persuasive evidence showing N to be a predictor of panic attacks, post-traumatic stress disorder (PTSD) and major depressive disorder (e.g., Breslau, Davis & Andreski, 1995; Clark, Watson, & Mineka, 1994; Hayward, Killen, Kraemer & Taylor, 2000; Kendler, Kuhn & Prescott, 2004; Krueger, Caspi, Moffitt, Silva, & McGee, 1996). In addition, children who are elevated on behavioral inhibition (thought to be a developmental precursor to, and facet of, N) (e.g., Turner, Beidel & Wolff, 1996) appear to be at greater risk for the development of multiple phobias and other anxiety disorders in later childhood (e.g., Biederman et al., 1993) and social phobia in adolescence (Hayward, Killen, Kraemer & Taylor, 1998; Schwartz, Snidman, & Kagan, 1999). Thus, N appears to be a marker of vulnerability for most, if not all, of the emotional disorders, although there is a need for more research with anxiety disorders.

Dysfunctional attitudes and pessimistic inferential style

Beck (1967, 1983) first hypothesized that dysfunctional attitudes constitute the underlying cognitive diathesis for depression. The theory was explicitly formulated as a diathesis-stress theory, whereby individuals with high levels of dysfunctional attitudes only become depressed when they experience significant life stress. Although this theory was developed (and is known as) as a theory of depression and not anxiety, strong predictions about specificity were not made in relation to depression versus anxiety (Clark & Beck, 1999).

The hopelessness theory of depression is another influential cognitive diathesis-stress theory (e.g., Abramson, Metalsky, & Alloy, 1989; Alloy, Abramson, Keyster, Gerstein, & Sylvia, 2008). It proposes a vulnerability model for a subtype of depression, hopelessness depression, with hopelessness cognitions (HC) hypothesized to be a proximal sufficient cause. Several factors may contribute to HC but the theory focuses primarily on trait-like pessimistic inferences or attributions about negative life events. Whereas pessimistic attributional style has been hypothesized to be a specific risk factor for depression as opposed to anxiety, at least some prior research shows this putatively specific vulnerability is also associated with at least certain anxiety disorders (e.g., Mineka, Pury & Luten, 1995)

¹The term *unique* will be used throughout this paper to refer to an association of a predictor with a criterion variable when all of the other predictors in the analysis are partialled out. The term *specific* will be used to refer to a predictor having an association (zero-order or unique) with a first criterion variable (e.g., depression) but not with a second criterion variable (e.g., anxiety), or vice versa. Thus, a predictor could have unique associations (above and beyond other predictors) with each of two criterion variables and therefore be non-specific. Alternatively, a predictor could have zero-order associations with both criterion variables without having unique associations with either in which case it would be non-unique and non-specific.

The most comprehensive test of these cognitive vulnerabilities is the Cognitive Vulnerability to Depression (CVD) Project - a large study of about 350 college students hypothesized to be at high risk for depression because of elevations on both dysfunctional attitudes and pessimistic inferential style. Pessimistic inferential style involves a tendency to interpret negative life events as having stable and global causes (i.e., pessimistic attributions), leading to negative consequences, and signifying fundamental flaws about the self (Alloy, Abramson et al., 2000, 2006). Results for the first 2.5 years of follow-up indicated that 17% of the high-risk participants (Ps), but only 1% of the low risk Ps, developed a first onset of DSM-III-R major depression (Alloy, Abramson et al., 2006). Unfortunately, because high risk Ps in the CVD study were high on both pessimistic inferences and dysfunctional attitudes, the unique contributions of each diathesis could not be determined.

Alloy et al. (2000, 2006) hypothesized and found their results for the cognitive vulnerability measures to be specific to depressive disorders (or to depression comorbid with anxiety disorders) but not anxiety disorders alone. However, their claim of specificity to depression is questionable because they did find non-significantly higher rates of anxiety disorders in the high-risk Ps, a difference that might have been significant with a larger sample. Moreover, Ps who had either current depressive disorders or current anxiety disorders were excluded from the study at the initial assessment. This decision was well-motivated in some respects but is problematic for determining specificity to anxiety versus depression because of the relatively chronic nature of anxiety disorders compared to the typically episodic nature of depression (e.g., Angst & Vollrath, 1991). Specifically, compared with Ps with a past history of depression, a smaller percentage of Ps with a past history of anxiety disorders would have been in remission at the initial assessment. For example, Table 1 for the current study shows the very large difference between lifetime and current prevalence for unipolar depressive disorders – nearly 4 to 1 – compared to the much smaller difference between lifetime and current prevalence of anxiety disorders – about 1.5 to 1. Thus, it seems likely that a larger percentage of those vulnerable to anxiety disorders would have been excluded at the initial assessment in Alloy et al. (2000, 2006), thereby rendering their study more likely to detect specificity for depressive disorders over anxiety disorders.

A limitation of nearly all extant studies on cognitive vulnerability is their failure to include measures of N (for exceptions see Hankin, Fraley & Abela, 2005; Hankin, Lakdawalla, Carter, Adams & Abela, 2007; and Lakdawalla & Hankin, 2008). For example, N correlates as highly with core facets of pessimistic inferential style as does depression (e.g., Ralph & Mineka, 1998). In addition, several theorists have explicitly incorporated cognitive related constructs in their definition of N. For example, Costa and McCrae (1992) considered irrational ideas to be a component of N. Eysenck and Eysenck (1985) also considered low self-esteem to be a facet of N, and Scheier, Carver and Bridges (1994) noted that pessimism often has been hypothesized and found to be a facet of N. Thus, it is unclear whether dysfunctional attitudes and inferential style account for unique variance in depression above and beyond N or vice versa. Moreover, few studies have included measures of anxiety or anxiety disorders and are thus unable to address the question of specificity to depression versus anxiety (Alloy et al., 2000, 2006, are exceptions but may have other limitations as discussed above).

Sociotropy and Autonomy

Sociotropy and autonomy are two personality-cognitive style constructs also hypothesized to confer vulnerability to depression (in interaction with congruent life stressors). Sociotropic individuals are overly dependent on interpersonal relationships to maintain self-esteem and have heightened needs for support and acceptance. Autonomous individuals are excessively concerned with achievement issues and tend to be highly self-critical. Beck (1983) proposed that *sociotropy* increases the likelihood of depression when combined with congruent life

events such as interpersonal losses, and *autonomy* increases the likelihood of depression when combined with congruent events such as achievement failures (see also Blatt & Zuroff, 1992). Some support (albeit mixed) for these congruency hypotheses has been obtained with high-risk samples (e.g., Segal, Shaw, Vella & Katz, 1992). Whether these congruency hypotheses were meant to be relevant for anxiety or anxiety disorders has never been clearly stated; the theory clearly states hypotheses only about depression.

Whether sociotropy and autonomy predict depression over and above N is also questionable. Correlations between sociotropy and N measures are high (e.g., .54–.75, cf., Dunkley, Blankstein & Flett, 1997) and correlations between autonomy and N measures are at least moderate (e.g., $r = .39$, Bagby et al., 2001). Moreover, cross-sectional studies have found that sociotropy is equally associated with anxious and depressive symptoms (e.g., Fresco, Sampson, Craighead & Koons, 2001) and that when N was entered first into regressions predicting depressive symptoms, solitude (a facet of autonomy) in men, and sociotropy in women, were no longer significant predictors (Dunkley et al., 1997).

In perhaps the only such study to date, Mongrain and Blackburn (2005) did include measures of N, dysfunctional attitudes, pessimistic attributions, sociotropy and autonomy as well as diagnoses of depression and anxiety disorders in a small prospective study (less than 100 Ps) of graduate students. They found some unique associations of the cognitive and personality-cognitive variables with various aspects of depression (e.g., number of previous episodes, likelihood of recurrence over a 16-month follow-up interval) but not with anxiety disorders. However, an inclusion criterion for this study was the diagnosis of a past episode of depression. Thus, similar to Alloy et al. (2000, 2006), this study was likely to have been biased toward including participants more vulnerable to depression than anxiety and thus toward finding specificity for depression over anxiety.

It is important to note that although each of these cognitive or personality-cognitive theories was formulated as a diathesis-stress theory, the nature of the interactions they predict implies that main effects of the diathesis should also be found (that is, the predicted interactions are not of the cross-over variety). Thus, whereas the present report follows a significant amount of research to date in only examining main effects (e.g., Alloy et al., 2000, 2006; Mongrain & Blackburn, 2005), the results reported here are still of some relevance to these theories.

Gender

Females are at greater risk for unipolar mood disorders (e.g., Nolen-Hoeksema, 1990; Nolen-Hoeksema & Hilt, 2008) and many anxiety disorders (e.g., Craske, 2003). They also score higher than males on N (e.g., Costa, Terracciano, & McCrae, 2001), as well as on the other cognitive and personality-cognitive vulnerabilities (e.g. Hankin & Abramson, 2001). What is not known is whether gender moderates the associations between the vulnerabilities discussed above and the emotional disorders. Such moderation is suggested by the results of Dunkley et al. (1997) on sociotropy and autonomy described above. In addition, another cross-sectional study estimated N to be more strongly related to major depression in males than females (Fanous, Gardner, Prescott, Cancro, & Kendler, 2002). However, Fanous et al. did not include risk factors other than N and no studies have tested gender moderation of the relationship between N and anxiety disorders. Moreover, the findings of Fanous et al. were counter to the authors' own prediction that N would be more strongly related to depression for females, and Dunkley et al. did not conduct tests of the significance of their sex differences. Thus, further evidence is needed to draw conclusions about gender moderation for depression and to begin to test if these conclusions also hold for many anxiety disorders.

