

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

**Young adults' adjustment to a recent diagnosis of multiple sclerosis: The role of identity satisfaction and self-efficacy**

**This is the author's manuscript**

*Original Citation:*

*Availability:*

This version is available <http://hdl.handle.net/2318/1704006> since 2019-06-05T18:47:44Z

*Published version:*

DOI:10.1016/j.dhjo.2018.07.008

*Terms of use:*

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

## **Young adults' adjustment to a recent diagnosis of multiple sclerosis: the role of identity satisfaction and self-efficacy**

### **ABSTRACT**

**Background.** Although multiple sclerosis (MS) is often diagnosed during young adulthood (18-30 years), there is a lack of knowledge on the psychological adjustment to the illness among recently diagnosed young adult patients.

**Objective/Hypothesis.** The aims of the study were to describe the adjustment to MS (depression, positive and negative affect) in a group of young adult patients and to investigate the role of identity satisfaction and self-efficacy in MS on adjustment. We hypothesized that the relationship between identity satisfaction and adjustment was mediated by self-efficacy (goal setting and symptom management).

**Methods.** The cross-sectional study involved 66 patients (63.6% women) with a mean age of 25.2 years ( $SD= 3.4$ ) who had been diagnosed for no more than three years. Patients completed measures of identity satisfaction (Identity Motives Scale), Self-efficacy in MS (SEMS), Depression (CESD-10), Positive and Negative Affect (PANAS). Data were analyzed through factorial ANOVAs and hierarchical regression analysis.

**Results.** Thirty-eight percent of patients reported depressive symptoms and negative affect mean score was higher than in the general population. Higher identity satisfaction was directly related to lower depression. Self-efficacy in goal setting partially mediated the relationship between identity satisfaction and positive affect, whereas self-efficacy in symptom management totally mediated the effect of identity satisfaction on negative affect. All results were significant at  $p < .05$ .

**Conclusions.** The results suggest the usefulness of addressing identity redefinition and self-efficacy in psychological interventions aimed at promoting young adults' adjustment to MS in an early phase of the illness.

## INTRODUCTION

Multiple sclerosis (MS) is a chronic neurological inflammatory disease that it is usually diagnosed between the ages of 20 and 40 years and that affects more women than men, with a proportion of approximately 3:1<sup>1</sup>. In relation to the location and extent of neurological damages, multiple sclerosis includes a variety of symptoms (fatigue, pain, sensory and motor disorders, bowel, bladder and sexual disturbances, cognitive impairment). In most cases the course of the disease is characterized by relapses and periods of symptom remission (relapsing-remitting multiple sclerosis, RR-MS)<sup>2</sup>. The illness course is therefore largely unpredictable and pharmacological therapies are not resolute, but aimed at treating attacks and slowing the progression of the disease. The characteristics of MS (chronicity, unpredictability, multiple and fluctuating symptoms) have relevant psychological consequences for patients. People with MS generally report lower quality of life<sup>3</sup> and higher levels of depression and anxiety<sup>4,5</sup> compared to healthy people. A growing body of literature has focused on the psychological factors that might promote patients' adjustment to the illness<sup>6,7</sup>. Moreover, studies have increasingly focused on a broader definition of adjustment, not only including negative aspects, but also positive ones, like affective well-being<sup>8-10</sup>

The present study was aimed at extending this area of research in three main directions. First of all, there is a lack of knowledge on the adjustment to MS among recently diagnosed young adult patients (18-30 years), in spite of the fact that MS is often diagnosed at this age. Although young patients generally report better physical health than older ones<sup>11</sup>, psychological difficulties are often reported, in particular anxiety<sup>4</sup> and clinically significant depressive symptoms<sup>12</sup>, which in turn negatively affect the quality of life<sup>13</sup>. Moreover, young adult patients had concerns about the fact that MS would negatively affect their intimate relationships and plans about having children, as well as social life and job opportunities<sup>12</sup>. . Nonetheless, results about the adjustment to MS among young adults are sometimes inconsistent. In particular, the study of Messmer Uccelli et al<sup>14</sup> reported that young adult patients did not differ from healthy controls on levels of depression, anxiety, quality of life, self-esteem and self-efficacy. In light of these inconsistent results, it is important to

deepen knowledge about young adults' adjustment to MS in an early phase of the illness. The diagnosis of MS has become more precocious over the years and, at present, MS is the most common cause of non-traumatic disability in young adults<sup>15</sup>. For all these reasons, research is needed, with the final goal of implementing effective psychological interventions targeting young adult patients.

