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Original article

# Perceived dyadic coping, anxiety, depression and satisfaction with life of women diagnosed with fibromyalgia

## *Coping dyadique perçu, anxiété, dépression et satisfaction de vie chez des femmes présentant une fibromyalgie*

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### ABSTRACT

Women diagnosed with fibromyalgia face a wide range of challenges impacting multiple aspects of their lives, such as their relationship with their partner. This study aims to examine how women diagnosed with fibromyalgia manage stress in their own couple and to investigate the role of dyadic coping in anxiety and depression symptoms, and in life satisfaction. Seventy-three women diagnosed with fibromyalgia and 73 matched women filled questionnaires to examine dyadic coping, anxiety and depression symptoms, and life satisfaction. Results show that women diagnosed with fibromyalgia perceived themselves and their partner as using more negative dyadic coping, more delegated dyadic coping and less common dyadic coping. Moreover, negative dyadic

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coping predicted higher anxiety symptoms and poorer life satisfaction. Overall, our findings highlight the importance of dyadic stress management in understanding psychological adjustment better in women diagnosed with fibromyalgia and the need to develop better-adapted interventions to support them effectively.

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## R É S U M É

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La fibromyalgie est un syndrome douloureux chronique, dont l'étiologie est encore mal connue, et qui a de nombreuses répercussions sur les patients et leurs familles. Le couple est particulièrement touché par cette pathologie. Si aujourd'hui, de nombreuses études ont étudié l'impact de la fibromyalgie sur le patient et les facteurs susceptibles d'influencer le vécu de la maladie dans une perspective individuelle, peu de travaux se sont intéressés à la manière dont le couple y fait face. L'objectif de cette recherche était d'étudier l'impact du coping dyadique sur la symptomatologie anxio-dépressive et la satisfaction de vie de patients souffrant de fibromyalgie. Un groupe de 73 patientes en couple atteintes de fibromyalgie et un groupe contrôle de 73 femmes en couple ne présentant pas de problème de santé ont complété trois questionnaires : (1) le DCI de Bodenmann (1997) pour l'évaluation des stratégies de coping dyadique au sein du couple ; (2) la HADS de Zigmund et Snaith (1983) pour la symptomatologie anxio-dépressive et (3) la SWLS de Diener (1985) pour la satisfaction de la vie. Les résultats montrent que les patientes ayant une fibromyalgie obtiennent en moyenne des scores d'anxiété et de dépression plus élevés, et au contraire un score de satisfaction de vie moins élevé, que les femmes du groupe contrôle. De plus, elles se perçoivent elles-mêmes et leur conjoint comme utilisant plus de stratégies de coping dyadique négatives et de stratégies de délégation, et moins de stratégies de coping communes pour faire face au stress. Enfin, le recours au coping dyadique négatif est prédicteur de symptômes anxieux et d'une insatisfaction de vie chez les patientes. Ainsi, les résultats mettent en évidence l'importance de tenir compte de la gestion dyadique du stress pour mieux comprendre l'ajustement à cette pathologie et mieux prendre en charge ces patients.

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## 1. Introduction

Fibromyalgia represents a complex multifactorial chronic syndrome predominantly affecting women. Various characteristics typify this syndrome, such as chronic widespread muscular and tendinous pain, neuropathies, chronic inflammatory demyelinating polyneuropathy, muscle denervation, non-restorative sleep, chronic fatigue, altered moods, mixed anxiety and depression disorders, intestinal irritability, and headaches (Atzeni et al., 2019; Pagano, Matsutani, Ferreira, Marques, & Pereira, 2004; Perrot, 2019). Due to its relatively unknown etiology, fibromyalgia remains a rather controversial diagnosis. Indeed, because there are no specific biological markers for fibromyalgia, its diagnosis is based on patients' statements and on clinical assessments (Atzeni et al., 2019), which may reinforce the lack of recognition and knowledge of this condition. Reflecting this situation, the World Health Organization (WHO) only included this pathology in the International Classification of Diseases