Goals of the present study

Using a large and diverse adolescent sample, this study tested the unique associations of N, dysfunctional attitudes, inferential style, sociotropy, and autonomy with past (lifetime) diagnoses of unipolar mood disorders (UMDs) and anxiety disorders (ADs). In addition, the role of gender in moderating these associations was tested. Adolescence is a useful time to study the onset and course of UMDs and ADs because many of these disorders have their first onset during this time (e.g., Kessler, Bergland et al., 2003; Kessler, Bergland et al., 2005). Predictions were compared from three models. All three models consider the cognitive and personality-cognitive vulnerabilities to be facets of the broader construct of N and therefore predict that these vulnerabilities have associations with N. 1) According to the *non-specificity model*, only the non-specific vulnerability of N contributes unique variance to both UMDs and ADs. 2) The *specificity model* hypothesizes that only the putatively specific vulnerabilities contribute unique variance to the UMDs (and if we had included vulnerabilities hypothesized to be specific to ADs then an expanded specificity model would hypothesize that only these putatively AD specific vulnerabilities contribute unique variance to the ADs). For the current analyses, this hypothesis leads to the prediction that only the cognitive and personality-cognitive vulnerabilities will contribute unique variance to UMDs, whereas only N will contribute unique variance to ADs (given that no vulnerabilities that are putatively specific to ADs are included in these analyses). 3) Finally, according to the *partial specificity model*, N contributes unique variance to both the UMDs and ADs and the putatively specific vulnerabilities also contribute unique variance to the UMDs but not the ADs (given, once again, that no vulnerabilities that are putatively specific to ADs are included in these analyses).

None of the three models predict unique associations between the cognitive facets of N with ADs because there are no existing theoretical frameworks that would allow for such a prediction. That is, the hopelessness theory predicts that inferential style specifically predicts depression (or comorbid anxiety and depression) and the other cognitive and personality - cognitive style theories do not make predictions about anxiety disorders. In contrast, the prediction that these variables should not be unique predictors of either UMDs or ADs can be derived from the view that these variables are facets of N.

Although the associations reported here are retrospective, they do provide a preliminary test of these trait vulnerability models. Given that many participants in our study already had a lifetime history of diagnoses of emotional disorders at their initial assessment (just as in Alloy et al., 2000), an association between a given trait and diagnoses would be consistent with (but not exclusive to) the hypothesis that this trait is a risk factor. However, if we failed to observe associations for a given trait this would cast doubt about that trait as a risk factor.

Discriminating among the three models tested here not only has theoretical implications but also has important implications for preventive interventions (if these models are also supported by prospective results). That is, different preventive interventions may be called for depending on which model best fits the data. For example, if N has primary predictive power for all the emotional disorders, then those at risk might benefit most from broad-based preventive interventions for general emotional regulation. By contrast, if specific risk factors for different disorders have unique predictive power for certain disorders then more targeted preventive intervention strategies might be most valuable for targeting specific risk factors. Alternatively if N and more specific risk factors are both important predictors then prevention programs might best target a combination of specific risk factors as well as the more general risk factor.

Method

Participants and Screening Procedures

Participants were recruited from two ethnically and socio-economically highly diverse high schools: one in suburban Chicago and the other in suburban Los Angeles. At each high school, three consecutive junior classes over three academic years were recruited into a screening phase of the study beginning in the Fall of 2002. A total of 1976 students who provided assent and parental consent to do so completed the screening questionnaire – a 23 item version of the N scale of the revised Eysenck Personality Questionnaire (EPQ-R-N; Eysenck & Eysenck, 1975).

Students were categorized as low-, medium-, and high-risk based on the EPQ-R-N. Those who endorsed seven or fewer items were classified as low-scorers ($n = 634$). Students who endorsed more than seven but fewer than 12 items were classified as medium-scorers ($n = 666$), and those who endorsed 12 or more items were classified as high-scorers ($n = 676$). Of these students, 1269 were invited into a longitudinal study using a strategy designed to oversample Ps classified as high-scorers in order to increase the number of and hence variance in new onsets of UMDs and ADs over the course of the follow-up interval. We also aimed to maintain equal proportions of females to males within each risk category. Among the 668 who agreed to participate in the longitudinal study and had parental consent to do so, only 627 actually completed their baseline assessment, which included an assessment of lifetime Axis I psychopathology using the Structured Clinical Interview for DSM-IV, non-patient edition (SCID-I/NP; First, Spitzer, Gibbon, & Williams, 2002). Forty-six cases were excluded from the current analyses due to missing data for one or more of the self-report scales and 6 were excluded due to missing data for one or more diagnoses, or the presence of a possible psychotic disorder.

Thus, the sample size for the current analyses was 575. Low-, medium-, and high-EPQ-R-N scoring participants represented 18.4%, 23%, and 58.6% of the sample respectively. The sample was 68.7% female. This gender difference occurred because females were more likely to: (a) agree to complete the screening questionnaire (56% female), (b) be invited to participate to fill the high risk category (63% female) given that females tend to score higher on N (e.g., Costa, Terracciano, & McCrae, 2001), and (c) agree to participate in the longitudinal study if invited. Ps identified themselves as 48.6% Caucasian, 15.3% Latino, 12.4% African American, 5.2% “other”, 4.5% Asian, .7% Pacific Islander, and 13.2% as having more than one race or ethnicity. The sample had a mean age of 16.9 years ($SD = 0.4$) at their first interview.

Measures and Assessment Procedures

Few of the measures in this study have been used before with 17 year-olds. However, as noted below, most have been used before with college students (including 18 year-olds) and there is no reason to assume these measures would perform worse in 17 year-old high school students than in first-year college students. It was also necessary to use the same measures at repeated time points in the longitudinal phase of our study to allow analyses of change over time.

Eysenck Personality Questionnaire-Revised, Neuroticism Scale (EPQ-R-N; Eysenck & Eysenck, 1975)—The original EPQ-R-N scale contains 24 items in a yes-no format. We excluded the suicide item to reduce IRB-related concerns related to responding to potentially suicidal participants. We also excluded an item from the analyses (including categorization into the three risk categories) about health concerns (“Do you worry about your health?”) because in factor analyses of our results, this item failed to load onto an overall N factor or onto any lower-order factors (Mor, Zinbarg, Craske, Mineka, et al., 2008). Thus, the version of the EPQ-R-N used here consisted of 22 items. Alpha in the present study was .78.

Mor et al. found that the EPQ-R-N is best represented as a hierarchical structure and estimated coefficient omega_{hierarchical} (ω_h) (Zinbarg, Yovel, Revelle & McDonald, 2006) to be .68 in our sample. Extensive construct validity evidence for the EPQ-R-N has been reported (Eysenck & Eysenck, 1975). Caruso, Witkiewitz, Belcourt-Dittloff, and Gottlieb (2001) found a median alpha of .83 across 69 samples including adolescent ones with no evidence that alpha varied as a function of age.

International Personality Item Pool-NEO-PI-R (Goldberg, 1999)—The N scale from the IPIP-NEO-PI-R consists of 60 items rated on a 1 to 5 Likert Scale and was developed to correspond with the N scale from the NEO-PI-R (Costa & McCrae, 1992). Goldberg (1999) reports that the total score from the two scales correlate .93 with one another. Alpha was .95 and Uliaszek, Zinbarg, Mineka, Craske et al. (2009) found ω_h was .86 in our sample.

The Behavioral Inhibition Scale (BIS; Carver & White, 1994)—The BIS, which measures concern over and sensitivity to negative outcomes, consists of 7 items rated on a 4-point Likert scale. Carver and White (1994) demonstrated both convergent and discriminant validity for the BIS. Muris, Rassin, Franken, and Leemreis (2007) reported an alpha of .75 in college students. In the current study alpha was .75.

Big Five Mini-Markers Scale (Saucier, 1994)—We used the 8-item N scale from this 40-item measure. Each item is rated on a 9-point Likert scale. Saucier (1994) reported an alpha of .76 for the N scale and alpha for the present sample was .81.

Neuroticism Composite—The EPQ-R-N, IPIP-NEO-PI, BIS, and Big Five Mini-Markers N scale each measure N or one of its facets. To enhance construct validity and reliability, these four scales were standardized and combined to form a N composite. In support of this decision, the correlations between the scales ranged from .47 to .72. Moreover, a confirmatory factor analysis showed that a single-factor model provided an excellent fit to the observed covariances among these four scales ($\chi^2 = 2.22$, $df = 2$, ns; comparative fit index = 1.00, root mean squared error of approximation = .013, standardized root mean square residual = .008).

