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The accuracy of the Brief Resilience Scale for measuring resilience to depression and anxiety in patients with Multiple Sclerosis

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Background:

Multiple Sclerosis (MS) causes a wide range of neuropsychological symptoms including depression. Resilience to depression in individuals with chronic diseases is of special research interest in positive clinical psychology

There is no gold standard to measure resilience.

Valid and reliable instruments for resilience in MS are needed to gain more insight into protective factors and for health care professionals who focus on the ability of the patient to 'bounce back' from the negative influence of disabling conditions.

Aims

- (1) to determine accuracy of the Brief Resilience Scale (BRS) in recognising MS patients with a high level of resilience to depression or anxiety
- (2) to assess BRS construct validity against the measures of depression & anxiety, fatigue and disability.

Methods

Design: Cross-sectional study

Participants: 313 individuals with Multiple Sclerosis (age M, 26.7 years [SD, 10.9]; N male=53, 17%)

Instruments: Resilience to depression and anxiety was conceptualised as the absence of depressive and anxious features (the Hospital Anxiety Depression Scale, HADS, score < 8). Also, the Expanded Disability Status Scale (EDSS), and a visual analogue scale for fatigue were administered.

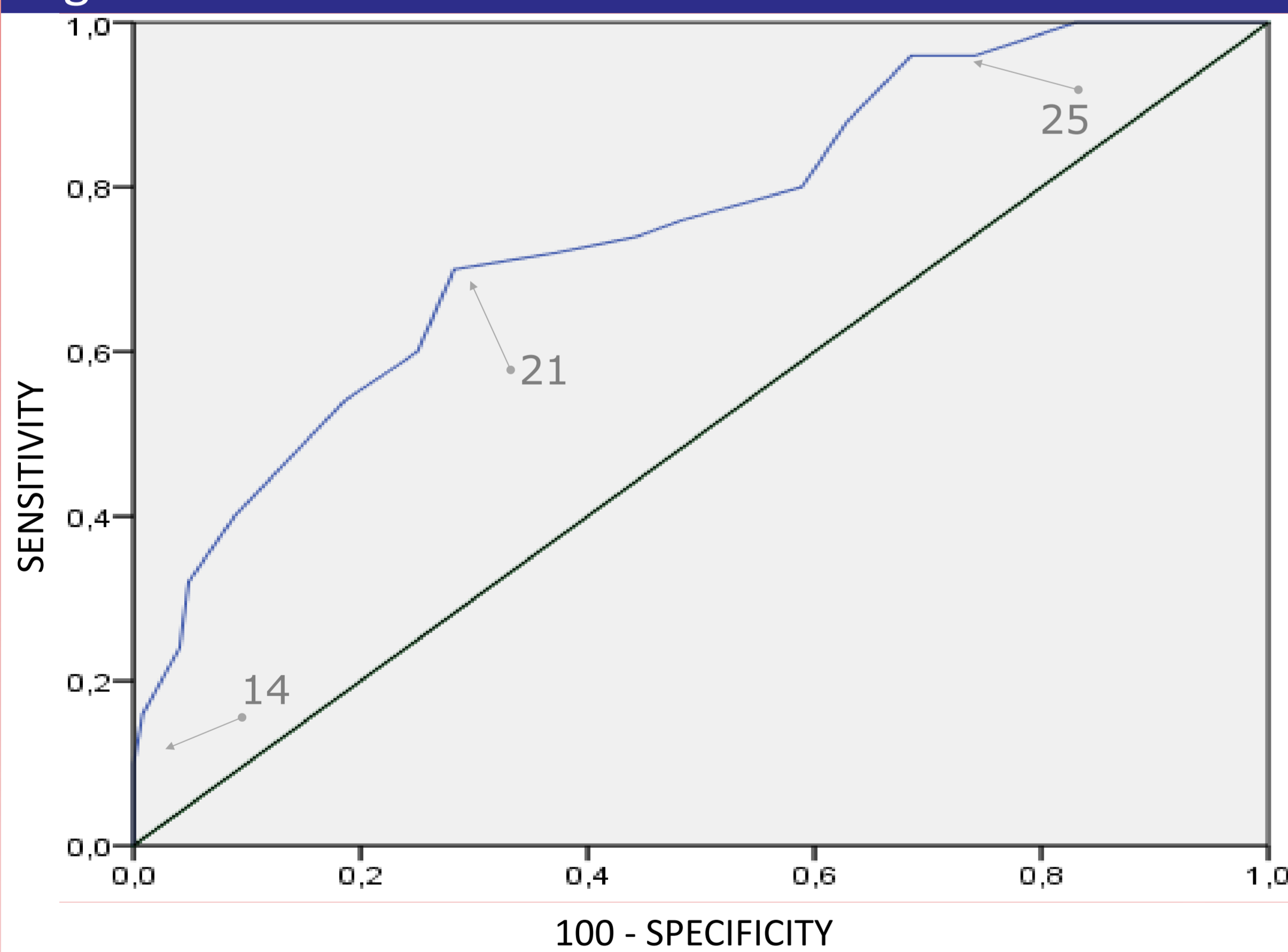
Analyses: The packages pROC, and BayesFactor were used in R statistical environment to assess accuracy (Area Under the Curve, AUC), cut-off scores, and to calculate Bayesian Factors (BF) and effect sizes (ES, z-scores were used).

