

Coping strategies and adjustment to multiple sclerosis among recently diagnosed patients: the mediating role of sense of coherence

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Abstract

Objective: To examine the relationship between coping strategies (problem solving, emotional release, and avoidance) and adjustment (health-related quality of life, depression, and affective well-being) in a group of recently diagnosed multiple sclerosis patients (up to three years since diagnosis), and to explore the mediating role of sense of coherence between coping strategies and adjustment.

Design: Cross-sectional.

Setting: Multiple Sclerosis Clinic Centre.

Subjects: A total of 102 patients (61.8% women; age (years): $M = 35.8$, $SD = 11.9$; 95% with a relapsing–remitting form of multiple sclerosis; Expanded Disability Status Scale score, between 1 and 4).

Interventions: Not applicable.

Main measures: Coping with multiple sclerosis (problem solving, emotional release, and avoidance), sense of coherence, health-related quality of life (SF-12), depression (CES-D), and affective well-being (PANAS).

Results: Problem solving was linked to higher mental health ($\beta = 0.28$) and higher affective well-being ($\beta = 0.36$), emotional release was related to lower depression ($\beta = -0.22$); avoidance was associated to higher mental health ($\beta = 0.25$), higher affective well-being ($\beta = 0.24$), and lower depression ($\beta = -0.29$) (all betas were significant at $p < 0.05$). Sense of coherence mediated the relationship between emotional release and depression (Sobel z-value = -2.00 ; $p < 0.05$) and the relationship between avoidance and all the indicators of adjustment (mental health: Sobel z-value = 1.97 ; depression: Sobel z-value = -2.02 ; affective well-being: Sobel z-value = 2.05 ; $p < 0.05$).

Conclusions: Emotional and avoidant coping strategies seem to be adaptive among recently diagnosed multiple sclerosis patients. A mediating role between coping strategies and adjustment is played by sense of coherence.

Keywords

Multiple sclerosis, coping, sense of coherence, health-related quality of life, depression, affective well-being

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Introduction

The literature on psychological aspects of multiple sclerosis has increasingly focused on the role of coping strategies for the adjustment to the illness.¹ Studies generally stressed the adaptive role of problem-focused coping,²⁻⁴ whereas both emotional coping⁴⁻⁶ and avoidant coping^{1,4} were found to be related to poorer adjustment. Nonetheless, the recent literature has questioned the maladaptive role of emotional and avoidant coping. On the one hand, strategies focused on regulating and expressing emotions were related to better psychological adjustment.^{7,8} On the other hand, avoidance proved to be an adaptive strategy in the short time to ward off negative thoughts about the future progression of the disease and to avoid a depressive reaction.^{9,10} In particular, emotional coping and avoidance were found to be more adaptive than problem-solving to face uncontrollable stressors.^{8,11,12} Also, research on coping in the first years of the illness, a period recognized as particularly critical for adjustment,^{13,14} reported conflicting results. Some studies found that both avoidance and emotion-focused coping were predictive of depression and anxiety.¹⁵⁻¹⁷ Other studies found that avoidance was more adaptive than acceptance and problem-solving.¹⁸

Owing to conflicting literature, there is a need to deepen knowledge on the adaptive role of coping strategies among multiple sclerosis patients, especially in the first years after the diagnosis. In particular, research should investigate whether the relationship between coping strategies and adjustment to multiple sclerosis is mediated by other psychological variables. In the present study, we chose to focus on the possible mediating role of sense of coherence, which represents the individual's ability to respond to stressful situations through the ability to understand what it is happening (comprehensibility), the perception of having resources to deal with the situation (manageability), and the ability to find meaning in the situation (meaningfulness).¹⁹ Many characteristics of multiple sclerosis (unknown origin, unpredictable course, multiple symptoms, no resolutive cure available) represent a challenge for the individual's sense of coherence. The literature has shown that the recovery of sense

of coherence in one's life after the diagnosis of multiple sclerosis promotes patients' quality of life²⁰ and contrast depression.²¹ In a previous study, we found that sense of coherence was related to lower psychological difficulties and higher health-related quality of life among recently diagnosed multiple sclerosis patients.²²