Given that several of the items on the scales comprising the N composite overlap with symptoms of ADs (e.g., item 10 from the IPIP-NEO-PI N scale is “Worry about things”) or UMDs (e.g., item 21 from the IPIP-NEO-PI N scale is “Am often down in the dumps”), relationships between this composite and the diagnostic variables could be due at least in part to item overlap. Thus, our primary analyses excluded N items that might overlap with symptoms of the diagnostic variables being predicted (see the Appendix for a list of items excluded from these analyses). Alphas for the N composites were: .74 after excluding items that might overlap with symptoms of ADs, .82 after excluding items that might overlap with symptoms of UMDs, and .69 after excluding items that might overlap with symptoms of either ADs or UMDs.

Cognitive Style Questionnaire (CSQ)—Participants’ inferential style for hypothetical negative events was measured by the CSQ (see Alloy et al., 2000; Haefel, Gibb, Metalsky, Alloy et al., 2007). Only the 12 negative events were used in this study. Each hypothetical event on the CSQ is rated on five scales. Scores on each scale range from 1–7. The first three scales are measures of pessimistic attributional style and contain the dimensions of internality, stability, and globality (Peterson et al., 1982). On the other two scales, participants rated the likelihood of other negative consequences of the hypothetical event and the negative implications about the self. Following Alloy et al. (2000, 2006) and Haefel et al. (2007) a composite score for negative inferential style was calculated by combining the four ratings on the globality, stability, consequences, and self dimensions.² Alloy et al. (2000) reported that alpha was .88 in their college freshman sample and alpha equaled .89 in this study.

Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978)—The present study used the standard 40 items from the original version of the DAS, plus an additional 24 age- and student-appropriate items that were added in the CVD project (Alloy et al., 2000). Participants endorsed items on a 7-point scale. Alloy et al. reported an alpha of .90 for their college freshman sample; alpha equaled .95 in the current sample.

Personal Style Inventory (PSI-II; Robins Ladd, Welkowitz, Blaney et al., 1994)—Sociotropy and autonomy were measured using the PSI-II which consists of two 24-item scales. Items are endorsed on a 1–6 scale. Robins, Bagby, Rector, Lynch, and Kennedy (1997) reported alpha was .90 for sociotropy and .86 for autonomy in a college sample. Alpha equaled .90 for sociotropy and .84 for autonomy in the present sample but these scales were more highly correlated ($r = .47$) than reported by Robins, Ladd, Welkowitz, Blaney et al. (1994, $r = .18$).

Self-Reported Symptoms of Anxiety and Depression—The self-report anxiety and depression questionnaires included the 21-item Inventory to Diagnose Depression (IDD; Zimmerman, Coryell, Corenthal, & Wilson, 1986), the 90-item Mood and Anxiety Symptom Questionnaire (MASQ; Watson, Weber, Assenheimer, Clark et al., 1995), the 22-item Albany Panic and Phobia Questionnaire (APPQ; Rapee, Craske, & Barlow, 1994/1995) and the 13-item Self-Consciousness (SC) subscale of the Social Phobia Scale (SPS; Mattick & Clarke, 1998; Zinbarg & Barlow, 1996). (1) The IDD assesses core features of mood disorders and has demonstrated adequate psychometric properties in college students (Goldston, O'Hara, & Schartz, 1990). Each IDD item consists of five statements and participants are instructed to select the one that best describes how they have been feeling in the past week. (2) The MASQ assesses symptoms that are key features of a range of anxiety disorders and mood disorders and has demonstrated good psychometric properties in college students (Watson et al., 1995). In the analyses reported here, we used four MASQ sub-scales for symptoms of generalized distress recognized as diagnostic criteria for anxiety disorders (GD-Anx), symptoms of generalized distress recognized as diagnostic criteria for depressive disorders (GD-Dep), symptoms of anxious arousal (AA) and symptoms of anhedonic depression (AnD). For the MASQ, participants are asked to indicate to what extent they have experienced each symptom during the past week. (3) The APPQ assesses fear of sensation-producing activities as well as fear of common agoraphobic situations. Participants respond to the APPQ by indicating how much fear they would expect to experience if they encountered the specified situation, activity, or stimulus in the coming week. (4) The SPS SC measures symptoms in the past week associated with sensitivity to social evaluation, a core feature of social phobia.

A self-reported depressive symptom composite, to use as a covariate in the analyses of depressive disorders, was created by averaging the standardized IDD, MASQ GD-D and MASQ-AnD scores. The self-reported depression composite had an alpha of .84. Similarly, a self-reported anxiety symptom composite, to use as a covariate in the analyses of anxiety disorders, was created by averaging the standardized MASQ GD-A, MASQ AA, APPQ and SPS SC scales. The self-reported anxiety composite had an alpha of .78. The depression and anxiety symptom composites were standardized and then averaged to produce a composite ($\alpha = .80$) for use as a covariate in analyses of comorbid anxiety and depressive disorders.

Axis I psychopathology interview—All participants were interviewed for lifetime Axis I psychopathology using the SCID-I/NP-Lifetime (hereafter, referred to as the *SCID*). All interviewers had at least a bachelor's degree and underwent extensive training that included self-study, didactics, tests in which they had to correctly diagnose cases from audio recordings,

²In the seminal article by Abramson et al. (1989) on the hopelessness theory the authors gave a rationale for dropping the internality scale from the composite, arguing it was more relevant to self-esteem than to depression per se.

role-playing, and live observations. Each assessment was presented at a diagnostic consensus meeting that was led by doctoral-level supervisors. To maintain consistency across sites, difficult cases were presented at weekly teleconferences and supervision meetings that were periodically attended by supervisors from the other site (via telephone).

After completing each SCID interview, the interviewers not only assigned categorical DSM diagnoses but also rated the severity of each current diagnosis in the past month using the Di Nardo and Barlow (1988) 0 to 8 clinician severity rating (CSR) scale. Scores of 1 and 2 indicate that at least some symptoms have been present in the past month but impairment and distress are sub-clinical. A score of 3 indicates that symptoms have not only been present but may be clinically significant. A score of 4 or above indicates that symptoms associated with clinically significant distress or impairment have been present in the past month. For past diagnoses, CSR was not rated on a 0–8 scale because of the potential difficulty of recalling the full extent of impairment or distress that was present during the course of the disorder. CSR's for past diagnoses were therefore coded 'Yes', '?', or 'No'. A code of 'Yes' indicated that the past symptoms were associated with clinically significant distress or impairment (analogous to a 4 or above in a present diagnosis). A code of '?' indicated that the past symptoms may have been clinically significant. Finally, 'No' indicated that symptoms were present but impairment and distress were sub-clinical. The inter-rater Pearson r for CSR ratings ranged from .74 for major depressive disorder (MDD) and specific phobia-natural subtype to .97 for obsessive compulsive disorder (OCD) and post-traumatic stress disorder (PTSD).

Reliability for diagnoses was assessed by having trained interviewers observe live SCIDs on 69 cases. At the end of these SCIDs, the interviewer left the room and the reliability assessor asked follow-up questions for clarification where necessary. Kappas were good when aggregated across all disorders (.82) and at least acceptable for those individual disorders assessed in three or more cases by either the primary interviewer or the reliability assessor, including MDD (.83), social anxiety disorder (SAD; .65), generalized anxiety disorder (GAD; .85), and OCD (.85).

We were concerned about inflated experimentwise type I error rate due to multiple tests of individual diagnostic categories, and the relatively small number of participants meeting criteria for many of the individual diagnostic categories after excluding those with current diagnoses of the same disorders (see below and Alloy et al., 2000). Thus, we conducted our primary tests at the level of diagnostic spectra -- by which we mean groups of disorders classified together in the DSM (e.g., UMDs, ADs). However, we also conducted separate analyses of MDD given the sufficiently large sub-sample with a past history of MDD who did not meet current criteria for MDD. There were three UMDs (MDD, dysthymia, depressive disorder not otherwise specified) and nine ADs (panic disorder, GAD, SAD, OCD, specific phobias, separation anxiety disorder, PTSD, acute stress disorder and anxiety disorder not otherwise specified). Table 1 shows the lifetime, current and past prevalence of each disorder.

The median interval between screening and administering the SCID and questionnaire packet was 4 months (range = 1 to 14 months). Whenever possible, participants completed the questionnaires in the same session as the SCID, but this often required several sessions.

Data Analysis

Correlations assessed the associations among the self-report questionnaires. Hierarchical logistic regression analyses using the emotional disorder diagnostic variables (i.e., diagnostic spectra and MDD) as dependent variables (DVs) assessed the relationships between emotional disorders and the vulnerability measures. Gender was always entered on the first step and the relevant self-reported symptom composite was always entered on the second step. N, dysfunctional attitudes, inferential style, sociotropy and autonomy were always entered as a

set on the third step. The interactions of gender with the self-reported symptom composite was always entered on the fourth step and the interactions of gender with N, and dysfunctional attitudes, inferential style, sociotropy and autonomy were entered on the fifth step.

