Dissociable Dimensions of Multiple Sclerosis-Related Depression

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Introduction

Multiple sclerosis (MS) is an autoimmune neurodegenerative disease that causes inflammation and demyelination in the brain, and it is associated with **increased risk of depression and suicide**; 20-40% of individuals with MS experience depression, a rate 2–4 times greater than the general population.[1,2] As many as **15% of MS-related deaths may be due to suicide**.[1,2]

Preliminary literature suggests that sadness and anhedonic (i.e., loss of pleasure) **aspects of depression may dissociate in MS**.[3] Based on this, **we hypothesized that depression would dissociate into two dimensions**, one characterized by sadness and the other characterized by anhedonia. We predicted that the **anhedonic phenotype would be more strongly related to suicidal ideation**.[4]

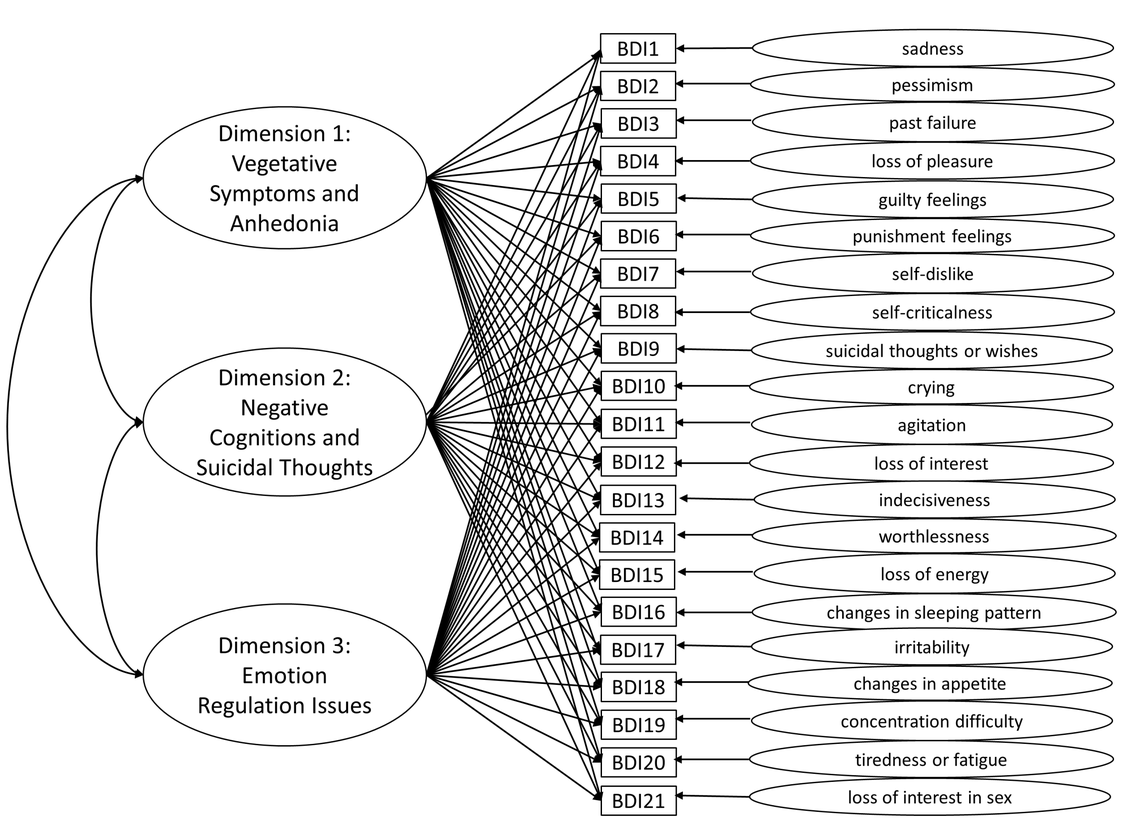

Figure 1. Rotated Principal Components Analysis of the Beck Depression Inventory II in a Sample of Adults with MS.

Method

This study used an existing dataset from several studies of individuals with MS, recruited from area MS clinics and the general community. Participants included **117 adults with MS** [Mean (Standard Deviation): age = 47.48 (10.21) years; 78.9% female; 97.3% White non-Hispanic; disease duration = 7.86 (8.30) years; Expanded Disability Status Scale: Median = 3, Range = 0 to 8.0]. Depression was measured using the Beck Depression Inventory-II (BDI-II).[4] Patients' level of **mood symptoms ranged from non-depressed to severely depressed** [10.26 (9.35)].

Results

The principal components analysis (PCA) was determined appropriate for the BDI-II data; Kaiser-Meyer-Olkin index = .91, Bartlett's test p < .001. Then, the analysis was run with PCA extraction and a Varimax with Kaiser Normalization rotation, which revealed **three dimensions** (eigenvalue > 1). One dominant dimension (eigenvalue 4.80) accounted for 22.88% of variation, with two additional dimensions (eigenvalues 4.72 and 2.88 respectively) that accounted for 22.46% and 13.72% of variation, respectively. Overall, the PCA accounted for 59% of variance in total. Dimension 1 consisted of eight items characterized by **vegetative symptoms and anhedonia**. Dimension 2 included eight items related to **negative cognitions, including pessimism, loss of hope, and suicidal thoughts**. Dimension 3 was comprised of five items pertaining to **sadness and emotion regulation issues**.

Discussion

This study builds on work previously suggesting a dissociation of MS-related depression symptoms, strengthening and expanding that finding to suggest that **MS-related depression dissociates into three dimensions**. The three dimensions we found consisted of vegetative symptoms and anhedonia (dimension 1), negative cognitions and suicidal thoughts (dimension 2), and sadness and emotion regulation issues (dimension 3).

Identifying and treating depression may be the most important factor in preventing suicide in patients with MS,[2] and this study suggests that those who are most affected by negative cognitions such as pessimism and hopelessness, worthlessness, and self-dislike are also at the most risk of suicide, so these cognitions should be screened for in MS patients. The etiology of depression in MS is complex and poorly understood,[1,2] perhaps because it has traditionally been conceptualized as homogenous.[1] This study suggests that similar to recent conceptualizations of depression without MS, depression in MS can be better understood also as a **disorder characterized by multiple distinct phenotypes that can present differently from individual to individual**. These findings also suggest the importance of ***negative cognitions*** **in relation to suicidal thoughts**, at least in this sample of MS patients.

Future studies should include non-MS depressed individuals as a comparison. Additionally, this sample had relatively low depression levels, so a replication of this study in individuals with more severe MS-related depression would be beneficial to assess if these dimensions exist across the spectrum of MS-related depression.

References

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