Published in final edited form as:
Depress Anxiety. 2014 March ; 31(3): 214–222. doi:10.1002/da.22139.

The Latent Structure and Comorbidity Patterns of Generalized Anxiety Disorder and Major Depression Disorder: A National Study

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Abstract

Background—There is controversy on whether generalized anxiety disorder (GAD) and major depressive disorder (MDD) constitute the same or separate disorders. This study sought to examine the factor structure of the DSM-IV diagnostic criteria of GAD and MDD and the patterns of comorbidity associated with both disorders.

Methods—Data were drawn from the National Epidemiological Survey on Alcohol and Related conditions (NESARC), a representative sample of the adult general population in the United States (N=43,093). Sociodemographic and psychiatric comorbidity correlates of GAD, MDD and co-occurring GAD-MDD were obtained. Exploratory and confirmatory factor analyses of the DSM-IV diagnostic criteria for GAD and MDD were conducted, followed by a Multiple Indicators Multiple Causes (MIMIC) model to examine the invariance of the model across several sociodemographic covariates.

Results—A bifactor model with one general factor underlying all the MDD and GAD diagnostic criteria and another factor with large loadings only for the GAD criteria best represented the latent structure. This model showed excellent fit indices (CFI=1.00, TLI=1.00, RMSEA <.02), and a high degree of invariance across sociodemographic covariates. The comorbidity patterns of individuals with MDD only (n=4,885), GAD only (n=947) and GAD-MDD (n=810) were clearly distinguishable.

Conclusions—The latent structure of the diagnostic criteria of MDD and GAD and their comorbidity patterns suggests that GAD and MDD are closely related but different nosological entities, with distinct latent structures, clinical manifestations and patterns of comorbidity.

Keywords

Anxiety/anxiety disorders; epidemiology; mood disorders; factor analysis; nosology

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Generalized anxiety disorder (GAD) and major depressive disorder (MDD) are highly prevalent, disabling conditions associated with considerable personal and societal burden.(1) Because MDD and GAD have high symptom overlap(2) and often co-occur,(3) there is considerable controversy regarding their separation as distinct diagnostic entities.

Some studies and meta-analyses have suggested that MDD and several anxiety disorders have a modest familial aggregation and moderate levels of cross heritability,(4) but other studies have found mixed evidence for shared familial risk.(5) Other studies have found distinguishable patterns of comorbidity between GAD and MDD,(6) although whether co-occurrence of MDD and GAD has any influence on these differences is unknown. Several twin studies have also examined the relationship between MDD and GAD in large population samples.(7) The Virginia Adult Twin Study of Psychiatric and Substance Use Disorders (VATSPSUD) found that the correlation for environmental risk factors between MDD and GAD was 0.51, indicating that environmental risk factors for these disorders are moderately correlated. The VATSPSUD estimated the genetic correlation between MDD and GAD to be 1, indicating a very strong relationship between the genetic risk factors for both disorders.(7) Data from the Australian and Dutch Twins and Siblings Study also suggest considerable overlap in genetic risk factors for GAD and MDD,(8) and data from the Swedish Twin Registry(9) indicate that GAD and MDD share the same genetic factors but their environmental determinants are mostly distinct. Three large prospective epidemiological studies have also indicated that the developmental risk factors for GAD and MDD do not fully overlap,(10-12) suggesting that despite their similarities, the etiological pathways of these two disorders may differ.

Application of latent variable techniques to three large community surveys in which psychiatric diagnoses were used as indicators have suggested that MDD and GAD may be part of an underlying factor named “anxious misery”,(13-16) but other studies have found divergent results.(17) In addition, a recent meta-analysis of the relationship between anxiety sensitivity and internalizing disorders found that anxiety sensitivity is more strongly correlated with agoraphobia, GAD and posttraumatic stress than with depression, raising new questions regarding the relationship between GAD and MDD.(18)

The present study seeks to build on existing knowledge by examining data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large, nationally representative sample of US adults. The specific goals of our study were: 1) to compare the sociodemographic characteristics and comorbidity patterns of individuals with GAD, MDD, and those with both disorders (GAD-MDD); and, 2) to determine the factor structure of the individual DSM-IV criteria for GAD and MDD.

