



Stability of Both Cognitive-Affective and Somatic Symptoms in Multiple Sclerosis



Botvinick, J.A.¹, Portnoy, J.¹, Hoffnung, G.¹, Glukhovsky, L.¹, and Foley, F. W.^{1,2}

¹Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, NY, United States ²Holy Name Medical Center, MS Center, Teaneck, NJ, United States

Abstract

Background: Previous research has shown that there is a difference in the stability of neurovegetative, evaluative, and mood symptoms in multiple sclerosis (MS). There are many reasons why mood might be more variable including differences in coping style and benefit finding. The Beck Depression Inventory – II (BDI-II) measures two different domains of depressive symptoms: somatic and cognitive-affective. There has not been research which has examined the longitudinal course of depression using these domains in the BDI-II.

Objective: To evaluate the stability of the domains of somatic and cognitive-affective symptoms of depression in MS.

Methods: Participants ($N = 349$) were recruited from an outpatient clinic at a large medical center in New Jersey. Longitudinal data were collected as part of an ongoing research project. Participants completed a BDI-II and demographic questionnaire. Prior research was used to divide total BDI-II scores into somatic and cognitive-affective scores. Linear regression was used to examine the relationship between time and change in somatic and cognitive-affective BDI-II scores. Linear regression was also used to relate somatic and cognitive-affective BDI-II scores at baseline and follow-up.

Results: Time did not significantly predict change in either cognitive-affective ($\beta = -.027, p = .613$) or somatic scores ($\beta = .018, p = .735$). Initial cognitive-affective scores predicted cognitive-affective scores at follow-up ($\beta = .604, p < .001$). Initial somatic scores predicted somatic scores at follow-up ($\beta = .533, p < .001$).

Conclusion: Depression appears stable across both somatic and cognitive-affective domains over time.

Background

• Previous research has shown differences in the stability of neurovegetative, evaluative, and mood symptoms in MS, with greater variability in mood symptoms over time.¹

• This suggests that some aspects of depression may fluctuate over time, which may account for the variability in the literature. This study used the BDI-II, which can be divided into two domains of depressive symptoms: somatic and cognitive-affective.^{2,4}

• It is important to examine individual domains in depression measures due to the overlap of MS symptoms and clinical depression.

• No previous study has examined the longitudinal course of depression using these domains in the BDI-II.

Methods

Sample: Participants ($N=349$) were recruited from an outpatient clinic, the MS Center at Holy Name Hospital in Teaneck, NJ. They all had a neurologist-confirmed diagnosis of MS. Individuals were allowed to participate each time they visited the clinic.

Materials: *Beck Depression Inventory-II (BDI-II)*: A 21-item self-report inventory that uses a 4-point (0-3) Likert scale to assess severity of depression. Total scores range from 0 (no symptoms) to 63 (severe symptoms). The BDI-II has been broken into two factors: somatic and cognitive-affective. The somatic factor examines tiredness or fatigue, changes in appetite, changes in sleeping pattern, loss of energy, and concentration difficulty. The cognitive-affective factor includes sadness, crying, past failure, loss of interest in sex, self-criticism, self-dislike, pessimism, loss of pleasure, loss of interest, feelings of guilt, punishment feelings, worthlessness, indecisiveness, suicidal thoughts or wishes, irritability, and agitation.^{2,4}

Statistics: Variables were calculated for each participant's cognitive-affective score by summing responses on the BDI-II for questions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 17, and 21. Each participant's somatic score was calculated by summing questions 15, 16, 18, 19, and 20.^{2,4} Changes in cognitive-affective and somatic factors were calculated by subtracting scores at the participant's final time point from scores at the first time point (Time 2 – Time 1). The primary analysis for this study is a linear regression used to examine the relationship between time and change in somatic and cognitive-affective BDI-II scores at baseline and follow-up

Results

Table 1. Somatic and Cognitive-Affective Factors of Depression Stability Over Time

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	-								
2. Time	.07	-							
3. Somatic baseline	.05	-.01	-						
4. Somatic follow-up	.07	-.03	.53**	-					
5. Somatic Change	.02	-.02	-.53**	.44**	-				
6. Cognitive - Affective baseline	-.01	-.01	.70**	.46**	-.29**	-			
7. Cognitive-Affective follow-up	-.02	-.05	.40**	.70**	.27**	.60**	-		
8. Cognitive-Affective Change	-.02	-.03	-.35**	.27**	.63**	-.45**	.44**	-	
9. Gender [~]	.11*	-.03	-.05	.05	.08	-.01	.01	.01	-

Spearman's Rho correlations, * $p < .05$ (two-tailed), ** $p < .01$ (two-tailed)

Conclusions

- Time did not significantly predict change in either cognitive-affective or somatic scores.
- Initial cognitive-affective scores predicted cognitive-affective scores at follow-up .
- Initial somatic scores predicted somatic scores at follow-up.
- This suggests that even when controlling for symptoms that overlap with MS, depression is still stable over time.
- These results differ from the literature, which suggests there may be some variability in depressive symptoms if broken down by factor. However, previous literature looked at neurovegetative, evaluative, and mood symptoms. It is possible that the two factors of the BDI-II do not discriminate sufficiently to separate physical symptoms of MS from other depressive symptoms not linked to physical disease.

References

1. Arnett, P.A. & Randolph, J.J. (2006). Longitudinal course of depression symptoms in multiple sclerosis. *J Neurol Neurosurg Psychiatry*, 77(5), 606-10.
2. Storch, EA., Robert, J.W., and Roth, DA. (2004). Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory-Second Edition in a sample of college students. *Depress Anxiety*, 19(3), 187-9.
3. Wang, Yuan-Pang, & Gorenstein, Clarice. (2013). Psychometric properties of the Beck Depression Inventory-II: a comprehensive review. *Revista Brasileira de Psiquiatria*, 35(4), 416-431.
4. Whisman, MA., Perez, JE., and Ramel, W. (2000). Factor structure of the Beck Depression Inventory-Second Edition (BDI-II) in a student sample. *J Clin Psychol*, 56(4), 545-51.

Table 2. Demographics and Data Distribution

Variable	N	Range	Mean (SD)
<i>Gender</i>			
Female	252		72.2
Male	97		27.8
<i>Variable</i>			
Age	349	21-71	44.07 (9.17)
<i>BDI-II Somatic</i>			
Somatic Initial	349	0-14	5.07 (3.20)
Somatic Follow-up	349	0-14	4.75 (3.00)
<i>BDI-II Cognitive-Affective</i>			
Cognitive-Affective Initial	349	0-36	9.82 (8.11)
Cognitive-Affective Follow-up	349	0-40	8.96 (8.05)
Time (in months)	349	0.92-71.33	29.57 (17.43)