Because the present results are not prospective, they are not capable of teasing apart vulnerability effects from scar effects. However, following Alloy et al. (2000), two safeguards were undertaken to minimize the state effects that current diagnoses and symptoms might have on scores on the vulnerability measures such as those reported by Ormel, Oldehinkel, and Vollebergh (2004). First, we used a retrospective approach in which we excluded participants from an analysis if they had a current diagnosis in the same diagnostic spectrum (i.e., UMDs and/or ADs) serving as the DV for that analysis. Second, as mentioned above, we included current symptoms of that diagnostic spectrum as a covariate. Finally, the simple associations with ADs reported below could be entirely due to the presence of comorbid depression. Therefore, we also created and analyzed simple associations with a pure AD variable (for which we excluded all those with a history of either a current or past UMD). (If the putatively depressogenic variables had had significant unique associations with ADs after partialing N, we would have used the pure AD variable as a DV in a logistic regression to test whether the unique associations with ADs were due to comorbid depression. As described below, however, the putatively depressogenic variables did not have significant unique associations with ADs after partialing N. Thus, there was no need to test to see if such unique associations were due to comorbid depression.)

Results

Simple Associations

As shown in Table 2, all of the correlations among dysfunctional attitudes, inferential style, autonomy, sociotropy and N were significant and tended to be moderate to large with a median of .50. These coefficients are consistent with the notion that dysfunctional attitudes, inferential style, autonomy, and sociotropy are facets of N. Table 2 also presents values of the odds ratios (ORs) when predicting the diagnostic spectrum variables from each individual predictor or covariate. Several of the ORs were significant, including not surprisingly those of each of the predictors with UMDs. Somewhat more surprisingly, the ORs for dysfunctional attitudes, inferential style, autonomy, and sociotropy with UMDs were no longer significant when the current depressive symptom composite was entered as a covariate. Inferential style and sociotropy were also associated with both ADs and pure ADs, although when anxious symptoms were used as a covariate inferential style only had a significant OR with ADs (although there was only a trivial reduction in the OR for inferential style with pure ADs – from 1.67 to 1.65). Perhaps most surprisingly, the ORs for inferential style, autonomy and sociotropy were at least as large for ADs as for UMDs (and were at least as large for inferential style and sociotropy for *pure ADs* as for UMDs).

Table 2 also shows that gender had a significant association with past UMDs and MDD (these were more common in females), and self-reported depressive symptoms had significant positive associations with past UMDs and MDD. The ORs for gender were also consistent with ADs, Pure ADs and Comorbid UMDs and ADs being more common in women though these ORs were not statistically significant. The self-reported anxiety and depression symptom composite had a significant positive association with past comorbid UMDs and ADs (OR = 1.85).

Unique Associations with Diagnostic Spectra and with Major Depressive Disorder

As shown in Table 3, the main effect of N had significant unique associations with past ADs, and with past comorbid ADs and UMDs. In addition, N significantly interacted with gender

in associating with past UMDs. Simple unique associations of N within the sexes showed that N was more strongly associated with past UMDs in males ($B = 1.79$; $p \leq .05$) than in females ($B = 0.17$; ns). In contrast, none of the unique associations with any of the diagnostic spectra of dysfunctional attitudes, inferential style, sociotropy, and autonomy were significant including both their main effects and their interactions with gender.

An analysis of past MDD alone produced results almost identical to those shown in Table 3 for UMDs. There were significant main effects of gender ($OR=0.54$, $B = -0.62$, $p \leq .05$) and self-reported symptoms of depression ($OR=1.93$, $B = 0.66$, $p \leq .05$) and a significant N by gender interaction ($OR = 6.48$, $B = 1.87$, $p \leq .05$). This interaction resulted from a stronger association of N with past MDD in males ($B=1.87$, $p \leq .05$) than in females ($B=0.00$, ns).

Analyses of unique associations with the diagnostic spectra and with MDD were also conducted with the unmodified N scales (i.e., that did not exclude N items that might overlap with the symptoms of the diagnostic variables). These analyses produced virtually identical results as those reported above. (The effect sizes for N were slightly larger for past UMDs and past MDD but slightly smaller for past ADs and past comorbid ADs and UMDs for the unmodified N scales. However, the patterns of significant effects were identical.)

To what extent are the Cognitive and Personality-Cognitive Variables Involved in Neuroticism's Associations with the Diagnostic Variables?

To estimate the extent to which the cognitive and personality-cognitive vulnerabilities also overlap with the variance that N shares with the diagnostic variables, we conducted two additional sets of logistic regression analyses. In both of these analyses, gender and the relevant self-reported symptom composite were forced into the model on the initial two steps as in the analyses reported above, and we used the N composites that excluded items that might overlap with symptoms of the diagnostic variables being predicted. In the first of these analyses, the main effects of the cognitive and personality-cognitive vulnerabilities were forced into the model *after* the main effect of N. In addition, for the two diagnostic variables for which there were significant N by gender interactions – UMDs and MDD – the interactions of the cognitive and personality-cognitive vulnerabilities with gender were forced into the model *after* the interaction of N with gender. Table 4 shows the Nagelkerke R^2 (hereafter referred to simply as R^2) values associated with each step of these analyses.³

In the second set of additional analyses, the main effects of the cognitive and personality-cognitive vulnerabilities were forced into the model on a step *before* the main effect of N. In addition, for the analyses of UMDs and MDD, the interactions of the cognitive and personality-cognitive vulnerabilities with gender were forced into the model on a step *before* the interaction of N with gender. Table 5 shows the R^2 values associated with each step of these analyses. (That the cognitive and personality-cognitive vulnerabilities as a set were not significantly associated with UMDs in these analyses when entered before N is perhaps less surprising when one considers that none of these four vulnerabilities had significant ORs with UMDs when the current depressive symptoms composite was used as a covariate as shown in Table 2.)

Subtracting the R^2 values uniquely associated with N above and beyond the effects of the cognitive and personality-cognitive vulnerabilities (Table 5) from the R^2 values for N when entered prior to the cognitive and personality-cognitive vulnerabilities (Table 4) estimates the R^2 in the associations of the diagnostic variables with N also shared with the cognitive and personality-cognitive variables. The estimates of the R^2 in the associations of the diagnostic

³It should be noted that Nagelkerke R^2 values – as well as all other indices of variance accounted for in logistic regression – are only approximations to ordinary least squares R^2 values. Its values for different dependent variables cannot be compared directly and will tend to be smaller than ordinary least squares R^2 values as noted by Cohen, Cohen, West & Aiken (2003).

variables with N also shared with the cognitive and personality-cognitive variables can then be divided by the R^2 values for N when entered prior to the cognitive and personality-cognitive variables. The resulting quotients represent the proportions of variance that N shares with the diagnostic variables that also overlap with the cognitive and personality-cognitive variables. That is, these quotients help to answer the question of the extent to which the cognitive facets of N are involved in N's associations with the diagnostic variables.

These analyses revealed that the cognitive and personality-cognitive variables are associated with 33%, 58%, 49%, 61% and 27%, respectively, of the variance that N shares with UMDs, MDD, ADs, Pure ADs, and Comorbid UMDs and ADs. Similarly, the interactions of the cognitive and personality-cognitive variables with gender are associated with 42% and 35%, respectively, of the variance that the interaction of N with gender shares with UMDs and MDD. Moreover, the main effects of N on UMDs, MDD and Pure ADs were significant before entering the cognitive and personality-cognitive vulnerabilities as shown in Table 4. However, as shown in Table 5 (or, for the analysis of the UMDs, as shown in Table 3) the main effects of N on UMDs, MDD and Pure ADs were no longer significant when entered after the cognitive and personality-cognitive variables, providing further evidence that the cognitive and personality-cognitive variables play a non-trivial role in N's associations with these diagnostic variables.

Associations with Lifetime Diagnoses of Fear Disorders

Recent evidence suggests a reorganization of the UMDs and ADs (for a review, see Watson, 2005). That is, both phenotypic and behavioral genetic results suggest that GAD is more closely related to the UMDs and should be classified with them as “misery” disorders whereas panic disorder, agoraphobia, social phobia and specific phobia should be classified as “fear” disorders (e.g., Kendler, Prescott et al., 2003; Krueger, 1999). Based on these structural models, it is possible that the associations we found between the cognitive vulnerability variables and ADs is because we included GAD with the other ADs and thus confounded misery and fear disorders in our AD variable.

Unfortunately, there were only 14 cases of past fear disorders who did not also have current diagnoses of fear disorders. Thus, there was not sufficient power to test this explanation excluding cases with current diagnoses of fear disorders. We did, however, have a sufficient number of fear disorder cases ($n = 75$) to examine associations with lifetime fear disorders (including both past and current diagnoses). These results are presented in Table 2 (see FearLife and UMDLife variables). For comparison, we also present the associations with lifetime UMDs (including both past and current diagnoses). As shown in Table 2, all of the predictors had significant univariate associations with lifetime fear disorders and each of these ORs were at least as large as the ORs with lifetime UMDs. Thus, there is no reason to suspect that the associations reported above of the cognitive and personality-cognitive variables with ADs resulted from including GAD (a misery disorder) with the other ADs. (Similarly, there were no cases of past GAD who did not have current GAD. When we included the GAD cases with the UMDLife cases to create a Misery disorder lifetime variable, the results were virtually identical to the results for the UMDLife variable and are available upon request from Richard E. Zinbarg).