METHODS

Sample and Data Collection

The 2001-2002 National Epidemiological Survey of Alcohol and Related Conditions (NESARC) surveyed a representative sample of the U.S. population.(19) The target population was the civilian non-institutionalized population 18 years and older residing in households and group quarters (e.g., college quarters, group homes, boarding houses, and non-transient hotels). The survey included residents of the continental United States, District of Columbia, Alaska and Hawaii. Face-to-face computer-assisted interviews were conducted with 43,093 respondents. The overall survey response rate was 81%. Blacks, Hispanics, and adults ages 18-24 were oversampled, with data adjusted for oversampling, household- and person-level non-response.(20) All procedures, including informed consent, received full ethical review and approval from the U.S. Census Bureau and U.S. Office of Management and Budget.

Assessment

DSM-IV diagnostic interviews—The diagnostic interview was the Alcohol Use Disorder and Associated Disability Interview Schedule-DSM-IV version (AUDADIS-IV).(21) Test-retest reliabilities for AUDADIS-IV mood, anxiety and personality disorders diagnoses in the general population and clinical settings were fair to good (κ=0.40-0.77).(22, 23) Test-retest reliabilities of AUDADIS-IV personality disorders compare favorably with those obtained in patient samples using semistructured personality interviews.(24) Convergent validity was good to excellent for all affective, anxiety, and personality disorders diagnoses. (3, 22, 23, 25) Selected diagnoses showed good agreement (κ=0.64-0.68) with psychiatrist reappraisals(26) and fair to good test-retest reliability for lifetime DSM-IV MDD and GAD diagnoses (κ=0.65 and κ= 0.42 respectively).(22) Cronbach's α was .95 for both GAD and MDD.

Analytic Plan

Weighted percentages were computed to derive prevalences, sociodemographic correlates, and rates of comorbidity of respondents with lifetime MDD, GAD and GAD-MDD. For the purposes of this study, MDD refers to MDD without GAD, GAD is GAD without MDD, and GAD-MDD consists of any lifetime comorbidity between MDD and GAD. Logistic regression analyses yielded odds ratios (ORs) indicating measures of association between lifetime MDD, GAD and GAD-MDD diagnosis and sociodemographic characteristics and comorbid psychiatric disorders. Point estimates, standard errors and confidence intervals for all these analyses were estimated using SUDAAN(27) to adjust for design characteristics of the survey.

To examine the factor structure of the MDD and GAD we initially conducted an exploratory factor analysis (EFA) using geomin oblique rotation. Items included in the analysis were: depressed mood most of the day, nearly every day (D1); markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (D2); significant weight loss when not dieting or weight gain (D3); insomnia or hypersomnia nearly every day (D4); psychomotor agitation or retardation nearly every day (D5); fatigue or loss of energy nearly every day (D6); feelings of worthlessness or excessive or inappropriate guilt nearly every day (D7); diminished ability to think or concentrate, or indecisiveness, nearly every day (D8) and recurrent thoughts of death (D9) for MDD and restlessness or feeling keyed up or on edge (A1); being easily fatigued (A2); difficulty concentrating or mind going blank (A3); irritability (A4); muscle tension (A5); sleep disturbance (A6) for GAD.

Factor selection was guided by interpretability of the factor pattern loadings, number of eigenvalues ≥1, the scree plot, and goodness of fit indices. The factor structure suggested by the EFA was tested in confirmatory factor analysis (CFA). Standard indices, including chi-square, comparative fit index (CFI), Tucker Lewis index (TLI) and root mean square error approximation (RMSEA) were used to assess the goodness of fit of the CFA. Following Muthen and Muthen (1998), (28) CFI > 0.95, TLI>0.95, and RMSEA< 0.06 were used as cut-offs indicating good model fit. When sample sizes are large (as in the present study), it is well known that a nonsignificant chi-square goodness of fit test is rarely obtained [Bentler and Bonett, 1980], nevertheless we present its value and degrees of freedom.(29) In addition, we considered a useful complement to traditional “simple structure” CFA and also examined the confirmatory “bifactor model” which examines the strength of evidence in favor of items being used as measures of a single overall “general” factor versus subgroups of items forming subscales measuring distinct “group” factors.(30) Specifically, the bifactor model assumes that each criterion loads on two factors, one overall “general” factor (shared by all criteria) and another “group” factor shared only by those other criteria potentially measuring the same (sub)construct. The model estimates how strongly the criteria load on

the overall general disorder factor versus the group-specific factors obtained after controlling for the overall general factor. All MDD and GAD criteria were allowed to load on the general factor. In addition, the MDD and GAD criteria were respectively allowed to load on their own “group” factor. A single dimension is supported by loadings >0.40 for all criteria on the general factor, with smaller loadings on the group-specific factors. Larger loadings on the group-specific factor indicate criteria with variability not fully captured by the general factor. Fit statistics for the bifactor model were compared with that of the 2-factor simple structure CFA model. In the current study we chose not to implement cross-validation (e.g. fit EFA models on half the data, then CFA on the other half) given that its utility to protect against chance findings diminishes as the sample becomes fully representative of the population. Given this study's very large sample size weighted to the national population, there is little sampling variability expected and so it is highly unlikely that different factor solutions would emerge from random halves.(31)