The goals of the study were: (1) to examine the relationship between coping strategies (problem solving, emotional release, and avoidance) and adjustment (health-related quality of life, depression, and affective well-being) in a group of recently diagnosed multiple sclerosis patients (up to three years since the diagnosis); (2) to explore if sense of coherence mediates the relationship between coping strategies and adjustment. It was expected that problem-solving would be related to higher health-related quality of life, higher affective well-being, and lower depression.^{1,2,7} No hypothesis was formulated on the role of emotional release and avoidance on adjustment owing to the inconsistent literature.¹⁶⁻¹⁸ Finally, we hypothesized that sense of coherence would account for a portion of the effect of coping strategies on adjustment.

Method

Patients were recruited at a Multiple Sclerosis Clinic Centre (Regional Referral Multiple Sclerosis Centre (CRESM), Torino, Italy) as part of a larger study on psychological correlates of adjustment to multiple sclerosis in an early phase of the illness. The inclusion criteria were (1) diagnosis of multiple sclerosis in the past three years and (2) aged 18 years or older. The exclusion criteria were (1) severe psychiatric problems and (2) clinically significant cognitive deficits. Cognitive impairment was detected by the Brief Repeatable Battery of Neuropsychological Tests (BRB-N),²³ a sensitive measure of cognitive deficits in multiple sclerosis patients. Patients having two or more BRB-N test scores under cut-off threshold were considered to have clinical significant cognitive impairment²⁴ and thus were excluded from the study.

Clinical information (disease duration, multiple sclerosis type, absence of psychiatric problems,

and cognitive deficits) was retrieved from the patients' case sheets compiled by the neurologist during routine examinations.

Eligible participants were contacted by email or telephone by a psychologist of the research team and were informed about the aims of the study and confidentiality of the results. Patients who consented to participate met the psychologist before or after one of the routine scheduled outpatient visits at the Clinic Centre. The psychologist gave them an anonymous self-report questionnaire and patients completed it alone in a quiet room. No support person was provided to assist patients with completing the questionnaire because they did not have disabilities requiring support. After completion, the questionnaire was immediately returned in a closed envelope to the psychologist. No benefit was given to participants for taking part in the research.

The questionnaire included socio-demographic variables (gender, age, marital status, education, and employment) and measures of the study variables (coping strategies, sense of coherence, health-related quality of life, depression, and affective well-being).

Coping strategies were evaluated using three subscales of the Coping with Multiple Sclerosis Scale (CMSS):²⁵ *Problem solving* (five items; e.g. I planned ahead what I needed to do), *Emotional release* (three items; e.g. I let my feelings out), and *Avoidance* (four items; e.g. I put it to the back of my mind). Patients were asked how often they used each of the coping strategies to deal with problems and difficulties linked to multiple sclerosis in the past month. Satisfactory reliability coefficients were found for each subscale (Cronbach alpha was 0.71 for problem solving, 0.69 for emotional release, and 0.59 for avoidance).

Sense of coherence was evaluated through the Sense of Coherence (SOC) scale.²⁶ The scale includes 11 items, and each one is evaluated on a 7-point scale from 1 to 7 with anchoring categories specific for each item (e.g. How often do you have the feeling that there's little meaning in the things you do in your daily life? very often/rarely or never; Doing the thing you do every day is: a source of deep pleasure and satisfaction/a source of

pain and boredom). Cronbach alpha in our study was 0.86.

Health-related quality of life was assessed using the SF-12 Health Survey,²⁷ which provides measures of physical health (PCS-12) and mental health (MCS-12); Cronbach alpha in our study was 0.81 for PCS-12 and 0.85 for MCS-12.