Discussion

The results provide strong support for unique associations of UMDs and ADs with N. As for the cognitive and personality-cognitive vulnerabilities, two sets of findings suggest that they are non-uniquely and non-specifically associated with both UMDs and ADs, with their zero-order relations with the UMDs and ADs arising in large part from their associations with N. First, the cognitive and personality-cognitive vulnerabilities for the most part had at least as

large zero-order associations with ADs and Pure ADs as with UMDs (and this was especially true for sociotropy). Second, there were no significant unique associations of these vulnerabilities with UMDs or ADs above and beyond N whereas N did make significant unique contributions either as a main effect or in interaction with gender above and beyond the cognitive and personality-cognitive vulnerabilities. Thus, the present results provide the most support for the non-specificity model. Another conclusion arising from these results is that, as in Fanous et al. (2002), gender moderates the associations of N with UMDs and MDD such that these associations are stronger for males than for females.

As mentioned earlier, theorizing about the cognitive and personality-cognitive vulnerabilities has either explicitly posited specificity for depression versus anxiety or has tended to focus on their associations with depression and not anxiety as if they were specific to depression. Similarly, the literature has tended to ignore the relations of the cognitive and personality-cognitive vulnerabilities with N as if they were independent of N. In contrast, the present results are most consistent with the notion that the cognitive and personality-cognitive vulnerabilities are non-specific facets of N that are associated with both UMDs and ADs and do not contribute unique variance to UMDs or ADs above and beyond N.

Whereas the literature on N has tended to explicitly acknowledge that it has cognitive facets, studies of N have not tended to investigate whether these cognitive facets are involved in the association of N with psychopathology. Thus, the current results also have implications for theorizing about N in showing that its' cognitive facets are important in N's associations with UMDs and ADs. That is, the cognitive facets also overlap with substantial portions of the variance that N shares with the diagnostic spectra variables and MDD. When taken together with findings on cognitive therapy indicating that the cognitive facets are likely to be malleable (e.g., Seligman, Schulman, DeRubeis, & Hollon, 1999), if these results are replicated by prospective analyses they will suggest that the cognitive facets of N should be included as targets in preventive interventions (see Sutton, 2007, for a review).

There are several plausible explanations for the finding that N is more strongly associated with UMDs and MDD in males than females. For example, some researchers have argued that biological variables such as hormonal factors may play an important causal role for depression in women and these might be largely independent of N. (However, see Nolen-Hoeksema & Hilt, 2009, for a critique of the literature on hormonal factors and sex differences in depression.) Social factors such as a history of abuse which can play an important causal role in depression occur more frequently in women (see Nolen-Hoeksema & Hilt, 2009) and these might also be largely independent of N. It is also possible that a factor such as gender atypicality may exacerbate the effects of N in males. That is, being high on N may represent a deviation from the expected gender role for males which might lead to stressors such as being bullied or victimized by peers (e.g., Augelli, Grossman & Starks, 2006). Unfortunately, the present results do not provide an adequate basis for choosing among these alternatives. In replicating the results of Fanous et al. (2002), however, the present results do establish gender moderation of the associations of N with UMDs and MDD as a reliable phenomenon that needs further study.

Limitations and future directions

The present results have a number of limitations. One is that selecting Ps based on a screening measure for N might have increased statistical power to detect unique effects of N relative to the other vulnerabilities. On the other hand, over-sampling on N might have also increased N's correlations with the cognitive and personality-cognitive vulnerabilities more than the correlations among the cognitive and personality-cognitive vulnerabilities. If so, multi-collinearity would have increased more (by definition) for N than for the cognitive and personality-cognitive vulnerabilities. Thus, because increasing multi-collinearity has the effect of increasing standard errors, it is also conceivable that over-sampling on N increased power

more for the cognitive and personality-cognitive vulnerabilities than for N. Initial simulations that we have conducted show that the level of oversampling used in this study should not have increased power more for N than for the other vulnerabilities (Hauner, Zinbarg & Revelle, 2009). Moreover, our design certainly should not have led to greater overestimation of the zero-order associations of the cognitive and personality-cognitive variables with ADs than with UMDs. That the ORs for inferential style, autonomy and sociotropy tended to be at least as large for ADs as for UMDs therefore underscores their lack of specificity for UMDs versus ADs.

In addition, the associations reported here are predominantly retrospective (with the sole exception of the analyses of the fear disorders in which we took a lifetime approach including both current and past cases). Thus, it is certainly possible that different results will be obtained in prospective analyses. It is also the case that the retrospective results reported here are consistent with scar models in which elevations on N and its cognitive facets are a consequence of developing one of these disorders rather than vice versa. Longitudinal designs are needed to see if the pattern of results obtained here is also found in prospective analyses. Nevertheless, if we had failed to find associations for N that involve N's cognitive facets, it would have cast serious doubt on N and its cognitive facets as risk factors.

Another limitation is that we did not include measures of life stress in the analyses reported here and several of the theories tested here are explicitly diathesis-stress theories. On the other hand, these diathesis-stress theories all predict interactions of a form that also implies main effects for the diatheses. That is, the predicted interactions arise from the expectation that the diatheses are expected to amplify – rather than reverse – the simple main effect of stress (in contrast to the prediction of a cross-over interaction in which neither stress nor the diatheses have main effects). Our results therefore have at least some relevance for these theories. Indeed, neither Alloy et al. (2000) nor Alloy et al. (2006) included life stress measures in their analyses and both therefore have only reported the main effects of cognitive vulnerability to date.

Additionally, though each of the other vulnerability measures was at least as reliable as the neuroticism composites, none of the predictor variables were perfectly reliable and it is well known that such unreliability can bias the results of an analysis of partial variance (e.g., Zinbarg, Suzuki, Uliaszek & Lewis, in press). In addition, the N composites may have had enhanced construct validity relative to the other vulnerability measures as a result of multiple measurement. Additional measures of cognitive biases, for example, might increase the construct and incremental validity of the measurement of cognitive vulnerability.

Another possible limitation is that our sampling strategy included a narrow age range of older adolescents. As the affective/temperamental core of N almost certainly develops before the cognitive facets, it is possible that the cognitive facets would account for smaller percentages of N's associations with diagnoses in younger samples. It also may be the case that the cognitive facets become increasingly important with age such that stronger effects for the cognitive facets would be found in older samples. Another possibility is that N might show a stronger association with UMDs in females in younger samples. Replications with different age groups are needed to see if the pattern of results obtained here are invariant with respect to age.

Finally, if we had assessed hopelessness depression (HD), it is possible that the cognitive vulnerabilities would have uniquely predicted HD. Even if this were the case, however, the results reported here suggest that the pragmatic utility of N exceeds that of the cognitive vulnerabilities in that N's predictive validity is not limited to a sub-type of UMDs.

Conclusion

Although the present results have limitations, they also have significant strengths. Our sample was relatively large and highly diverse. We also assessed both UMDs and ADs as well as the cognitive and personality-cognitive vulnerabilities and N, permitting tests of specificity versus non-specificity. Finally, we evaluated the relationships between N and diagnoses after removing item overlap. In sum, the present results suggest that N has unique associations (either as a main effect or in interaction with gender) with both past UMDs and ADs above and beyond dysfunctional attitudes, inferential style, autonomy, and sociotropy whereas the cognitive and personality-cognitive variables do not uniquely associate with either UMDs or ADs above and beyond N. Although not associated specifically with past UMDs versus ADs, nor uniquely associated with either UMDs or ADs, dysfunctional attitudes, inferential style, autonomy, and sociotropy do appear to be facets of N substantially involved in N's retrospective associations with UMDs and ADs.

Acknowledgments

This research was supported by National Institute of Mental Health Grants R01 MH65651 to Richard Zinbarg and Susan Mineka (NU) and R01 MH65652 to Michelle Craske (UCLA). This research was also supported by National Institute of Mental Health Grant F31 MH076579 to Jonathan Sutton. Richard Zinbarg was also supported by the Patricia M Nielsen Research Chair of the Family Institute at Northwestern University. Grateful acknowledgment is given to Jeff Jaeger, Angela Chiong, Lauren Spies, Catherine D'Avanzato, Corissa Callahan, and Natalie Castriotta.