Finally, a multiple indicators multiple causes (MIMIC) model was fit with demographic covariates included in the bifactor model to: 1) assess the associations between demographic variables and the latent factors; and, 2) to assess the invariance assumption of the factor structure across demographic groups. The MIMIC model includes three sets of relationships: those between the symptom items and the factors (the measurement model); those between the factors and the covariates (the structural regression equations); and those between the symptom items and the covariates (the direct effects). The presence of direct effects implies that there are differences in the factor model based on the covariates (e.g., factor structure is not identical for all population subgroups). It is important to stress, though, that both the reported measurement model and structural equation models are adjusted for the present of direct effects, in the same way that main effects are adjusted for other covariates in more traditional regression models. Age, sex, race, educational level, marital status, and employment status were entered to estimate associations between factors and covariates. Those estimates represent standard deviation change in the latent factor across comparison groups of predictor, except for age which represents the effect of a one year increase.

Modification indices were used to identify if any additional direct effects from covariates to specific MDD and GAD criteria were warranted indicating lack of uniform invariance (intercept invariance) in the relationship between the criterion and the latent factor across that particular demographic characteristic. A MIMIC analysis provides advantage over multiple group testing for measurement invariance as it allows for multiple covariates to be examined simultaneously without the need to stratify the data into small subgroups and further allows testing for invariance across continuous variables such as age.(32) Multiple studies have shown inflated Type 1 error when assessing model invariance (i.e. higher than desirable probability of declaring non-invariance when actually the factor structure is invariant)(33-35) and hence it is recommended to use a conservative cut-off (i.e. Bonferroni correction) for testing modification indices.(36) Given 10 covariates and 15 GAD-MDD criteria, we use Modification index cutoff of 16 corresponding to a Chi-square test with 1 degree of freedom and a p-value of .01/150 to identify criteria exhibiting non-invariance.

All factor analyses were conducted in Mplus Version 7.0,(28) which takes into account the NESARC sampling weights and design effects, in the parameter and standard error estimation as well as model fit calculations. The default estimator for the analysis was the variance-adjusted weighted least squares (WLSMV), a robust estimator which does not assume normally distributed variables and provides the best option for modeling categorical or ordered data.

RESULTS

Prevalence and Sociodemographic Correlates

The lifetime prevalence of GAD, MDD and GAD-MDD were 2.16%, 11.25% and 1.98%, respectively. GAD was more common in African Americans, those that did not complete high school and unemployed individuals. By contrast, individuals with the incomes over $70,000 were more likely to have MDD or GAD-MDD than GAD. Individuals who were separated, divorced, or widowed and those aged older than 30 had higher odds for GAD-MDD than MDD. Women were more likely to have GAD-MDD than GAD or MDD, whereas Hispanics and foreign-born individuals had higher odds for MDD or GAD than for GAD-MDD. Among individuals who had GAD-MDD, 17.8% had GAD onset before MDD, 36.7% had the onset of MDD prior to GAD, 41.6% had in the same year and in 3.9% the order of onset was unknown (Data not shown).

Psychiatric Comorbidity

The prevalence of having at least one comorbid psychiatric disorder was 90.2% among respondents with GAD, 75.5% among respondents with MDD and 88.5% among those with GAD-MDD. Respondents with GAD and GAD-MDD had higher odds than those with MDD of having other Axis I and II comorbid disorders.

Individuals with GAD had higher odds than those of the GAD-MDD and MDD groups of having any comorbid substance disorder, alcohol dependence, drug abuse and dependence and pathological gambling. They were also more likely to have any comorbid anxiety disorder, including panic disorder, social anxiety disorder and, specific phobia or any psychotic disorder than individuals with MDD. Individuals with GAD-MDD were more likely than those with MDD or GAD to have comorbid dysthymia. Individuals with GAD had higher odds of personality disorders than those with GAD-MDD who, in turn, had higher odds of personality disorders than those with MDD (Table 1).