Depression was evaluated through the 10-item Centre for Epidemiologic Studies Depression Scale.²⁸ A cut-off score of 10 indicates the presence of significant depressive symptoms. Cronbach alpha in our study was 0.88.

Affective well-being was evaluated using the Positive Affect Negative Affect Schedule (PANAS).²⁹ The schedule comprises two mood scales: Positive affect (PA; 10 items) and Negative affect (NA; 10 items). The measure of affective well-being is calculated by subtracting the NA score from the PA score. Cronbach alpha in our study was 0.70. For all measures, the Cronbach alpha values found in our study were comparable with those reported in the respective validation studies.²⁵⁻²⁹

Statistical analyses were performed using SPSS version 22. Descriptive analyses of the study variables were performed. Relationships between variables were first examined through bivariate correlations. Then, to investigate the relationships between coping strategies and each outcome (health-related quality of life, depression, and affective well-being) and the mediating role of sense of coherence, the approach suggested by Baron and Kenny³⁰ was followed. In a first regression, sense of coherence (mediator) was regressed on coping strategies (predictors). Then, for each outcome, a hierarchical multiple regression was performed. In the first step, coping strategies (predictors) were included, and in the second step sense of coherence (mediator) was entered. A mediation effect occurs if the relation between predictors and outcome decreases, or if it is no longer significant, after entering into regression the mediating variable. The statistical significance of the mediation effect was examined using the Sobel *z*-test (two-tailed *p*). Analyses were performed on valid *N*. When at least 50% of the scale items were answered, the scale score was calculated by

substituting the missing values with the mean of items that were answered.³¹

The study was approved by the Hospital Ethics Committee, and the participants provided written informed consent prior to the study.

Results

A group of 102 patients, out of a total of 282 eligible patients, agreed to participate in this study. The majority of the participants were women, with a mean age of about 36 years, most had received their diagnosis within two years of the study, most had relapsing–remitting multiple sclerosis, and all had a score on the Expanded Disability Status Scale (EDSS)³² between 1 and 4. The characteristics of the study participants and the descriptive statistics of the study variables are presented in Table 1.

Correlations

Preliminary correlation analysis showed that gender, age, and disease duration were not correlated with other variables. Only physical health decreased as age increased. Higher use of all coping strategies was associated with a higher sense of coherence, higher affective well-being, and lower depression. Moreover, problem solving and avoidance were associated with higher mental health, whereas no relationship emerged between coping strategies and physical health. Higher sense of coherence was associated with higher mental health, higher affective well-being, and lower depression, whereas no relationship emerged with physical health (Table 2).

Relationships between coping strategies and sense of coherence

Since gender, age, and disease duration were not correlated with other measures they were not entered as controlling variables in regression analyses. Higher sense of coherence was associated with the use of both emotional release and avoidance coping strategies. The relationship between problem solving and sense of coherence was not

statistically significant. The model accounted for 19% of the variance (Table 3).

Mediating role of sense of coherence between coping strategies and adjustment

As for health-related quality of life, the regression model was only tested for mental health, because no correlations were found between physical health, sense of coherence, and coping strategies. Coping strategies entered in the first step explained 18% of the variance: higher mental health was related to the use of both problem solving and avoidance. After entering sense of coherence in the second step, a significant increase of R^2 was observed, and the final model accounted for 38% of the variance. Sense of coherence was related to higher mental health, whereas the effects of both problem solving and avoidance were no longer significant. The mediation effect of sense of coherence between coping strategies and mental health was significant for avoidance (Sobel z -value = 1.97, $p=0.04$), but not for problem solving (Sobel z -value = 1.87, $p=0.06$) (Table 4).

Concerning depression, coping strategies entered in the first step explained 20% of the variance: lower depression was related to the use of both emotional release and avoidance. After entering sense of coherence in the second step, a significant increase of R^2 was observed and the final model accounted for 44% of the variance. Sense of coherence was related to lower depression and the effects of both emotional release and avoidance were no longer significant. The mediation effect of sense of coherence between coping strategies and depression was significant for both emotional release (Sobel z -value = -2.00 , $p=0.04$) and avoidance (Sobel z -value = -2.02 , $p=0.04$) (Table 4).