References

- Abramson LY, Metalsky GI, Alloy LB. Hopelessness depression: A theory-based subtype of depression. *Psychological Review* 1989;96:358–372.
- Alloy LB, Abramson LY, Hogan ME, Whitehouse WG, Rose DT, Robinson MS, et al. The Temple-Wisconsin Cognitive Vulnerability to Depression Project: Lifetime history of axis I psychopathology in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology* 2000;109:403–418. [PubMed: 11016110]
- Alloy LB, Abramson LY, Whitehouse WG, Hogan ME, Panzarella C, Rose DT. Prosepective incidence of first onsets and recurrences of depression in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology* 2006;115:145–156. [PubMed: 16492105]
- Alloy, LB.; Abramson, LY.; Keyster, J.; Gerstein, RK.; Sylvia, LG. Negative cognitive style. In: Dobson, KS.; Dozois, DJ., editors. *Risk factors in depression*. Oxford, UK: Elsevier Press; 2008.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4. Washington, DC: American Psychiatric Press, Inc; 2000. Text Revision
- Angst J, Vollrath M. The natural history of anxiety disorders. *Acta Psychiatrica Scandinavica* 1991;84:446–452. [PubMed: 1776498]
- Augelli A, Grossman A, Starks M. Child gender atypicality, victimization, and PTSD among lesbian, gay and bisexual youth. *Journal of Interpersonal Violence* 2006;21:1462–1482. [PubMed: 17057162]
- Bagby RM, Parker JDA, Joffe RT, Schuller D, Gilchrist E. Confirmatory factor analysis of the revised personal style inventory. *Assessment* 1998;5:31–43. [PubMed: 9458340]
- Bagby RM, Gilchrist EJ, Rector NA, Dickens SE, Joffe RT, Levitt A, et al. The stability and validity of the sociotropy and autonomy personality dimensions as measured by the Revised Personal Style Inventory. *Cognitive Therapy and Research* 2001;25:765–779.
- Beck, AT. *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper and Row; 1967.
- Beck, AT. Cognitive therapy of depression: New perspectives. In: Clayton, PJ.; Barrett, JE., editors. *Treatment of depression: Old controversies and new approaches*. New York: Raven Press; 1983. p. 265–290.
- Biederman J, Rosenbaum JF, Bolduc-Murphy EA, Faraone SV, Chaloff J, Hirshfeld DR, et al. A three year follow-up of children with and without behavioral inhibition. *Journal of the American Academy of Child and Adolescent Psychiatry* 1993;32:814–821. [PubMed: 8340303]

- Blatt SJ, Zuroff DC. Interpersonal relatedness and self-definition: Two prototypes for depression. *Clinical Psychology Review* 1992;12:527–562.
- Breslau N, Davis GC, Andreski P. Risk factors for PTSD-related traumatic events: A prospective analysis. *American Journal of Psychiatry* 1995;152:529–535. [PubMed: 7694900]
- Caruso JC, Witkiewitz K, Belcourt-Dittloff A, Gottlieb JD. Reliability of scores from the Eysenck Personality Questionnaire: A reliability generalization study. *Educational and Psychological Measurement* 2001;61:675–689.
- Carver CS, White TL. Behavioral Inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology* 1994;67:319–333.
- Clark, DA.; Beck, AT. *Scientific foundations of Cognitive Theory and Therapy of Depression*. Wiley; New York: 1999.
- Clark LA, Watson D, Mineka S. Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology* 1994;103:103–116. [PubMed: 8040472]
- Cohen, J.; Cohen, P.; West, SG.; Aiken, LS. *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates; 2003.
- Costa, PT.; McCrae, RR. *Revised NEO Personality Inventory (NEO-PIR): Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc; 1992.
- Costa PT Jr, Terracciano A, McCrae RR. Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology* 2001;81:322–331. [PubMed: 11519935]
- Craske, MG. *Origins of phobias and anxiety disorders: Why more women than men?*. Oxford, UK: Elsevier; 2003.
- Di Nardo, PA.; Barlow, DH. *Anxiety Disorders Interview Schedule-Revised (ADIS-R)*. Albany, NY: Phobia and Anxiety Disorders Clinic, State University of New York; 1988.
- Dunkley DM, Blankstein KR, Flett GL. Specific cognitive-personality vulnerability styles in depression and the five-factor model of personality. *Personality and Individual Differences* 1997;23:1041–1053.
- Eysenck, HJ. *The biological basis of personality*. Springfield, IL: Charles C. Thomas; 1967.
- Eysenck, HJ.; Eysenck, SBG. *Manual of the Eysenck Personality Questionnaire (adult and junior)*. London: Hodder & Stoughton; 1975.
- Eysenck, HJ.; Eysenck, MW. *Personality and individual differences: A natural science approach*. New York: Plenum; 1985.
- Fanous A, Gardner CO, Prescott CA, Cancro R, Kendler KS. Neuroticism, major depression and gender: A population-based twin study. *Psychological Medicine* 2002;32:719–728. [PubMed: 12102386]
- First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version*. New York: Biometrics Research, New York State Psychiatric Institute; 2002. Non-patient Edition. (SCID-I/NP)
- Fresco DM, Sampson WS, Craighead LW, Koons AN. The relationship of sociotropy and autonomy to symptoms of depression and anxiety. *Journal of Cognitive Psychotherapy: An International Quarterly* 2001;15:17–31.
- Goldberg, LR. A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In: Mervielde, I.; Deary, I.; De Fruyt, F.; Ostendorf, F., editors. *Personality psychology in Europe*. Vol. 7. Tilburg, The Netherlands: Tilburg University Press; 1999. p. 7-28.
- Goldston DB, O'Hara MW, Schartz HA. Reliability, validity, and preliminary normative data for the Inventory to Diagnose Depression in a college population. *Psychological Assessment: A Journal of Consulting and Clinical Psychology* 1990;2:212–215.
- Gray, JA. *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*. New York: Oxford University Press; 1982.
- Haefel GJ, Gibb BE, Metalsky GI, Alloy LB, Abramson LY, Hankin BL, et al. Measuring cognitive vulnerability to depression: Development and validation of the cognitive style questionnaire. *Clinical Psychology Review* 2008;28:824–836. [PubMed: 18234405]

- Hankin BL, Abramson LY. Development of gender differences in depression: An elaborated cognitive vulnerability-transactional stress theory. *Psychological Bulletin* 2001;127:773–796. [PubMed: 11726071]
- Hankin BL, Fraley CR, Abela JRZ. Daily depression and cognitions about stress: Evidence for a traitlike depressogenic cognitive style and the prediction of depressive symptoms in a prospective daily diary study. *Journal of Personality and Social Psychology* 2005;88:673–685. [PubMed: 15796667]
- Hankin BL, Lakdawalla Z, Carter IL, Abela JRZ, Adams P. Are neuroticism, cognitive vulnerabilities and self-esteem overlapping or distinct risks for depression? Evidence from exploratory and confirmatory factor analyses. *Journal of Social and Clinical Psychology* 2007;26:29–63.
- Hauner K, Zinbarg R, Revelle W. The effects of oversampling on directly and indirectly oversampled predictors. 2009 Manuscript in preparation.
- Hayward C, Killen JD, Kraemer HC, Taylor CB. Linking self-reported childhood behavioral inhibition to adolescent social phobia. *Journal of the American Academy of Child & Adolescent Psychiatry* 1998;37:1308–1316. [PubMed: 9847504]
- Hayward C, Killen JD, Kraemer HC, Taylor CB. Predictors of panic attacks in adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry* 2000;39:207–214. [PubMed: 10673832]
- Kendler KS, Prescott CA, Myers J, Neale MC. The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. *Archives of General Psychiatry* 2003;50:863–870. [PubMed: 8215812]
- Kendler KS, Kuhn J, Prescott CA. The interrelationship of neuroticism, sex, and stressful life events in the prediction of episodes of Major Depression. *American Journal of Psychiatry* 2004;161:631–636. [PubMed: 15056508]
- Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangus KR, et al. The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication. *Journal of the American Medical Association* 2003;289:3095–3105. [PubMed: 12813115]
- Kessler RC, Berglund P, Demler O, Jin R, Walters E. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry* 2005;62:593–602. [PubMed: 15939837]
- Krueger RF. The structure of common mental disorders. *Archives of General Psychiatry* 1999;56:921–26. [PubMed: 10530634]
- Krueger RF, Caspi A, Moffitt TE, Silva PA, McGee R. Personality traits are differentially linked to mental disorders: A multitrait-multidiagnosis study of an adolescent birth cohort. *Journal of Abnormal Psychology* 1996;105:299–312. [PubMed: 8772001]
- Lakdawalla Z, Hankin BL. Personality as a prospective vulnerability to dysphoric symptoms among college students: Proposed mechanisms. *Journal of Psychopathology and Behavioral Assessment* 2008;30:121–131.
- Mattick RP, Clarke JC. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy* 1998;36:455–470. [PubMed: 9670605]
- Mineka, S.; Pury, C.; Luten, A. Explanatory style in anxiety versus depression. In: Buchanan, G.; Seligman, MEP., editors. *Explanatory Style*. Lawrence Erlbaum. P.'s; 1995. p. 135-158.
- Mongrain M, Blackburn S. Cognitive Vulnerability, Lifetime Risk, and the Recurrence of Major Depression in Graduate Students. *Cognitive Therapy and Research* 2005;29:747–768.
- Mor N, Zinbarg R, Craske M, Mineka S, Griffith J, Uliaszek A, Rose R, Waters A. Factor structure and factorial invariance of the EPQ-R Neuroticism Scale in high school juniors. *Journal of Personality Assessment* 2008;90:66–75. [PubMed: 18444097]
- Muris P, Rassin E, Franken I, Leemreis W. Psychometric properties of the Behavioral Inhibition Scale in young adults. *Journal of Individual Differences* 2007;28:219–226.
- Nolen-Hoeksema, S. Sex differences in depression. Stanford, CA: Stanford University Press; 1990.
- Nolen-Hoeksema, S.; Hilt, LM. Gender differences in depression. In: Gotlib, IH.; Hammen, CL., editors. *Handbook of Depression*. 2. New York: Guilford Press; 2008. p. 386-404.
- Ost L-G. Age of onset in different phobias. *Journal of Abnormal Psychology* 1987;96:223–229. [PubMed: 3680761]