Exploratory Factor Analyses (EFA)

An EFA of the DSM-IV criteria for GAD and MDD indicated the existence of two factors with large eigenvalues, 11.53 and 2.50. The remaining eigenvalues had values well below 1 and formed a straight line (0.24; 0.15; 0.12; 0.11; 0.10; 0.08; 0.06; 0.05; 0.04; 0.03; 0.02; 0.01; 0.00). One-factor (χ^2=19740.6, d.f.=90, p<.0001; CFI=0.989, TLI=0.987, RMSEA=0.071), two-factor (χ^2=976.3, d.f.=76, p<.0001, CFI=1.00, TLI=1.00, RMSEA=0.017) and three-factor (χ^2=622.1, d.f.=63, p<.0001, CFI=1.00, TLI=1.00, RMSEA=0.014) solutions were obtained.

Although the three-factor model yielded slightly better fitting indices than the two-factor solution, all of the loadings on its third factor were below 0.3. Furthermore, only two eigenvalues were larger than 1 and the scree plot suggested leveling off after two. Based on these considerations the two-factor model, which had very high loadings and very good fit indices, was chosen. All the items assessing DSM-IV GAD had loadings close to unity in the “Anxiety” factor, whereas their loading in the “Depression” factor were close to 0. Conversely, all the DSM-IV MDD criteria loaded close to unity on the “Depression” factor, but had a loading close to 0 on the “Anxiety” factor. The correlation between the “Anxiety” and “Depression” factors was 0.64 (Table 2).

Confirmatory Factor Analysis

Because the EFA suggested two factors with simple structure (i.e. only one criteria loading on each factor), we examined a model with two correlated factors, as well as a bifactor model that had a “general” factor for MDD and GAD that would capture the shared aspects

of MDD and GAD, and separate independent GAD-specific and MDD-specific factors that would capture their unique aspects. The two models are presented in Table 3. Consistent with the results of the EFA, the simple structure 2-factor model found that all MDD criteria had loadings above 0.9 on the MDD factor, and all GAD criteria had loadings above 0.9 on the GAD factor. The interfactor correlation was 0.66. The bifactor model results showed high loadings for all criteria on the general factor. The GAD-specific in the bifactor model also had large loadings ranging between 0.74 and 0.77, whereas the MDD-specific factor had low loadings ranging between 0.003 and 0.242. Both models showed good fit with CFI=1.00, TLI =1.00 and RMSEA <.02, but the bifactor model exhibited better fit in terms of having smaller chi-square ratio (chi-square/d.f = 429.9/75 = 5.7 bifactor, 572.4/89 = 6.4 simple structure 2-factor) and was thus preferred.

The MIMIC model, including the effects of sociodemographic covariates on the general factor and specific anxiety and depression factors also provided a good fit to the data (χ^2=1021.5, d.f.=219, CFI=1.00, TLI=1.00, RMSEA=0.009). Older age, male gender, being employed, African American and Hispanic had negative coefficients on the general GAD-MDD factor, whereas being US-born, previously married or reporting high education had positive coefficients. Having been previously married had a positive coefficient on the “Anxiety” factor, whereas old age had a positive coefficient on the “Depression” factor. Overall, the effects were small and <10% of the variability was explained in any of the factors by the covariates (Table 4).

Out of 150 different direct effects of covariate on specific GAD-MDD indicators tested for potential non-invariance there were only 7 that were found significant after Bonferroni correction and all had effect sizes of 0.13 or smaller. Specifically, male sex had a negative effect on muscle tension; older age had a positive effect on depressed mood; male sex had negative effect and black race a positive effect on weight loss; male sex had a positive effect and having higher than high school education had a negative effect on psychomotor agitation or retardation; and black race had a negative effect on fatigue. Given the lack of consistency and small sizes of the direct effects found between covariates and the individual criteria, we conclude there was a high degree of invariance of the factor structure across all the demographic covariates (Table 5).

DISCUSSION

In a large, nationally representative sample of US adults, GAD was associated with higher rates of comorbidity than MDD. Furthermore, the latent structure of GAD and MDD was best represented by a bifactor model with a general factor underlying criteria for both disorders, and a specific factor underlying the GAD criteria. The specific factor for MDD did not have significant loadings, indicating that the structure of the MDD criteria was fully explained by the general factor.

GAD and GAD-MDD had higher rates of comorbidity with internalizing disorders (mood and anxiety disorders) than MDD. In addition, GAD had higher rates of comorbidity than either GAD-MDD or MDD for most externalizing disorders (ADHD, pathological gambling and all substance use disorders except alcohol abuse). The odds of having a personality disorder were highest for individuals with GAD, intermediate for those with GAD-MDD and lowest for those with MDD. Our findings suggest that compared to GAD alone, MDD alone does not further increase the risk of internalizing disorders and may be associated with decreased risk of externalizing and personality disorders.