The second focus of the present study is on the psychological construct of identity, defined by psychological literature as the sense of continuity and oneness which everyone experiences during one's life, in spite of the continuous changes in their biological, psychological, and social lives<sup>16</sup>. During young adulthood people are defining an adult identity, looking to realize their life projects and future aspirations, and making important choices about study and job career, as well as about family and relationships (e.g. getting independent from parents, redefining relationships with friends, engaging in intimate relationships). The diagnosis of a chronic illness, like MS, represents a break in this process of identity redefinition<sup>17</sup>. The illness negatively changes the body functioning and perception, as well as life plans, chances of personal realization and social roles which the individual is engaged in<sup>18</sup>. This is particularly dramatic for young people who suddenly perceive themselves as ill and have to reorganize their future perspectives. The few studies that focused on identity and MS among patients with long disease duration found that identity restructuring is a key aspect for the psychosocial adjustment to the illness<sup>19-22</sup>. Moreover, in our previous study on recently diagnosed patients aged from 18 to 65, it was found that higher identity satisfaction was related to lower depression, higher affective well-being and higher optimism<sup>23</sup>. In light of the relevance of identity redefinition for young adults, in the present study we examined the specific role of identity for the adjustment to MS among young patients.

The third focus of our study is on the adaptive role of perceived self-efficacy, defined as the individual's appraisal of the extent to which he/she has the capabilities required to organize and realize the actions needed to obtain planned goals in a specific domain<sup>24</sup>. Symptoms and disabilities of MS undermine patients' perception of self-efficacy. Previous studies on patients with long

disease duration found that self-efficacy positively influenced the psychological adjustment to the illness, after controlling for clinical variables and depressive symptoms<sup>25,26</sup>. Also in our above mentioned study, self-efficacy in dealing with multiple sclerosis was associated to higher affective well-being<sup>23</sup>. To our knowledge, no previous study focused on the role of self-efficacy among young adult patients. In particular, we considered the adaptive role of two components of self-efficacy in MS, namely the perceived ability to manage symptoms, and the perceived ability to set goals and plan activities in diverse life domains.

Moving from this framework, the study had the following aims:

1. To describe the levels of depression, positive and negative affect in a group of young adults recently diagnosed MS patients (up to three years since the diagnosis), taking into account gender, age, and disease duration differences.
2. To investigate the role of identity satisfaction and self-efficacy in dealing with MS (symptom management and goal setting) on patients' depression, positive and negative affect.
3. To explore if self-efficacy in dealing with MS (symptom management and goal setting) mediates the relationship between identity satisfaction and adjustment (depression, positive and negative affect).

As for the first aim, in light with inconsistent results reported in literature<sup>4,12,14</sup>, we explored the prevalence of depression and if negative and positive affect mean scores were significantly different from the general population. Moreover, we explored if depression, positive and negative affect varied as a function of gender, age, and disease duration, as found in our previous research on newly diagnosed patients<sup>23</sup>. With respect to the second aim, lower depression, lower negative affect and higher positive affect were expected to be linked to higher levels of identity satisfaction<sup>19-22</sup> and to higher self-efficacy in dealing with MS<sup>25-26</sup>. Finally, we expected that self-efficacy would account for a portion of the effect of identity satisfaction on adjustment.

## METHODS

Patients were consecutively recruited from 2012 to 2016 at a Multiple Sclerosis Clinic Centre (Regional Referral Multiple Sclerosis Centre (CRESM), Torino, Italy), as part of a larger study on psychological adjustment to multiple sclerosis in an early phase of the illness<sup>23</sup>. The inclusion criteria were: 1) diagnosis of MS according to the Mc Donald criteria<sup>27</sup> in the past three years; 2) aged between 18 and 30. The exclusion criteria were: 1) presence of severe psychiatric problems; 2) presence of clinically significant cognitive deficits<sup>1</sup>. Eligible participants were contacted by e-mail 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 agreed to participate completed an anonymous self-report questionnaire, administered by a psychologist of the research team, during one of the routine scheduled outpatient visits at the Clinic Centre. Patients completed the questionnaire alone, in a quiet room, and after completion the questionnaire was immediately returned in a closed envelope to the psychologist. Participants' anonymity and answer confidentiality contributed to limit respondent bias. No benefit was given to participants for taking part in the research. The study was approved by the Hospital Ethics Committee (protocol number 0013772) and participants gave written informed consent for participation in the study. The questionnaire included socio-demographic variables (gender, age, marital status, education, and employment) and validated measures of the study variables.

*Depression* was assessed through the Italian validation of the 10-item Center for Epidemiologic Studies Depression Scale (CES-D-10<sup>30</sup> which evaluates the frequency of depressive symptoms during the past week (e.g., “I was bothered by things that usually don’t bother me”).

Each item is scored on a 4-point scale ranging from 0 (“rarely or none of the time”) to 3 (“most or

---

<sup>1</sup> This information was obtained from the patients' case sheets compiled by the neurologist at the MS Centre during routine examination. Cognitive impairment was detected by the Brief Repeatable Battery of Neuropsychological Tests (BRB-N)<sup>28</sup> 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 impairment<sup>29</sup> and thus were excluded from the study.

all of the time”). The scale ranges from 0 to 30, with a cut-off score of 10 or higher indicating the presence of significant depressive symptoms. Cronbach’s alpha in our study was 0.87.