As for affective well-being, coping strategies entered in the first step explained 30% of the variance: higher affective well-being was related to both problem solving and avoidance. After entering sense of coherence in the second step, the R^2 significantly increased, and the final model

Table 1. Characteristics of study participants ($N=102$) and descriptive statistics for the study variables.

	N (%)	M (SD)	Range
Gender, women	63 (61.8)	—	—
Age, years	—	35.8 (11.9)	18–65
Disease duration			
up to 1 year	57 (55.9)	—	—
2 years	26 (25.5)	—	—
3 years	19 (18.6)	—	—
M disease duration, years	—	1.6 (0.8)	0–3
Multiple sclerosis type			
Relapsing remitting (RR)	97 (95.1)	—	—
Primary progressive (PP)	1 (1.0)	—	—
Secondary progressive (SP)	4 (3.9)	—	—
Marital status			
Married/living with a partner	55 (53.9)	—	—
Separated/divorced/widowed	10 (9.8)	—	—
Single	37 (36.3)	—	—
Education			
At least 8 years (middle school diploma)	20 (19.6)	—	—
At least 13 years (high school diploma)	59 (57.9)	—	—
More than 13 years (degree)	23 (22.5)	—	—
Employment			
Employed	76 (74.5)	—	—
Unemployed/student/retired	26 (25.5)	—	—
Coping strategies ($N=97$)			
Problem solving	—	18.4 (3.8)	0–25
Emotional release	—	10.1 (2.6)	0–15
Avoidance	—	13.5 (3.5)	0–20
Sense of coherence ($N=102$)	—	56.9 (11.9)	11–77
Depression ($N=99$)	—	9.8 (6.3)	0–30
Score ≥ 10	48 (48.5)	—	—
Health-related quality of life ($N=96$)			
Physical health	—	46.6 (9.6)	0–100
Mental health	—	45.0 (11.5)	0–100
Affective well-being ($N=99$)	—	8.5 (12.3)	-40+50

accounted for 58% of the variance. Sense of coherence was related to higher affective well-being. Problem solving was still a significant predictor of higher affective well-being, although the relation decreased, whereas the effect of avoidance was no longer significant. The mediation effect of sense of coherence between coping strategies and affective well-being was significant for avoidance (Sobel z -value = 2.05, $p=0.03$), whereas it did not reach statistical significance for problem solving (Sobel z -value = 1.95, $p=0.05$) (Table 4). A synthesis of

interrelationships between variables is presented in Figure 1.

Discussion

Concerning the first aim of the study, problem solving was found to be related to higher mental health and higher affective well-being; emotional release was related to lower depression; avoidance was related to higher mental health, higher affective well-being, and lower depression. As for the second

Table 2. Bivariate correlations between the study variables.

	1 Gender	2	3	4	5	6	7	8	9	10
2 Age	-0.06	—								
3 Disease duration	-0.08	-0.18	—							
4 Problem-solving	0.01	0.14	0.01	—						
5 Emotional release	-0.06	0.02	-0.12	0.35**	—					
6 Avoidance	0.09	0.04	-0.04	0.46**	-0.01	—				
7 Physical health	0.18	-0.33**	0.10	-0.10	-0.04	0.19	—			
8 Mental health	0.03	-0.05	-0.10	0.40**	0.10	0.38**	0.01	—		
9 Depression	-0.09	0.11	0.02	-0.38**	-0.27**	-0.36**	-0.38**	-0.76**	—	
10 Affective well-being	0.05	-0.01	0.13	0.52**	0.25*	0.41**	0.15	0.71**	-0.76**	—
11 Sense of coherence	0.11	0.09	0.03	0.40**	0.28**	0.32**	0.17	0.61**	-0.66**	0.73**

N ranged from 91 to 97.