The results of our factor analyses indicate that the differences between GAD and MDD also extend to their latent structure. The existence of a general factor with high loadings on MDD

and GAD criteria is consistent with studies that have found that MDD and GAD lie on a common dimension of internalizing disorders, as well as with findings of common genetic liability,(13-15) overlapping risk factors,(37) and high rates of comorbidity between GAD and MDD.(7, 9) The existence of a GAD-specific factor and the lack of an MDD-specific factor and may help explain why individuals with GAD have higher rates of comorbidity with other psychiatric disorders than individuals with MDD, as found in this and other studies.(38, 39) Individuals with GAD and MDD would all be at risk for the comorbidity associated with the general factor, but only individuals with GAD would be at the additional risk conferred by the GAD-specific factor. Our results are also consistent with findings from prospective studies indicating that individuals with GAD are more likely to develop MDD than individuals with MDD are to develop GAD.(40, 41) (42) Individuals with GAD, with high scores on the general factor, would be at increased liability for MDD, whereas those individuals with MDD with low scores on the GAD-specific factor, would not be at higher risk for GAD.

The MIMIC model indicated that although some covariates were correlated with the factors, the proportion of variance explained by those covariates was small. These results provide general support for the validity of these constructs across a broad range of sociodemographic characteristics, an issue of potential interest for ongoing and future revisions of the current psychiatric nosology.(43) An interesting finding was that although small, age had a significant negative effect on the general factor and a positive effect on the depression factor. These results are consistent with our findings that individuals older than 30 were more likely to have GAD-MDD than MDD only, and with a larger proportion of individuals developing MDD earlier than GAD.

Combined with prior research evidence, our findings have etiological and clinical implications. From the etiological point of view, the existence of two disorders with similar genetic basis but with different symptom structure, comorbidity patterns, risk factors,(10, 12) neurobiology(44, 45) and clinical manifestations may constitute a large natural epigenetic experiment. Twin studies with prospective information about the onset and course of MDD and GAD may provide unique opportunities to examine how the interplay of identical genetic predisposition with different environmental risk factors can lead to the development of two distinct nosological entities.

From the clinical point of view, the finding that MDD and GAD are related but different disorders would suggest that some, but not all treatments that are efficacious for GAD may be efficacious for MDD. Consistent with this prediction, while SSRIs have demonstrated efficacy for both MDD and GAD,(46) benzodiazepines are efficacious for the treatment of GAD, but not MDD.(47) Benzodiazepines may be efficacious for the symptoms of the GAD through their effects on the specific factor, rather than on the general factor. As our understanding of the neurobiology and risk factors for GAD and MDD continue to advance, it may be possible to develop treatment and preventive interventions targeted towards the common and specific domains of these disorders.

Our study had several limitations. First, consistent with DSM-IV diagnostic criteria, the AUDADIS-IV uses as gating questions for MDD the presence of depressed mood or anhedonia. Individuals who answered negatively to both gating questions, were not queried about other criteria for MDD. Similarly, the presence of anxious mood for more days than not for six months is used as a screening for GAD. Use of those gating questions could have artificially inflated the intercorrelations among criteria within each disorder. However, subanalyses of individuals who answered yes to the gating questions for both MDD and GAD showed similar results to the bifactor model in our main analyses, suggesting a general factor underlying both sets of criteria and specific factor just underlying the GAD criteria.

Second, we focused our analysis of the factor structure of MDD and GAD on cross-sectional data. To examine whether the factor structure changed over time, we repeated the analysis including individuals who met criteria for MDD or GAD (or both) in the Wave 2 data conducted three years later. We found that the bifactor model continued to provide the best-fitting model, suggesting that the bifactor structure is stable over time. Our results are in accord with several studies have documented differences in longitudinal course of GAD and MDD, also supporting the existence of two different disorders.(11, 42) Third, the present study did not examine treatment response, which has also been investigated in other studies. (48)

In conclusion, our findings suggest that in the general population GAD and MDD are closely related but different nosological entities, with distinct latent structures, clinical manifestations and patterns of comorbidity. This information may help inform future classifications of psychiatric disorders and guide etiological and treatment research.

Acknowledgments

The authors thank Dr. Kenneth S. Kendler for comments on previous versions of this manuscript.