*Positive and negative affect* were evaluated through the Italian validation of the Positive Affect and Negative Affect Schedule (PANAS)<sup>31</sup>. It comprises two mood scales: Positive Affect (PA) (10 items) and Negative Affect (NA) (10 items); each item is rated on a 5-point scale (from 1 = “never” to 5 = “always”) to indicate the number of times the respondent feels this way (e.g., positive: “interested”; negative: “scared”) in their daily living. Each scale ranges from 10 to 50. Cronbach’s alpha was 0.89 for both the Positive and the Negative Affect scales.

*Identity satisfaction* was evaluated using the Identity Motives Scale<sup>32</sup>, which considers six identity motives (self-esteem, efficacy, continuity, belonging, distinctiveness, and meaning) through 12 items, both positive (e.g., “When I think about my future, I think I will feel proud”) and negative (e.g., “When I think about my future, I think I will feel powerless”). Each item ranges from 1 (“extremely disagree”) to 5 (“extremely agree”). For the aims of the present study, scores for the six subscales were summed up (range 12-60): higher scores represent greater identity satisfaction, whereas lower scores represent a perceived threat to the identity. Cronbach’s alpha in our study was 0.76.

*Self-efficacy in dealing with multiple sclerosis* was evaluated through the Self-Efficacy in Multiple Sclerosis scale (SEMS)<sup>33</sup>. The SEMS is a 15-item scale characterized by two correlated dimensions: Goal setting (items referring to the perceived ability of planning activities, asking for support and maintaining social life) and Symptoms management (items referring to the perceived ability of facing fatigue, physical disabilities and negative emotions related to MS). Each item is scored on a 5-point Likert scale (ranging from 1 = “completely unable” to 5 = “completely able”) (range 15-75; Cronbach’s alpha in our study was 0.86 for Goal setting and 0.87 for Symptom management).

Statistical analyses were performed using SPSS version 24. As for the first aim, a factorial ANOVA was performed for each indicator of adjustment (depression, positive and negative affect), entering gender, age (18-25 and 26-30 years), and disease duration (1, 2 or 3 years since diagnosis) as factors between subjects. Concerning interactions, the effects of gender X disease duration and age X disease duration were examined. The statistically significant interactions were investigated by testing the simple main effects of gender and age for each year since the diagnosis.

Concerning the second and third aim of the study, relationships between variables were first examined through bivariate correlations<sup>2</sup>. Then, to investigate the relationships between identity and adjustment (depression, positive affect and negative affect) and the mediating role of self-efficacy in MS, a series of hierarchical multiple regression analysis were performed, following the approach suggested by Baron and Kenny<sup>34</sup>. Firstly, the two subscales of self-efficacy in MS (goal setting and symptom management) (mediators) were regressed on identity satisfaction (predictor). Then, in three hierarchical multiple regression, each indicator of adjustment (depression, positive affect and negative affect) was regressed on identity satisfaction (first step) and on self-efficacy in MS (goal setting and symptom management) (second step)<sup>3</sup>. A mediation effect occurs if the relation between predictor and dependent variable decreases, or if it is no longer significant, after entering the mediator into regression. The statistical significance of the mediation effect was examined using the Sobel *z*-test (two-tailed *p*). Statistical analyses were performed on valid *N*.

## RESULTS

### *Participants*

The study involved 66 participants, out of a total of 126 eligible MS patients. The participation rate was around 52%, in line with our previous studies<sup>23</sup>. The majority (63.6%; N=42) were women and

---

<sup>2</sup> Although some overlap may exist between identity and self-efficacy, the results of correlation analysis suggested a non-collinearity among these variables. Therefore, they were both entered as predictors in regressions.

<sup>3</sup> Since gender, age, level of disability, and disease duration were not correlated with dependent variables, they were not entered in regressions as control variables.



mean age was 25.2 years ( $SD= 3.4$ ). Mean disease duration was 1.7 years ( $SD = 0.8$ ) and most patients (54.5%,  $N=36$ ) had been diagnosed by less than a year. All patients had the relapsing-remitting form of MS and the Expanded Disability Status Scale (EDSS) score ranged from 1 to 3.<sup>4</sup> At the moment of data collection, most participants were living with parents (57.1%,  $N=36$ )<sup>5</sup>, hold a high school diploma (59.1%,  $N=39$ ), and were employed (63.6%,  $N=42$ ). People aged 18 to 25 were more likely to live with parents and to be still students (Chi square= 14.53,  $df= 1$ ,  $p<0.0001$ ), whereas people over 25 were more likely to live alone or with a partner and to work (Chi square= 4.80,  $df= 1$ ,  $p<0.05$ ). The characteristics of the study participants are presented in Table 1.