For gender, Spearman rho coefficients are presented.

*p < 0.05; **p < 0.01.

Table 3. Regression analysis predicting sense of coherence (N = 96).

	B	SE B	β
Problem solving	0.68	0.34	0.22
Emotional release	0.94	0.45	0.21*
Avoidance	0.74	0.35	0.22*
Adj R ²	0.19		
F (df)	8.66*** (3.93)		

*p < 0.05; ***p < 0.001.

Table 4. Hierarchical regression analysis predicting mental health (N = 90), depression (N = 94), and affective well-being (N = 96).

	Mental health				Depression				Affective well-being			
	B	SE B	Δ	Adj R ² (ΔR ²)	B	SE B	β	Adj R ² (ΔR ²)	B	SE B	β	Adj R ² (ΔR ²)
Step 1								0.20				0.30
Problem solving	0.84	0.34	0.28*	0.18	-0.29	0.18	-0.18	(0.20)	1.16	0.33	0.36**	(0.30)
Emotional release	0.06	0.46	0.02	(0.18)	-0.53	0.24	-0.22*		0.58	0.44	0.12	
Avoidance	0.83	0.37	0.25*		-0.52	0.19	-0.29**		0.86	0.35	0.24*	
Step 2								0.44				0.58
Problem solving	0.53	0.31	0.18	0.38	-0.08	0.16	-0.05	(0.22)	0.73	0.26	0.23**	(0.28)
Emotional release	-0.38	0.41	-0.09	(0.20)	-0.26	0.21	-0.11		-0.01	0.35	-0.01	
Avoidance	0.44	0.33	0.13		-0.31	0.16	-0.17		0.39	0.27	0.11	
Sense of coherence	0.49	0.09	0.50***		-0.29	0.04	-0.55***		0.63	0.07	0.60***	

Mental health: First step F (3, 87) = 7.74, p < 0.001; second step F (4, 86) = 14.79, p < 0.001.

Depression: First step F (3, 91) = 8.94, p < 0.001; second step F (4, 90) = 19.78, p < 0.001.

Affective well-being: First step F (3, 93) = 14.54, p < 0.001; second step F (4, 92) = 34.63, p < 0.001.

*p < 0.05; **p < 0.01; ***p < 0.001.