Funding/Support: The National Epidemiologic Survey on Alcohol and Related Conditions was sponsored by the National Institute on Alcohol Abuse and Alcoholism with supplemental support from the National Institute on Drug Abuse. Work on this manuscript was supported by NIH grants DA019606, DA020783, DA023200, DA023973, and MH076051 (Dr. Blanco) and the New York State Psychiatric Institute (Dr. Blanco). The sponsors had no additional role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript. Dr. Wang had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Table 1

Lifetime psychiatric comorbidity and substance use of individuals with GAD, MDD and GAD-MDD.

	GAD		MDD		GAD + MDD		OR between GAD and (GAD +MDD)[a]			OR Between MDD and (GAD + MDD)[a]			OR Between GAD and MDD[a]		
	n=947		n=4,885		n=810										
Disorder	**%**	**SE**	**%**	**SE**	**%**	**SE**	**OR**	**95% CI**		**0R**	**95% CI**		**OR**	**95% CI**	
Any Psychiatric Disorder	90.19	1.17	75.49	0.78	88.47	1.57	1.20	0.82	1.75	**0.40**	**0.29**	**0.56**	**2.98**	**2.28**	**3.91**
Any Axis I Disorder	86.11	1.30	71.02	0.87	83.79	1.70	1.20	0.87	1.65	**0.47**	**0.36**	**0.63**	**2.53**	**2.02**	**3.18**
Any Substance Use Disorder	63.46	1.92	53.59	0.94	53.69	2.19	**1.50**	**1.18**	**1.90**	1.00	0.82	1.21	**1.50**	**1.26**	**1.80**
Alcohol Use Disorder	48.91	2.12	40.01	0.96	42.18	2.13	**1.31**	**1.04**	**1.65**	0.91	0.76	1.10	**1.44**	**1.20**	**1.72**
Alcohol Abuse Disorder	18.32	1.48	19.29	0.77	19.75	1.69	0.91	0.68	1.21	0.97	0.77	1.22	0.94	0.76	1.16
Alcohol Dependence Disorder	30.59	1.96	20.72	0.84	22.42	1.59	**1.53**	**1.18**	**1.97**	0.90	0.74	1.10	**1.69**	**1.39**	**2.04**
Drug Use Disorder	29.61	1.91	17.48	0.68	15.73	1.52	**2.25**	**1.73**	**2.93**	1.13	0.90	1.44	**1.99**	**1.65**	**2.39**
Drug Abuse Disorder	22.51	1.59	14.74	0.67	12.59	1.24	**2.02**	**1.52**	**2.67**	1.20	0.94	1.54	**1.68**	**1.37**	**2.06**
Drug Dependence Disorder	15.04	1.56	5.23	0.38	6.73	1.18	**2.45**	**1.68**	**3.59**	0.77	0.51	1.14	**3.20**	**2.43**	**4.23**
Nicotine Dependence	39.65	2.15	29.59	0.95	32.29	1.92	**1.38**	**1.09**	**1.74**	0.88	0.71	1.09	**1.56**	**1.28**	**1.91**
Any Mood Disorder	52.07	2.05	16.21	0.71	35.40	2.02	**1.98**	**1.57**	**2.51**	**0.35**	**0.29**	**0.44**	**5.62**	**4.66**	**6.77**
Bipolar I	38.32	2.01	0.00	0.00	0.00	0.00									
Bipolar II	9.68	1.27	0.00	0.00	0.00	0.00									
Dysthymia	4.08	0.74	16.21	0.71	35.40	2.02	**0.08**	**0.05**	**0.12**	**0.35**	**0.29**	**0.44**	**0.22**	**0.15**	**0.32**
Any Anxiety Disorder	56.35	2.05	31.03	0.91	58.49	2.19	0.92	0.72	1.16	**0.32**	**0.26**	**0.39**	**2.87**	**2.39**	**3.44**
Panic Disorder	28.33	1.89	11.56	0.61	26.89	1.76	1.07	0.83	1.39	**0.36**	**0.29**	**0.44**	**3.02**	**2.42**	**3.78**
Social Anxiety Disorder	29.74	1.76	10.49	0.58	26.04	2.10	1.20	0.92	1.58	**0.33**	**0.26**	**0.43**	**3.61**	**2.95**	**4.42**
Specific Phobia	35.76	1.96	17.72	0.71	35.83	2.11	1.00	0.78	1.28	**0.39**	**0.32**	**0.47**	**2.58**	**2.13**	**3.14**
Conduct Disorder	1.60	0.45	1.71	0.26	1.55	0.61	1.03	0.38	2.81	1.10	0.47	2.57	0.93	0.48	1.80
Pathological Gambling	1.72	0.55	0.68	0.14	0.52	0.19	**3.34**	**1.21**	**9.25**	1.31	0.55	3.09	**2.55**	**1.23**	**5.30**
Any Psychotic Disorder	1.60	0.40	0.59	0.13	1.63	0.50	0.98	0.44	2.20	**0.36**	**0.16**	**0.77**	**2.77**	**1.31**	**5.85**
Any Personality Disorder	57.65	1.99	28.00	0.83	46.42	2.25	**1.57**	**1.26**	**1.96**	**0.45**	**0.37**	**0.55**	**3.50**	**2.93**	**4.18**
Schizotypical	17.70	1.44	6.37	0.49	13.58	1.57	1.37	0.99	1.89	**0.43**	**0.31**	**0.60**	**3.16**	**2.44**	**4.10**
Schizoid	30.99	1.89	8.61	0.51	17.66	1.65	**2.09**	**1.55**	**2.82**	**0.44**	**0.34**	**0.58**	**4.76**	**3.82**	**5.95**
Paranoid	11.19	1.19	3.29	0.33	5.42	1.19	**2.20**	**1.38**	**3.51**	**0.59**	**0.38**	**0.92**	**3.70**	**2.78**	**4.93**