*INSERT TABLE 1*

***Descriptive statistics***

Participants reported a depression mean score of 8.9 ( $SD=6.3$ ), and 38% of them ( $N=23$ ) reported a score equal to or greater than the critical cut-off of 10, which indicates the presence of significant depressive symptoms. No statistically significant differences emerged for gender ( $F_{1,51}=0.07$ ,  $p=0.789$ ), age ( $F_{1,51}=3.21$ ,  $p=0.079$ ), and disease duration ( $F_{2,51}=0.10$ ,  $p=0.906$ ), whereas the effects of gender  $\times$  disease duration was statistically significant ( $F_{2,51}=3.36$ ,  $p=0.043$ ,  $\eta^2=.12$ ). In particular, three years after the diagnosis, depression scores were higher for men than for women ( $F_{1, 51}= 4.53$ ,  $p < 0.05$ ) (Table 2).

*INSERT TABLE 2*

Concerning positive affect, participants reported a mean score of 34.4 ( $SD=7.1$ ), whereas the negative affect mean score was equal to 27.0 ( $SD=7.8$ ). Scores were compared with available data from the PANAS Italian validation sample (age:  $M=27.9$ ,  $SD=9.8$ ; 63% women)<sup>31</sup> through  $t$  test statistic ( $p<0.05$ ). Positive affect scores did not differ from those of the general population ( $M=33.0$ ,  $SD=5.9$ ;  $p=ns$ ), whereas negative affect was higher than in the general population ( $M=20.9$ ,  $SD=6.5$ ;

---

<sup>4</sup> The Expanded Disability Status Scale (EDSS) score<sup>35</sup> is the most widely used measure of disability in MS and it is evaluated by a neurologist. The EDSS score varies between 1 and 10. Patients in our study had mild levels of disability (1=no disability; 3=autonomous, fully ambulatory, mild neurological deficits in three or four functional systems).

<sup>5</sup> The percentage of young adults still living in the family are in line with Italian data.

$p < 0.05$ ). As for positive affect, no statistically significant differences emerged for gender ( $F_{1,50} = 0.22, p = 0.643$ ), age ( $F_{1,50} = 2.20, p = 0.144$ ), and disease duration ( $F_{2,50} = 0.11, p = 0.901$ ) nor for the interactions. Also for negative affect, no differences were found for gender ( $F_{1,48} = 0.02, p = 0.899$ ), age ( $F_{1,48} = 2.99, p = 0.090$ ), and disease duration ( $F_{2,48} = 1.85, p = 0.168$ ), whereas the effects of gender  $\times$  disease duration was statistically significant ( $F_{2,48} = 4.43, p = 0.017, \eta^2 = 0.16$ ). In particular, the simple effects analysis revealed that three years after the diagnosis men reported higher negative affect than women ( $F_{1,48} = 5.47, p < .05$ ) (Table 2).

### ***The role of identity satisfaction and self-efficacy on adjustment***

Preliminary correlation analysis showed that higher identity satisfaction was associated with lower depression ( $r = -0.69, p < 0.01$ ), higher positive affect ( $r = 0.68, p < 0.01$ ), and lower negative affect ( $r = -0.57, p < 0.01$ ). Both dimensions of self-efficacy in MS were negatively related to depression and negative affect and positively to positive affect. In particular, goal setting had the strongest positive correlation with positive affect ( $r = 0.77, p < 0.01$ ), and symptom management had the strongest negative correlation with negative affect ( $r = -0.68, p < 0.01$ ). Identity satisfaction was positively correlated to both dimensions of self efficacy ( $r = 0.66, p < 0.01$  with goal setting and  $r = 0.57, p < 0.01$  with symptom management) (Table 3).

#### *INSERT TABLE 3*

The first set of regression analysis showed that identity satisfaction was a significant predictor of both dimensions of self-efficacy. The model predicting goal setting accounted for 43% of the variance ( $F_{1,54} = 42.28, p < 0.001$ ) with higher identity satisfaction related to higher perceived efficacy in goal setting ( $B = 0.56, SE B = 0.09, \beta = 0.66, p < 0.0001$ ). The model predicting symptom management accounted for 31% of the variance ( $F_{1,52} = 25.13, p < 0.0001$ ) with higher identity satisfaction related to higher perceived efficacy in symptom management ( $B = 0.36, SE B = 0.07, \beta = 0.57, p < 0.001$ ).

Then three regression analysis were performed predicting each indicator of adjustment. As for depression, identity satisfaction entered in the first step explained 39% of the variance: lower depression was related to higher identity satisfaction ( $\beta=-0.64, p<0.001$ ). After entering the two dimensions of self-efficacy in MS, a significant increase of  $R^2$  was observed and the final model accounted for 44% of the variance. Higher identity satisfaction continued to be related to lower depression ( $\beta=-0.40, p<.01$ ), whereas the effect of self-efficacy dimensions did not reach statistical significance (goal setting  $\beta=-0.26, p=0.111$ ; symptom management  $\beta=-0.12, p=0.406$ ) (Cohen's  $f^2$  effect size=0.09) (Table 4).