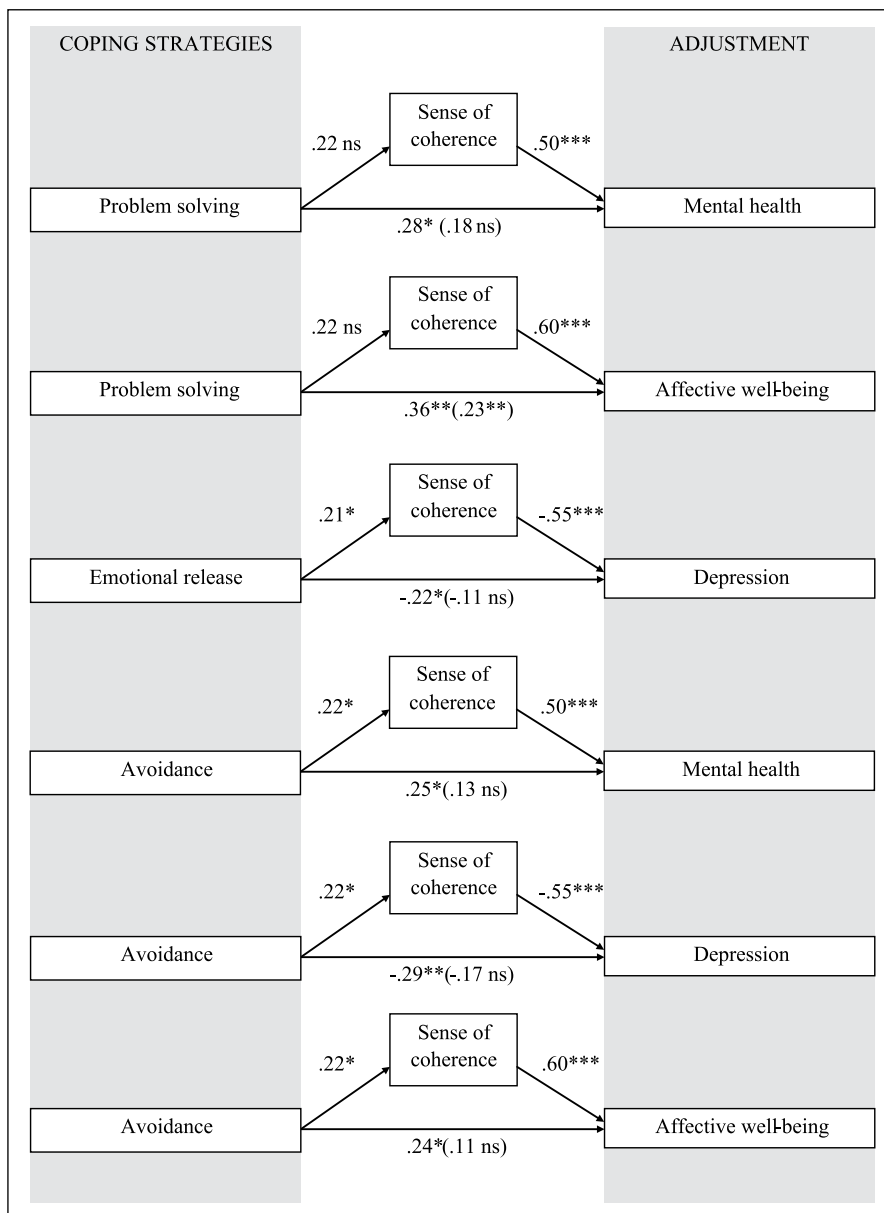


Figure 1. Standardized regression coefficients for the relationships between coping strategies (problem solving, emotional release, avoidance) and adjustment (mental health, depression, affective well-being) as mediated by sense of coherence. The standardized regression coefficient between coping and adjustment, controlling for sense of coherence, is in parentheses.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

aim, emotional release and avoidance, but not problem solving, were found to be positively associated with sense of coherence. Sense of coherence

mediated the relationship between emotional release and depression. Moreover, the relationships between avoidance and all indicators of adjustment

(mental health, depression, and affective well-being) were mediated by sense of coherence. Two key findings emerged from our study. First, not only problem solving, but also emotional release and avoidance, seem to be adaptive coping strategies in the first years since a diagnosis of multiple sclerosis. Second, sense of coherence is central for patients' adjustment, and it mediates the adaptive role of emotional and avoidant coping strategies.

Results on the adaptive role of problem solving are consistent with our hypothesis and in line with the literature,²⁻⁴ although we did not find an association between problem-solving strategies and depression. Conversely, emotional release seemed to be protective against depression, as also found in other studies on multiple sclerosis patients with long disease duration.^{7,8} In the first period after the diagnosis of multiple sclerosis, studies report strong emotional responses of anger, anxiety, and depression.^{16,33} Our results suggest that expressing one's emotions and talking to others about one's feelings seem to be a useful strategy to contrast depression among newly diagnosed patients. Results on the adaptive role of avoidance are consistent with research on patients with long disease duration¹⁰⁻¹² and in line with studies stressing its positive role also in the first period of the illness.¹⁸ In the first few years after the diagnosis, when patients are learning how to deal with their new condition, avoidance might be useful to cope with the uncertainty for the future and not to deal with hardly modifiable symptoms.