	GAD		MDD		GAD + MDD		OR between GAD and (GAD +MDD)[a]			OR Between MDD and (GAD + MDD)[a]			OR Between GAD and MDD[a]		
	n=947		n=4,885		n=810										
Disorder	**%**	**SE**	**%**	**SE**	**%**	**SE**	**OR**	**95% CI**		**0R**	**95% CI**		**OR**	**95% CI**	
Antisocial	13.31	1.37	5.90	0.43	8.69	1.15	**1.61**	**1.12**	**2.33**	**0.66**	**0.47**	**0.92**	**2.45**	**1.86**	**3.23**
Obsessive-compulsive	32.73	1.95	14.82	0.69	25.33	2.03	**1.43**	**1.11**	**1.85**	**0.51**	**0.41**	**0.65**	**2.80**	**2.28**	**3.43**
Avoidant	20.59	1.80	5.35	0.38	13.25	1.49	**1.70**	**1.24**	**2.33**	**0.37**	**0.27**	**0.50**	**4.58**	**3.56**	**5.90**
Dependant	5.71	0.98	0.85	0.17	3.21	0.80	**1.82**	**1.09**	**3.04**	**0.26**	**0.13**	**0.50**	**7.09**	**4.12**	**12.20**

Significant results are bolded

[a]Reference group.

Table 2

Exploratory factor analysis of one-, two- and three-factor models

		1-Factor Model	2-Factor Model		3-Factor Model		
Item		**Factor 1**	**Factor1**	**Factor2**	**Factor1**	**Factor2**	**Factor3**
A1	*Restlessness or feeling keyed up or on edge*	0.983	1.000	−0.013	1.001	−0.015	−0.016
A2	*Being easily fatigued*	0.958	0.976	0.004	0.976	0.006	0.108
A3	*Difficulty concentrating or mind going blank*	0.983	0.989	0.003	0.989	0.002	0.011
A4	*Irritability*	0.967	0.971	0.019	0.973	0.016	−0.036
A5	*Muscle tension*	0.917	0.961	−0.007	0.959	−0.004	0.088
A6	*Sleep disturbance*	0.952	0.974	0.000	0.975	−0.001	−0.016
D1	*Depressed mood most of the day, nearly every day*	0.978	−0.029	1.001	−0.030	1.001	−0.010
D2	*Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every*	0.955	−0.013	0.971	−0.013	0.971	−0.049
D3	*Significant weight loss when not dieting or weight gain*	0.925	−0.022	0.954	−0.023	0.955	0.063
D4	*Insomnia or hypersomnia nearly every day*	0.979	0.000	0.981	−0.002	0.985	0.100
D5	*Psychomotor agitation or retardation nearly every day*	0.908	0.027	0.908	0.026	0.909	0.047
D6	*Fatigue or loss of energy nearly every day*	0.947	0.010	0.949	0.009	0.951	0.102
D7	*Feelings of worthlessness or excessive or inappropriate guilt nearly every*	0.929	0.013	0.937	0.014	0.934	−0.132
D8	*Diminished ability to think or concentrate, or indecisiveness, nearly every day*	0.965	0.026	0.957	0.026	0.957	−0.023
D9	*Recurrent thoughts of death*	0.858	−0.004	0.892	−0.003	0.889	−0.203
	Interfactor Correlations	1.000	1.000		1.000		
			0.637	1.000	0.637	1.000	
					−0.020	−0.015	1.000

Table 3

Confirmatory factor analysis (for the whole dataset, n=43093).