*INSERT TABLE 4*

Concerning positive affect, identity satisfaction entered in the first step explained 43% of the variance: higher positive affect was related to higher identity satisfaction ( $\beta=0.66, p<0.001$ ). After entering the two dimensions of self-efficacy in MS, a significant increase of  $R^2$  was observed and the final model accounted for 60% of the variance. The relationship between identity satisfaction and positive affect decreased ( $\beta=0.28, p<0.05$ ) and higher self-efficacy in goal setting was related to higher positive affect ( $\beta=0.52, p<0.001$ ). The partial mediation effect of self-efficacy in goal setting between identity satisfaction and positive affect was significant (Sobel  $z$ -value = 3.28,  $p <0.001$ ) (Cohen's  $f^2$  effect size=0.42) (Table 4).

Finally, for negative affect, identity satisfaction entered in the first step explained 30% of the variance: lower depression was related to higher identity satisfaction ( $\beta=-0.56, p<0.001$ ). After entering the two dimensions of self-efficacy in MS, a significant increase of  $R^2$  was observed and the final model accounted for 48% of the variance. Higher self-efficacy in symptom management was related to lower negative affect ( $\beta=-0.49, p<0.001$ ) and the effect of identity satisfaction was no longer significant ( $\beta=-0.21, p= 0.132$ ). The total mediation effect of self-efficacy in symptom management between identity satisfaction and negative affect was significant (Sobel  $z$ -value = - 2.85,  $p <0.005$ ) (Cohen's  $f^2$  effect size=0.35) (Table 4). A post-hoc power analysis was carried out for each regression model. The observed power was 0.33 for depression, 0.97 for positive affect,

and 0.92 for negative affect. The low power value of the model predicting depression was likely to be due to the non-significant effect of predictors entered in the second step. A synthesis of interrelationships between variables is presented in Figure 1.

*INSERT FIGURE 1*

## **DISCUSSION**

The aims of the study were to describe the adjustment to MS (depression, positive and negative affect) in a group of young adult recently diagnosed patients and to investigate the role of identity satisfaction and self-efficacy on adjustment to MS. Moreover, the study explored the mediation effect of self-efficacy (goal setting and symptom management) in the relationship between identity satisfaction and adjustment. Overall, the results showed that 38% of patients in our study reported depressive symptoms and negative affect mean score was higher than in the general population. Moreover, both depression and negative affect were higher for men than for women three years after the diagnosis. As hypothesized, higher identity satisfaction and higher self-efficacy in MS were related to a better adjustment. The hypothesis of a mediation role of self-efficacy was partially confirmed. In particular, neither self-efficacy in goal setting nor self-efficacy in symptom management mediated the relationship between identity satisfaction and depression. Self-efficacy in goal setting partially mediated the relationship between identity satisfaction and positive affect, whereas self-efficacy in symptom management totally mediated the effect of identity satisfaction on negative affect.

The descriptive results on psychological adjustment to MS are in line with studies reporting psychological distress among young adult patients<sup>4, 12,13</sup>. In particular, the prevalence of depression was similar to previous studies<sup>12</sup>. Some interesting results emerged about the role of gender: young men seem to experience greater psychological difficulties than young women, in terms of high depression and negative affect, as time passes since the diagnosis, as also found in our previous study on recently diagnosed patients aged from 18 to 65<sup>23</sup>. The result is in line with studies

indicating that male MS patients are more sensitive to physical limitations and are less able to buffer the debilitating aspects of MS than female MS patients<sup>36,37</sup>.

In line with literature, we found that the adjustment to MS was related to both identity satisfaction<sup>19-22</sup> and self-efficacy<sup>23,25,26</sup>. In particular, the construct of identity seems to be particularly relevant for patients of this age. Young adults who receive a diagnosis of MS are likely to face a more challenging situation than their healthy peers, because they have to face both the normative transition to adulthood and the non-normative transition to the illness. Young people who are more successful in redefining their identity and who elaborate a new self-image, including the chronic illness, are more likely to better adjust to MS. In particular, in our study identity satisfaction had a direct effect on depression and an indirect effect on affective well-being through the mediation of self-efficacy. On the one hand, patients more satisfied with their identity also feel more confident in their ability to define goals and to plan actions; in turn, patients with higher self-efficacy in goal setting are more likely to experience positive affects, and to feel active and determined. Therefore, setting new goals, in relation to both the developmental tasks of young adults and the illness limitations, seems to be crucial for a positive adjustment. On the other hand, patients more satisfied with their identity also perceive a greater ability to manage the various and often uncontrollable MS symptoms. This self-efficacy in symptom management seems to fully explain the presence of lower negative affects (like feelings of anxiety, fear, pessimism). As a whole, the process of identity redefinition seems to be crucial to reduce a pervasive mood state, like depression, whereas the self-efficacy in dealing with MS in day-to-day living seems to be relevant for the perception of affective well-being.