The hypothesis regarding the mediating role of sense of coherence between coping and adjustment was partly confirmed; in particular, the adaptive role of both emotional release and avoidance was mediated by sense of coherence. To our knowledge, the role of coping on sense of coherence has not yet been explored among multiple sclerosis patients. Nonetheless, some research investigated the relationships between coping and meaning in life (a psychological construct similar to the meaningfulness component of the sense of coherence) among women with breast cancer³⁴ and among patients with heart failure,³⁵ obtaining results similar to our study. On the one hand, a possible explanation of the positive relationships between

emotional release and sense of coherence could be that expressing emotions might help patients to clarify what they are experiencing and to manage their feelings. On the other hand, avoiding uncontrollable stressors might temporarily be useful to maintain a sense of control in one's life. Sense of coherence, in turn, might promote mental health and affective well-being and contrast depression, as stressed by studies on the role of sense of coherence for the adjustment to multiple sclerosis.^{20,21} A final remark concerns the lack of relationship we found between coping, sense of coherence, and the physical component of the health-related quality of life. This result is in line with research indicating that among multiple sclerosis patients, physical health is related to such factors as symptom severity, level of disability, and illness course, and therefore it is marginally influenced by psychological resources.^{11,12,22} Examination of these illness-related variables was beyond the scope of our study, and they should be considered in future research.

The study had several limitations. First, the group of participants was not representative of the population of recently diagnosed multiple sclerosis patients; thus, caution must be taken in generalizing results. Moreover, the study was characterized by a self-selection of participants, and this might represent a research bias. In most cases, patients declined study participation for lack of time, being pressed by family and work commitments they were fully engaged in. Indeed, recently diagnosed patients usually carry on with the same commitments as their healthy peers, because their physical symptoms are generally limited and not disabling. However, various degrees of psychological distress are reported among these patients.^{13,33} For this reason, we cannot rule out the possibility that their refusal was owing to the psychological mechanisms of avoidance and denial of the illness difficulties. Second, the majority of patients were affected by relapsing–remitting multiple sclerosis, with mild to moderate disability. The relapsing–remitting form is the most common and the majority of multiple sclerosis patients in the first years after the diagnosis report an EDSS score lower than 4, which represents a mild or moderate

disability.³⁶ Nonetheless, it would be interesting to extend future research to patients recently diagnosed with other forms of multiple sclerosis and experiencing higher disability. Third, the cross-sectional nature of the study prevents us from making causal inferences on the relationships between variables. Adaptive coping is likely to positively affect sense of coherence; however, sense of coherence might also promote adaptive coping strategies. A longitudinal design would allow researchers to better investigate causal and reciprocal relationships among these variables.

The results of the study have clinical implications for health professionals working with recently diagnosed multiple sclerosis patients. First, psychological interventions should promote the use of problem-solving strategies, helping patients to plan meaningful and realistic goals in different life contexts. Moreover, the patients' ability to understand and express their emotions should be promoted to foster adjustment to multiple sclerosis. Finally, it would be worth considering that avoidance could also be a useful strategy in the short term to cope with momentary difficulties or hardly modifiable symptoms. These findings should be taken into consideration, especially when implementing peer support groups, because some people might feel uncomfortable to talk about the illness and to share emotions with others in an early phase of the illness. Results on the mediating role of sense of coherence suggest that coping strategies must be developed in a broader context, in which rehabilitation professionals work with patients on the recovery of sense of coherence in life after the diagnosis of multiple sclerosis. The role of meaning-making on adjustment to multiple sclerosis has been demonstrated by reviews on the efficacy of cognitive-behavioural therapy,³⁷ and it has been also suggested by a previous study in evaluating a group-based cognitive-behavioural intervention targeting newly diagnosed patients,³⁸ and patients with longer disease duration.³⁹ The suggestion for clinical practitioners is to consider the first few years following a diagnosis of multiple sclerosis a good time to give patients the resources to understand and to deal with their new condition, and to recover a meaning in their life with the illness.

Clinical messages

- There is preliminary evidence that sense of coherence mediates the relationships between emotional release and avoidance and the psychological adjustment to multiple sclerosis among recently diagnosed patients.

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Conflict of interest

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