Item		Two Correlated Factors Model		Bifactor Model		
		Factor 1	**Factor 2**	**General Factor**	**Specific Factor 1**	**Specific Factor 2**
A1	*Restlessness or feeling keyed up or on edge*	0.991	0.000	0.624	0.770	0.000
A2	*Being easily fatigued*	0.978	0.000	0.626	0.751	0.000
A3	*Difficulty concentrating or mind going blank*	0.991	0.000	0.634	0.762	0.000
A4	*Irritability*	0.983	0.000	0.638	0.748	0.000
A5	*Muscle tension*	0.956	0.000	0.606	0.740	0.000
A6	*Sleep disturbance*	0.974	0.000	0.621	0.750	0.000
D1	*Depressed mood most of the day, nearly every day*	0.000	0.981	0.981	0.000	0.026
D2	*Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every*	0.000	0.963	0.962	0.000	0.064
D3	*Significant weight loss when not dieting or weight gain*	0.000	0.939	0.940	0.000	−0.048
D4	*Insomnia or hypersomnia nearly every day*	0.000	0.981	0.983	0.000	−0.084
D5	*Psychomotor agitation or retardation nearly every day*	0.000	0.926	0.926	0.000	−0.045
D6	*Fatigue or loss of energy nearly every day*	0.000	0.956	0.957	0.000	−0.083
D7	*Feelings of worthlessness or excessive or inappropriate guilt nearly every*	0.000	0.945	0.943	0.000	0.136
D8	*Diminished ability to think or concentrate, or indecisiveness, nearly every day*	0.000	0.974	0.974	0.000	0.032
D9	*Recurrent thoughts of death*	0.000	0.888	0.887	0.000	0.242
Fit Statistics						
Chi-square, d.f.		572.4 (89), p<.001		429.9 (75), p<.001		
CFI		1.00		1.00		
TLI		1.00		1.00		
RMSEA		0.011		0.010		

CFI: comparative fit index; TLI: Tucker Lewis Index; RMSEA : root mean square error approximation.

Table 4

MIMIC model: Effect of covariates on the general and specific factors[a]

Sociodemographic covariate	General Factor			Specific Factor 1 (Anxiety)			Specific Factor 2 (Depression)		
	Estimate	S.E.	P-value	Estimate	S.E.	P-value	Estimate	S.E.	P-value
Age (in years)	**−0.160**	**0.001**	**0.000**	0.023	0.001	0.227	**0.140**	**0.001**	**0.000**
Male vs Female	**−0.322**	**0.031**	**0.000**	−0.079	0.040	0.048	**−0.534**	**0.054**	**0.000**
Black vs White	**−0.283**	**0.026**	**0.000**	0.030	0.040	0.453	0.130	0.057	0.021
Hispanic vs White	**−0.176**	**0.030**	**0.000**	−0.049	0.047	0.299	−0.019	0.074	0.800
U.S. Born vs Foreign Born	**0.290**	**0.030**	**0.000**	0.044	0.049	0.368	**−0.258**	**0.085**	**0.002**
Less than High School education vs High School	0.066	0.026	0.012	−0.023	0.045	0.610	−0.027	0.069	0.693
College vs High School	**0.070**	**0.018**	**0.000**	−0.061	0.032	0.056	0.064	0.052	0.220
Previously married vs currently married	**0.363**	**0.018**	**0.000**	**0.084**	**0.031**	**0.007**	0.035	0.057	0.546
Never married vs currently married	−0.017	0.021	0.402	**−0.127**	**0.037**	**0.001**	−0.096	0.061	0.115
Employed vs unemployed	**−0.103**	**0.018**	**0.000**	**−0.095**	**0.033**	**0.004**	0.072	0.045	0.109
R^2	.080			.016			0.099		

[a]Estimates represent standard deviation change in the latent factor across comparison groups of predictor, except for age which represents the effect of a one year increase. b. p-values<.01 are bolded.

Table 5

MIMIC Model: Significant direct effects of sociodemographic covariates on diagnostic criteria

	Sociodemographic covariate Estimate (S.E.)			
Item	**Older age**	**Male sex**	**Black race**	**College Education**
A5 Muscle tension		−0.106 (0.023)		
D1 Depressed mood	0.062 (<0.001)			
D3 Significant weight loss		−0.099 (0.013)	0.099 (0.014)	
D5 Psychomotor agitation or retardation		0.125 (0.013)		0.082 (0.015)
D6 Fatigue or loss of energy			−0.111(0.018)	