The study had some limitations. Firstly, the rather small and not representative group of participants does not allow to generalize our results to the population of the recently diagnosed young adult MS patients. Further research involving a larger sample is needed to investigate if the preliminary results of this study are confirmed. Secondly, our research design was cross-sectional and the

relationships between variables must be considered as bidirectional. A longitudinal research design would allow to explore causal relationships between variables.

## **CONCLUSIONS**

The present study adds to knowledge on the adjustment to MS among young adult recently diagnosed patients with two key findings: the role of identity satisfaction, especially in reducing levels of depression, and the relevance of self-efficacy with respect to the affective well-being. In particular, two distinct components of self-efficacy, namely goal setting and symptom management, resulted to have a different role, on positive and negative affects, respectively. These results have relevant clinical implications for health professionals working with young MS patients.

Psychological interventions aimed at promoting patients' adjustment should target both identity redefinition and self-efficacy<sup>38,39</sup>. In particular, young patients should be supported in the process of an adult identity definition in relation to illness possibilities and limitations. Moreover, a psychological intervention should be focused on the promotion of self-efficacy in goal setting and in symptom management, with the final aim of making young patients able to recover a sense of competence in their day-to-day living. Health professionals are encouraged to consider identity and self-efficacy as two relevant psychological resources that might help young adult patients especially to face challenges related to job career, affective relationships and parenthood, which represent core aspects of this period of life.

## References

1. Sellner J, Kraus J, Awad A, Milo R, Hemmer B, & Stuve O (2011). The increasing incidence and prevalence of female multiple sclerosis—a critical analysis of potential environmental factors. *Autoimmunity Reviews*, *10* (8): 495-502. doi: 10.1016/j.autrev.2011.02.006
2. Lublin FD, Reingold SC, Cohen JA, Cutter GR, Sørensen PS, Thompson AJ, *et al.* (2014). Defining the clinical course of multiple sclerosis: the 2013 revisions. *Neurol*, *83* (3): 278-286. doi: 10.1212/WNL.0000000000000560
3. Klevan G, Farbu E, Jacobsen CO, Aarseth JH, Myhr KM, Nyland H, *et al.* (2014). Health related quality of life in patients recently diagnosed with multiple sclerosis. *Acta Neurol Scand*, *129*, 21–26. doi: 10.1111/ane.12142
4. Jones KH, Ford DV, Jones PA, John A, Middleton RM, Lockart-Jones H, *et al.* (2012). A large-scale study of anxiety and depression in people with multiple sclerosis: a survey via the Web Portal of the UK MS Register. *PLoS ONE* *7*(7): e41910. doi:10.1371/journal.pone.0041910
5. Leddy S, Fowler AJ, Giovanonni G, & Dobson R (2014). Depression in MS: a systematic review and meta-analysis. *J Neurol Neurosurg Psychiatry*, *85*(10):A1-A57. doi: 10.1136/jnnp-2014-309236.134
6. Dennison L, Moss-Morris R, & Chalder T (2009). A review of psychological correlates of adjustment in patients with multiple sclerosis. *Clin Psychol Rev*, *29*:141–153. doi: 10.1016/j.cpr.2008.12.001.
7. Sà MJ (2008). Psychological aspects of multiple sclerosis. *Clin Neurol Neurosurg*, *110*: 868–877. doi: 10.1016/j.clineuro.2007.10.001
8. Moss-Morris R (2013). Adjusting to chronic illness: time for a unified theory. *Br J Health Psychol*, *18*(4): 681-686. doi: 10.1111/bjhp.12072

9. Pakenham KI & Cox S (2009). The dimensional structure of benefit finding in multiple sclerosis and relations with positive and negative adjustment: a longitudinal study. *Psychol Health, 24 (4)*: 373-393. doi: 10.1080/08870440701832592
10. Pakenham KI & Fleming M (2011). Relations between acceptance of multiple sclerosis and positive and negative adjustments. *Psychol Health, 26 (10)*: 1292-1309. doi: 10.1080/08870446.2010.517838
11. Solari A, Filippini G, Mendozzi L, Ghezzi A, Cifani S, Barbieri E, *et al.* (1999). Validation of Italian multiple sclerosis quality of life 54 questionnaire. *J Neurol Neurosurg Psychiatry, 67(2)*: 158–62. doi: 10.1136/jnnp.67.2.158
12. Buchanan RJ, Minden SL, Chakravorty BJ, Hatcher W, Tyry T, & Vollmer T (2010). A pilot study of young adults with multiple sclerosis: demographic, disease, treatment, and psychosocial characteristics. *Disabil Health J, 3(4)*: 262-270. doi: 10.1016/j.dhjo.2009.09.003
13. Rainone N, Chiodi A, Lanzillo R, Magri V, Napolitano A, Morra VB, *et al.* (2017). Affective disorders and Health-Related Quality of Life (HRQoL) in adolescents and young adults with Multiple Sclerosis (MS): the moderating role of resilience. *Qual Life Res, 26*:727–736. doi 10.1007/s11136-016-1466-4
14. Messmer Uccelli M, Traversa S, & Ponzio M (2016). A survey study comparing young adults with MS and healthy controls on self-esteem, self-efficacy, mood and quality of life. *J Neurol Sci, 368*: 369–373. doi: 10.1016/j.jns.2016.07.039
15. Vanbellinghen T & Kamm CP. (2016). Neurorehabilitation topics in patients with multiple sclerosis: from outcome measurements to rehabilitation interventions. *Semin Neurol, 36*:196–202. doi: 10.1055/s-0036-1579694
16. Bosma H & Kunnen S (2001). *Identity and emotion. Development through self-organization*. Paris: Cambridge University Press.