- Ormel J, Oldehinkel AJ, Vollebergh W. Vulnerability before, during, and after a major depressive episode: A 3-wave population-based study. *Archives of General Psychiatry* 2004;61:990–996. [PubMed: 15466672]
- Peterson C, Semmel A, von Baeyer C, Abramson LY, Metalsky GI, Seligman MEP. The attributional style questionnaire. *Cognitive Therapy and Research* 1982;6:287–299.
- Ralph JA, Mineka S. Attributional style and self-esteem: The prediction of emotional distress following a midterm exam. *Journal of Abnormal Psychology* 1998;107:203–215. [PubMed: 9604550]
- Rapee RM, Craske MG, Barlow DH. Assessment instrument for panic disorder that includes fear of sensation-producing activities: The Albany Panic and Phobia Questionnaire. *Anxiety* 1994/1995;1:114–122. [PubMed: 9160559]
- Robins CJ, Bagby RM, Rector NA, Lynch TR, Kennedy SH. Sociotropy, autonomy, and patterns of symptoms in patients with major depression: A comparison of dimensional and categorical approaches. *Cognitive Therapy and Research* 1997;21(3):285–300.
- Robins CJ, Ladd J, Welkowitz J, Blaney PH, Diaz R, Kutcher G. The Personal Style Inventory: Preliminary validation studies of new measures of sociotropy and autonomy. *Journal of Psychopathology and Behavioral Assessment* 1994;16:277–300.
- Saucier G. Mini-markers: A brief version of Goldberg's unipolar big-five markers. *Journal of Personality Assessment* 1994;63:506–516. [PubMed: 7844738]
- Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology* 1994;67:1063–1078. [PubMed: 7815302]
- Schwartz CE, Snidman N, Kagan J. Adolescent social anxiety as an outcome of inhibited temperament in childhood. *Journal of the American Academy of Child & Adolescent Psychiatry* 1999;38:1008–1015. [PubMed: 10434493]
- Segal ZV, Shaw BF, Vella DD, Katz R. Cognitive and life stress predictors of relapse in remitted unipolar depressed patients: Test of the congruency hypothesis. *Journal of Abnormal Psychology* 1992;101:26–36. [PubMed: 1537969]
- Seligman, MEP.; Schulman, P.; DeRubeis, RJ.; Hollon, SD. The prevention of depression and anxiety. Prevention & Treatment. 1999. <http://journals.apa.org/prevention/>
- Sutton JM. Prevention of depression in youth: A qualitative review and future suggestions. *Clinical Psychology Review* 2007;27:552–571. [PubMed: 17355898]
- Turner SM, Beidel DC, Wolff PL. Is behavioral inhibition related to the anxiety disorders? *Clinical Psychology Review* 1996;16:157–172.
- Uliaszek AA, Hauner KKY, Zinbarg RE, Craske MG, Mineka S, Griffith J, Epstein A. An Examination of Content Overlap and Disorder-Specific Predictions in the Associations of Neuroticism with Anxiety and Depression. *Journal of Research in Personality* 2009;43:785–794. [PubMed: 20161016]
- Watson D. Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. *Journal of Abnormal Psychology* 2005;114:522–536. [PubMed: 16351375]
- Watson D, Weber K, Assenheimer JS, Clark LA, Strauss ME, McCormick RA. Testing a tripartite model: I. Evaluating the convergent and discriminant validity of anxiety and depression symptom scales. *Journal of Abnormal Psychology* 1995;104:3–14. [PubMed: 7897050]
- Weissman, AN.; Beck, AT. Development and validation of the Dysfunctional Attitudes Scale. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy; Chicago. 1978.
- Zimmerman M, Coryell W, Corenthal C, Wilson S. A self-report scale to diagnose major depressive disorder. *Archives of General Psychiatry* 1986;43:1076–1081. [PubMed: 3767597]
- Zinbarg RE, Barlow DH. Structure of anxiety and the anxiety disorders: A hierarchical model. *Journal of Abnormal Psychology* 1996;105:181–193. [PubMed: 8722999]
- Zinbarg RE, Suzui S, Uliaszek AA, Lewis AR. Biased parameter estimates and inflated type I error rates in analysis of covariance (and analysis of partial variance) arising from unreliability: Alternatives and remedial strategies. *Journal of Abnormal Psychology*. in press.
- Zinbarg R, Yovel I, Revelle W, McDonald R. Estimating generalizability to a universe of indicators that all have an attribute in common: A comparison of estimators for ω_h . *Applied Psychological Measurement* 2006;30:121–144.

Appendix – N Items with Overlapping Content with Depression or Anxiety

In the analyses in which N items with overlapping content with our dependent variables were excluded, items were categorized as anxiety or depression symptoms (and therefore excluded from the relevant analysis) on the basis of a content comparison with a DSM-IV symptom criteria. Letters in parentheses below indicate if the item was classified as a depressive symptom (D) or an anxiety symptom (A) and were excluded from the analyses in which depression and anxiety disorders were dependent variables, respectively (items not followed by a letter in parentheses were not excluded from either analysis).

EPQ

1. Does your mood often go up and down? (D)
2. Do you ever feel 'just miserable' for no reason? (D)
3. Do you often worry about things you should not have done or said? (A)
4. Are you a person who is cranky or easily annoyed? (A, D)
5. Are your feelings easily hurt?
6. Do you often feel 'fed-up'?
7. Are you often troubled about feelings of guilt? (D)
8. Would you call yourself a nervous person? (A)
9. Are you a worrier? (A)
10. Do you worry about awful things that might happen? (A)
11. Would you call yourself tense or 'highly-strung'? (A)
12. Do you suffer from sleeplessness? (A, D)
13. Have you often felt tired and without energy for no reason? (A, D)
14. Do you often feel life is very dull? (D)
15. Do you worry a lot about your looks? (A)
16. Do you worry too long after an embarrassing experience? (A)
17. Do you suffer from "nerves"? (A?)
18. Do you often feel lonely?
19. Are you easily hurt when people find fault with you or the work you do?
20. Are you sometimes bubbling over with energy and sometimes very slow and low on energy?
21. Are you touchy about some things? (A, D)
22. When your temper rises, do you find it difficult to control?

Big 5

12. Envious
14. Fretful (A)
19. Jealous

- 21. Moody (D)
- 25. Relaxed (A)
- 32. Temperamental (A, D)
- 33. Touchy (A, D)
- 35. Unenvious

IPIP-NEO-PI-N: Depression 50 items, Anxiety 37 Items

1. Adapt easily to new situations	33. Am afraid to draw attention to myself (A)
2. Am afraid of many things. (A)	34. Am comfortable in unfamiliar situations.
3. Am not easily bothered by things.	35. Am easily intimidated.
4. Am not easily disturbed by events.	36. Am not bothered by difficult social situations. (A)
5. Am relaxed most of the time. (A)	37. Am not embarrassed easily. (A)
6. Don't worry about things that have already happened. (A)	38. Find it difficult to approach others. (A)
7. Fear for the worst. (A)	39. Only feel comfortable with friends. (A)
8. Get caught up in my problems.	40. Stumble over my words.
9. Get stressed out easily.	41. Am able to control my cravings.
10. Worry about things. (A)	42. Do things I later regret.
11. Am not easily annoyed. (A, D)	43. Don't know why I do some of the things I do.
12. Am often in a bad mood.	44. Easily resist temptations.
13. Get angry easily.	45. Go on binges.
14. Get irritated easily. (A, D)	46. Love to eat.
15. Get upset easily.	47. Never spend more than I can afford.
16. Keep my cool.	48. Never splurge.
17. Lose my temper.	49. Often eat too much. (D)
18. Rarely complain.	50. Rarely overindulge.
19. Rarely get irritated. (A, D)	51. Am calm even in tense situations. (A)
20. Seldom get mad.	52. Become overwhelmed by events.
21. Am often down in the dumps. (D)	53. Can handle complex problems.
22. Am very pleased with myself. (D)	54. Can't make up my mind. (D)
23. Dislike myself. (D)	55. Feel that I'm unable to deal with things.
24. Feel comfortable with myself. (D)	56. Get overwhelmed by emotions.
25. Feel desperate. (D)	57. Know how to cope.
26. Feel that my life lacks direction.	58. Panic easily. (A)
27. Have a low opinion of myself. (D)	59. Readily overcome setbacks.
28. Have frequent mood swings. (D)	60. Remain calm under pressure. (A)
29. Often feel blue. (D)	
30. Seldom feel blue. (D)	
31. Am able to stand up for myself. (A)	
32. Am afraid that I will do the wrong thing. (A)	

BIS

- 1. If I think something unpleasant is going to happen I usually get pretty “worked up” (A)
- 2. I worry about making mistakes. (A)

3. Criticism or scolding hurts me quite a bit.
4. I feel pretty worried or upset when I think or know somebody is angry at me. (A)
5. Even if something bad is about to happen to me, I rarely experience fear or nervousness (A)
6. I feel worried when I think I have done poorly at something. (A)
7. I have very few fears compared to my friends. (A)

Table 1

Prevalence of unipolar mood disorders (UMDs) and anxiety disorders (ADs).