Brief Resilience Scale (Smith et al., 2008)

Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

1. I tend to bounce back quickly after hard times
2. I have a hard time making it through stressful events.
3. It does not take me long to recover from a stressful event.
4. It is hard for me to snap back when something bad happens.
5. I usually come through difficult times with little trouble.
6. I tend to take a long time to get over set-backs in my life.

Figure. ROC Curve



RESULTS

Accuracy

Of 226 patients, 76 (37%) had a HADS score of <8.

The BRS showed acceptable accuracy for resilience (HADS<8; AUC, .77 [95% DeLong, .71 to .83]), and for recognizing those with the possible depression or anxiety (HADS>10; AUC, .79 [.75 to .85]).

Construct validity

Bayes factors[†] of <1 pointed to the absence of the association of the BRS with disability (BF=0.18) and age (BF=.20). There was extreme evidence for the relation of BRS with fatigue (ES, -.33 [95% CI, -.44 to -.22], BF=7.7E+6), and HADS (-.61 [-.70 to -.52], BF=1.2E+29). No evidence was found for the effect of gender on the BRS (BF=1.6).

Cut-off points

A cut-off score of >21 showed a maximum joint sensitivity (74) and specificity (73) for resilience. Scores lower than 14 showed the highest sensitivity (100) and highest negative predictive value (100) while scores higher than 25 showed high specificity numbers (>.95), high positive predictive values (76 to 79), and low negative likelihood ratio (0.10).

CONCLUSIONS

The BRS can be used for measuring resilience to depression and anxiety in MS patients. Scores lower than 14 may be used to rule out resilience while scores higher than 25 may be used to rule in resilience.

[†] We considered the degree of evidence in favor of a model in accordance to the Jeffreys' classification: BF of 1 for no evidence; 1 to 3 (resp. 1/3 to 1 in favor of null hypothesis) for anecdotal evidence; 3 to 10 (1/10 to 1/3) for substantial evidence; 10 to 30 (1/30 to 1/10) for strong evidence; 30 to 100 (1/100 to 1/30) for very strong evidence; and >100 (<1/100) for extreme evidence.

Score	SE	SP	NPV	PPV	SE + SP	SE + NPV	SP + PPV	LR+	LR-
>13	15	100	100	30	115	115	130	∞	0.9
>14	23	96	95	31	119	118	127	5.8	0.8
>15	29	95	94	32	124	123	127	5.8	0.7
>16	35	89	90	33	124	125	122	3.2	0.7
>17	40	83	87	33	123	127	116	2.4	0.7
>18	51	79	87	37	130	138	116	2.4	0.6
>19	58	78	88	40	136	146	118	2.6	0.5
>20	65	77	89	44	142	154	121	2.8	0.5
>21	74	73	88	50	147	162	123	2.7	0.4
>22	78	64	86	51	142	164	115	2.2	0.3
>23	84	57	84	55	141	168	112	2.0	0.3
>24	92	38	81	65	130	173	103	1.5	0.2
>25	96	31	79	74	127	175	105	1.4	0.1
>26	97	23	78	73	120	175	96	1.3	0.1
>27	98	19	77	75	117	175	94	1.2	0.1
>28	99	14	76	85	113	175	99	1.2	0.1

SE, sensitivity; SP, specificity; NPV, negative predictive value; PPV, positive predictive value;

LR+, likelihood ratio positive, LR-, likelihood ratio negative [LR+ = SE/(1 - SP); LR- = (1 - SE)/ SP]

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