17. Charmaz K (1983). Loss of self: a fundamental form of suffering in the chronically ill. *Sociol Health Illn*, 5(2): 168-195. doi: 10.1111/1467-9566.ep10491512
18. Weinreich P & Saunderson W (2003). *Analysing identity: cross-cultural, societal and clinical contexts*. Hove, East Sussex: Routledge.
19. Irvine H, Davidson C, Hoy K, & Lowe-Strong A. (2009). Psychosocial adjustment to multiple sclerosis: exploration of identity redefinition. *Disabil Rehabil*, 31(8): 599-606. doi: 10.1080/09638280802243286
20. Mozo-Dutton L, Simpson J, & Boot J (2012). MS and me: exploring the impact of multiple sclerosis on perceptions of self. *Disabil Rehabil*, 34(14): 1208-1217. doi: 10.3109/09638288.2011.638032
21. Tabuteau-Harrison SL, Haslam C, & Mewse AJ (2016). Adjusting to living with multiple sclerosis: The role of social groups. *Neuropsychol Rehabil*, 26(1): 36-59. doi: 10.1080/09602011.2014.993403
22. Stepleman LM, Floyd RM, Valvano-Kelley A, Penwell-Waines L, Wonn S, Crethers D, *et al.* (2017). Developing a measure to assess identity reconstruction in patients with multiple sclerosis. *Rehabil Psychol*, 62:165-177. doi: 10.1037/rep0000126.
23. Author, 2018
24. Bandura A. (1997). *Self-efficacy. The exercise of control*. New York: Freeman and Company.
25. Schmitt MM, Goverover Y, Deluca J, & Chiaravalloti N (2014). Self-efficacy as a predictor of self-reported physical, cognitive, and social functioning in multiple sclerosis. *Rehabil Psychol*, 59(1): 27-34. doi: 10.1037/a0035288
26. Wilski M & Tasiemski T (2016). Illness perception, treatment beliefs, self-esteem, and self-efficacy as correlates of self-management in multiple sclerosis. *Acta Neurol Scand*, 133(5):338-45. doi: 10.1111/ane.12465

27. Polman CH, Reingold SC, Banwell B, Clanet M, Cohen JA, Filippi M, *et al.* (2011).  
Diagnostic criteria for multiple sclerosis: 2010 Revisions to the Mc Donald criteria. *Ann Neurol*, 69 (2): 292–302. doi:10.1002/ana.22366.
28. Solari A, Mancuso L, Motta A, Mendozzi L, & Serrati C (2002). Comparison of two brief neuropsychological batteries in people with multiple sclerosis. *Mult Scler*, 8: 169-176.  
doi:10.1191/1352458502ms780oa
29. Amato MP, Portaccio E, Goretti B, Zipoli V, Ricchiuti L, De Caro MF, *et al.* (2006). The Rao’s Brief Repeatable Battery and Stroop test: normative values with age, education and gender corrections in an Italian population. *Mult Scler*, 12: 787-793. doi:  
10.1177/1352458506070933
30. Fava GA. (1983). Assessing depressive symptoms across cultures: Italian validation of the CES-D self-rating scale. *J Clin Psychol*, 39: 249-251. doi: 10.1002/1097-4679(198303)39:2%3C249::AID-JCLP2270390218%3E3.0.CO;2-Y
31. Terracciano A, McCrae RR, & Costa Jr PT. (2003). Factorial and construct validity of the Italian Positive and Negative Affect Schedule (PANAS). *Eur J Psych Ass*, 19(2):131–141.  
doi: 10.1027//1015-5759.19.2.131.
32. Manzi C, Vignoles VL, & Regalia C (2010). Accommodating a new identity: possible selves, identity change and well-being across two life-transitions. *Eur J Soc Psychol*, 40(6): 970–984. doi: 10.1002/ejsp.669
33. Author, 2016
34. Baron RM & Kenny DA (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* , 51:1173-1182. doi: 10.1037/0022-3514.51.6.1173.
35. Kurtzke JF (1983). Rating neurologic impairment in multiple sclerosis: an expanded disability status scale (EDSS). *Neurology*, 33(11):1444–1452. doi:  
10.1212/WNL.33.11.1444