Diagnosis	Lifetime Prevalence	Current Prevalence	Past Prevalence
UMD	20.4 (157)	5.6 (43)	14.8 (114)
MDD	14.1 (112)	2.4 (19)	11.7 (93)
DYS	0.8 (7)	0.6 (5)	0.2 (2)
DDNOS	6.2 (46)	2.6 (20)	3.6 (26)
AD	15.8 (125)	10.8 (86)	5.0 (39)
PD	0.6 (6)	0.2 (2)	0.4 (4)
SAD	6.4 (53)	5.6 (47)	0.8 (6)
OCD	1.4 (13)	0.5 (5)	0.9 (8)
PTSD	0.4 (4)	0.4 (4)	0.0 (0)
ASD	0.9 (5)	0.0 (0)	0.9 (5)
GAD	1.3 (13)	1.3 (13)	0.0 (0)
SEP	1.1 (11)	0.1 (1)	1.0 (10)
PHOB	4.3 (33)	3.5 (27)	0.8 (6)
ADNOS	4.0 (29)	2.2 (17)	1.8 (12)
Any Emotional Disorder	28.6 (216)	13.8 (107)	14.8 (109)
Comorbid UMD and AD	7.6 (66)	2.8 (22)	4.8 (44)

Note: Cell values are weighted prevalences using weights to account for (a) oversampling on the basis of the neuroticism screener and (b) gender and ethnicity differences in agreeing to participate in the four year study, unweighted frequencies are in parentheses. MDD = major depressive disorder; DYS = dysthymia; DDNOS = depressive disorder not otherwise specified; PD = panic disorder; SAD = social anxiety disorder; OCD = obsessive compulsive disorder; PTSD = post-traumatic stress disorder; ASD = acute stress disorder; GAD = generalized anxiety disorder; SEP = separation anxiety disorder; PHOB = specific phobia; ADNOS = anxiety disorder not otherwise specified.

Table 2

Associations among dysfunctional attitudes, inferential style, autonomy, sociotropy, neuroticism and with diagnostic spectra variables and major depressive disorder (MDD)

	DAS	CSQ	Aut	Soc	N	Dep	Anx	DepAnx	Gen
rs									
DAS									
CSQ	.51								
Aut	.49	.42							
Soc	.52	.47	.47						
N	.59	.52	.48	.65					
Dep	.53	.50	.51	.44	.67				
Anx	.41	.42	.45	.47	.58	.67			
DepAnx	.51	.51	.53	.49	.68	.91	.91		
ORs									
Gen	1.10	1.00	1.11	0.73	0.67	0.86	0.81	0.83	
UMD	1.45/1.14	1.44/1.16	1.36/1.09	1.46/1.22	2.00/1.66	1.74			.44
AD	1.35/1.28	1.55/1.49	1.36/1.23	2.14/2.20	2.50/2.92	1.39			.77
Pure AD	1.39/1.32	1.67/1.65	1.14/1.06	1.75/1.75	2.19/2.42	1.34			.70
Comorb	1.21/0.92	1.42/1.11	1.63/1.18	2.58/2.34	3.70/4.23		1.85		.75
MDD	1.50/1.12	1.64/1.30	1.47/1.14	1.59/1.30	2.06/1.59	1.91			.54
FearLife	1.84	1.63	1.56	1.80	2.71	2.24			1.02
UMDLife	1.39	1.61	1.37	1.73	1.96	1.76			.45
Mean	3.11	.00	3.41	3.64	.46	.00	.00	.00	
SD	0.84	0.86	0.66	0.78	3.27	.87	.78	.91	

Note: Bolded values = $p \leq .05$. DAS = dysfunctional attitudes scale; CSQ = cognitive style questionnaire; aut = autonomy; Soc = sociotropy; N = neuroticism composite; Dep = self-reported depression symptom composite; Anx = self-reported anxiety symptom composite; DepAnx = self-reported depression and anxiety symptom composite; Gen = gender (female = 0; male = 1); UMD = past unipolar mood disorders; AD = past anxiety disorders; Pure AD = past anxiety disorders without a history of a unipolar mood disorder; Comorb = past history of at least one unipolar mood disorder and at least one anxiety disorder; FearLife = lifetime (including both past and current diagnoses) of fear disorders (i.e., panic disorder, agoraphobia, social phobia and specific phobia); UMDLife = lifetime (including both past and current diagnoses) of unipolar mood disorders; r 's = Pearson product-moment correlations; ORs = odds ratios. No covariates were used for the cells containing a single OR or for the first OR in cells containing two ORs; the second OR in cells containing two ORs is based on using current symptoms relevant to that disorder as a covariate (i.e., the anxiety symptom composite for ADs, the depression symptom composite for UMDs and MDD and the depression and anxiety symptom composite for comorbid UMDs and ADs).

Table 3

Associations with diagnostic spectra: Hierarchical logistic regression results

	UMD			AD			Comorbid		
	R ²	OR	B	R ²	OR	B	R ²	OR	B
Step 1	0.03			0.00			0.00		
Gender		0.44	-0.83		0.77	-0.26		0.75	-0.29
Step 2	0.06			0.01			0.04		
Sxs		1.78	0.58		1.36	0.31		1.84	0.61
Step 3	0.02			0.09			0.12		
N		1.50	0.41		2.52	0.92		3.81	1.34
CSQ		1.08	0.07		1.07	.068		0.73	-0.31
DAS		1.04	0.04		0.78	-0.28		0.63	-0.46
Aut		1.03	0.03		0.88	-0.13		1.05	0.05
Soc		0.95	-0.06		1.73	0.55		2.14	0.76
Step 4	0.00			0.00			0.00		
Sxs × Gender		1.13	0.18		1.27	0.24		1.10	0.09
Step 5	0.03			0.02			0.06		
N × Gender		5.07	1.62		1.38	0.32		5.59	1.72
CSQ × Gender		0.65	-0.43		0.95	-0.05		0.80	-0.23
DAS × Gender		0.95	-0.05		0.87	-0.14		0.42	-0.87
Aut × Gender		0.97	-0.03		2.42	0.88		5.07	1.62
Soc × Gender		1.35	0.30		0.36	-1.02		2.24	0.81

Note. Bolded values = $p \leq .05$. UMD = past unipolar mood disorders; AD = past anxiety disorders; Comorbid = past history of at least one unipolar mood disorder and at least one anxiety disorder; OR = Odds ratio; B = unstandardized logistic regression coefficient; R^2 = change in Nagelkerke R^2 values associated with that step of the regression; Sxs = self-reported symptoms of that diagnostic spectrum (i.e., self-reported depressive symptom composite for the UMD analysis; self-reported anxiety symptom composite for the AD analysis and a composite of self-reported symptoms of both anxiety and depression in the analysis of Comorbid UMDs and ADs); Gender was coded such that females were assigned a value of 0 and males were assigned a value of 1; N = neuroticism composite; CSQ = cognitive style questionnaire; DAS = dysfunctional attitudes scale; aut = autonomy; Soc = sociotropy.

Proportions of variance accounted for when terms involving the neuroticism composite (N) were entered prior to terms involving the cognitive and personality-cognitive variables

Table 4

	UMD	MDD	AD	Pure AD	Comorbid
Gender	.031	.017	.002	.003	.002
Sxs	.059	.074	.009	.007	.037
N	.015	.012	.065	.038	.075
Cog	.002	.003	.027	.021	.042
Sxs × Gender	.000	.000			
N × gender	.026	.031			
Cog × Gender	.004	.007			

Note. Tabled values are changes in the Nagelkerke R² values associated with that step of the logistic regression; bolded values = $p \leq .05$. UMD = past unipolar mood disorders; AD = past anxiety disorders; Pure AD = past anxiety disorders without a current or past UMD; Comorbid = past history of at least one unipolar mood disorder and at least one anxiety disorder; Sxs = self-reported symptoms of that diagnostic spectrum (i.e., self-reported depressive symptom composite for the UMD analysis; self-reported anxiety symptom composite for the AD analysis and a composite of self-reported symptoms of both anxiety and depression in the analysis of Comorbid UMDs and ADs); Cog = the set of four cognitive and personality-cognitive variables including the cognitive style questionnaire, dysfunctional attitudes scale, autonomy and sociotropy.

Proportions of variance accounted for when terms involving the neuroticism composite (N) were entered after the terms involving the cognitive and personality-cognitive variables

Table 5

	UMD	MDD	AD	Pure AD	Comorbid
Gender	.031	.017	.002	.003	.002
Sxs	.059	.074	.009	.007	.037
Cog	.007	.010	.059	.044	.062
N	.010	.005	.033	.015	.055
Sxs × Gender	.000	.000			
Cog × Gender	.015	.018			
N × Gender	.015	.020			

Note. Tabled values are changes in the Nagelkerke R² values associated with that step of the logistic regression; bolded values = $p \leq .05$. UMD = past unipolar mood disorders; AD = past anxiety disorders; Pure AD = past anxiety disorders without a current or past UMD; Comorbid = past history of at least one unipolar mood disorder and at least one anxiety disorder; Sxs = self-reported symptoms of that diagnostic spectrum (i.e., self-reported depressive symptom composite for the UMD analysis; self-reported anxiety symptom composite for the AD analysis and a composite of self-reported symptoms of both anxiety and depression in the analysis of Comorbid UMDs and ADs); Cog = the set of four cognitive and personality-cognitive variables including the cognitive style questionnaire, dysfunctional attitudes scale, autonomy and sociotropy.