36. McCabe M, McKern S, & McDonald E (2004). Coping and psychological adjustment among people with multiple sclerosis. *J Psychosom Res*, 56: 355–361. doi: 10.1016/S0022-3999(03)00132-6
37. Miller A & Dishon S (2006). Health-related quality of life in multiple sclerosis: the impact of disability, gender and employment status. *Qual Life Res*, 15: 259-271. doi: 10.1007/s11136-005-0891-6
38. Author, 2014
39. Author, 2017

Table 1

*Characteristics of study participants (N= 66)*

Gender, women, n (%)	42	63.6
Age, years, M (SD) (range 18-30)	25.2	3.4
Age groups, n (%)		
18-25 years	35	53
26-30 years	31	47
Disease duration, n (%)		
up to 1 year	36	54.5
2 years	17	25.8
3 years	13	19.7
Multiple sclerosis type, n (%)		
Relapsing remitting	66	100
Living situation <sup>1</sup> , n (%)		
With parents	36	57.2
With partner	19	30.2
With partner and children	4	6.3
Alone	4	6.3
Education, n (%)		
At least 8 years (middle school diploma)	11	16.7
At least 13 years (high school diploma)	39	59.1
More than 13 years (degree)	16	24.2
Employment, n (%)		
Employed	42	63.6
Unemployed/student	24	36.4

<sup>1</sup> Data were missing for 3 participants

Table 2

*Means and standard deviations of depression and negative affect (factorial ANOVA- interaction effects gender X disease duration)*

		Depression		Negative affect	
		<i>N</i>	<i>M (DS)</i>	<i>N</i>	<i>M (DS)</i>
Women	1year	20	9.8 (6.7)	19	30.0 (8.3)
	2years	12	9.2 (5.0)	12	27.1 (8.3)
	3years	6	6.3 <sub>a</sub> (9.1)	5	18.4 <sub>a</sub> (6.2)
Men	1year	13	7.9 (5.6)	12	26.3 (6.3)
	2years	4	6.3 (5.3)	4	23.8 (5.4)
	3years	5	12.4 <sub>b</sub> (7.1)	5	28.6 <sub>b</sub> (6.4)

*Note.* Means with different subscripts are significantly different at  $p < .05$ .

Depression: gender X disease duration  $F_{2, 51} = 3.36, p = .043, \eta^2 = .12$

Negative affect: gender X disease duration  $F_{2, 48} = 4.43, p = .017, \eta^2 = .16$

Table 3

*Bivariate correlations between the study variables*

	1	2	3	4	5	6
1 Depression	-					
2 Positive affect	-.68**	-				
3 Negative affect	.73**	-.39**	-			
4 Identity satisfaction	-.69**	.68**	-.57**	-		
5 SEMS_ goal setting	-.61**	.77**	-.59**	.66**	-	
6 SEMS_ symptom management	-.55**	.59**	-.68**	.57**	.66**	-

Note. N ranged from 51 to 60. SEMS= Self Efficacy in Multiple Sclerosis Scale

\*\* p<.01

Table 4

*Hierarchical regression analysis predicting depression (N= 50), positive affect (N=50) and negative affect (N=49)*

	Depression				Positive affect				Negative affect			
	<i>B</i>	<i>SE B</i>	$\beta$	Adj R <sup>2</sup> ( $\Delta R^2$ )	<i>B</i>	<i>SE B</i>	$\beta$	Adj R <sup>2</sup> ( $\Delta R^2$ )	<i>B</i>	<i>SE B</i>	$\beta$	Adj R <sup>2</sup> ( $\Delta R^2$ )
Step 1												
Identity satisfaction	-.53	.09	-.64***	.39	.59	.10	.66***	.43	-.60	.13	-.56***	.30
Step 2												
Identity satisfaction	-.33	.12	-.40**	.44	.25	.11	.28*	.60	-.23	.15	-.21	.48
SEMS_goal setting	-.27	.17	-.26	(.05)	.58	.15	.52***	(.17)	-.13	.21	-.10	(.18)
SEMS_symptom management	-.17	.20	-.12		.12	.17	.09		-.82	.24	-.49***	

Note. SEMS= Self Efficacy in Multiple Sclerosis Scale

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Depression: first step  $F(1, 49) = 33.29, p < .001$ ; second step  $F(3, 47) = 14.29, p < .001$

Positive affect: first step  $F(1, 49) = 38.38, p < .001$ ; second step  $F(3, 47) = 26.07, p < .001$

Negative affect: first step  $F(1, 48) = 21.47, p < .001$ ; second step  $F(3, 46) = 16.07, p < .001$

Figure 1

Standardized regression coefficients for the relationships between identity satisfaction and adjustment (depression, positive and negative affect) as mediated by self-efficacy in MS (goal setting and symptom management). The standardized regression coefficient between identity satisfaction and each indicator of adjustment, controlling for self-efficacy in MS, is in parentheses.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