(specific code: M 79.7) 25 years ago as a musculoskeletal system and connective tissue disorder (Perrot et al., 2019). Nevertheless, an international working group of clinicians and basic scientists, the ACTTION-APS Pain Taxonomy (AAPT), recently developed a diagnostic system for chronic pain disorders that considers five dimensions: (1) core diagnostic criteria; (2) common features; (3) common medical comorbidities; (4) neurobiological, psychosocial, and functional consequences; (5) putative neurobiological and psychosocial mechanisms, risk factors, and protective factors (Fillingingim, Bruehl, & Dworkin, 2014). Arnold et al. (2019) recommended using the AAPT taxonomic approach to diagnose fibromyalgia. The core diagnostic criteria (dimension 1) are the presence of multisite pain (six out of nine sites) with moderate to severe fatigue or sleep problems, for at least three months. Common features (dimension 2) that may support a diagnosis of fibromyalgia are tenderness to touch, dyscognition, musculoskeletal stiffness and environmental sensitivity. Comorbidities (dimension 3) frequently associated with fibromyalgia are several somatic pain disorders, psychiatric conditions, sleep disorders and rheumatic diseases. Poor quality of life and high indirect cost are the most frequent consequences (dimension 4) of this disease. Finally, prior functional chronic pain disorders and environmental stressors have been identified as risk factors (dimension 5). The heterogeneity and plurality of the disease, in terms of symptoms and severity, and possible changes in the characteristics of the disease over time must also be taken into account when diagnosing fibromyalgia (Atzeni et al., 2019). This recent multidimensional approach to fibromyalgia should therefore facilitate its diagnosis.

Nevertheless, the etiopathogenesis of fibromyalgia is still debated (Atzeni et al., 2019). Controversy surrounding the authenticity of the diagnosis persist in certain non-specialist environments and negatively impacts patients' care and wellbeing, as it undermines the legitimacy of their complaints. Thus, individuals afflicted by this condition often face disparaging attitudes from relatives and health professionals, thereby leaving them waiting for a diagnosis and the appropriate support (Pagano et al., 2004). These issues have important psychological, social, medical and professional implications for their wellbeing (Bernard, Prince, & Edsall, 2000; Diaz-Piedra et al., 2014; Murray, Murray, & Daniels, 2007; Offenbaecher et al., 2017; Smith et al., 2010; Zautra, Smith, Affleck, & Tennen, 2001).

Fibromyalgia-related symptoms greatly affect daily activities, which, in turn, impact social and family relationships (Bernard et al., 2000; Peterson, 2007). Moreover, the near-absence of recognition and information related to fibromyalgia within the public sphere often leads to general incomprehension on the part of family and friends (Bernard et al., 2000). This situation often results in conflicts and challenges with close friends and relatives, and negatively influences the relationship between individuals diagnosed with fibromyalgia and their partner (Bernard et al., 2000; Tikiz et al., 2005; Yilmaz, Yilmaz, & Erkin, 2012). Taken together, these factors promote social seclusion and feelings of loneliness. In addition, the loss of autonomy and the greater sense of dependence that follow from symptoms are often accompanied by feelings of guilt and shame (Bernard et al., 2000). Overall, fibromyalgia patients and their relatives face challenges that impede various areas of their lives (White, Speechley, Harth, & Ostbye, 1999). In an attempt to overcome this bleak outlook, researchers have sought factors that may potentially improve the general quality of life for these patients.

According to a literature review on chronic pain in the couple context, the link between marital satisfaction and pain is rather complex (Leonard, Cano, & Johansen, 2006). The reactions and support of the partner regarding feelings of pain are viewed as central factors. In particular, the perception of negative attitudes and lack of support increase feelings of pain and uselessness. Conversely, the perception of positive support reduces feelings of pain and disability in patients. Therefore, support and assistance from the partner concerning the pain of the patient increase wellbeing. Furthermore, marital satisfaction is negatively related to experiences of psychological distress (Leonard et al., 2006).

The literature emphasizes the importance of focusing on the patient-spouse dyad. It therefore seems relevant to explore how couples face stress and how this is associated with patient adjustment. To our knowledge, no study has investigated dyadic coping in fibromyalgia (Bernard et al., 2000; Boehm, Eisenberg, & Lampel, 2011; Tikiz et al., 2005). Concentrating future efforts on a better understanding of these links may help to improve the quality of life of individuals diagnosed with fibromyalgia. In fact, a training program designed to improve the coping skills of the partner showed notable benefits regarding the emotional distress of patients diagnosed with chronic pain (Keefe et al., 1996).

Proposing a systemic and transactional approach, [Bodenmann \(1995\)](#) developed the concept of dyadic coping in close relationships. In his view, stress and coping reflect an interactive phenomenon between the two partners, whereby the signs of stress of one partner may trigger a reliable management response from the other. More specifically, this model considers that the dyadic process of stress management corresponds to three fundamental phases:

- stress communication: communicating about stress to one's partner, soliciting practical or emotional support;
- dyadic coping: all the efforts made by one or both partners to manage stressful events experienced by one (i.e., individual stress) or both (i.e., dyadic stress) partners. This phase comprises management strategies that attempt to maintain or restore structural balance, the functional, behavioral, emotional and social development of the dyadic system, as well as the balance of each of the partners ([Bodenmann, 1997](#)). It therefore corresponds to the reaction of each of the partners that follows from the communication phase. These reactions vary and may be more or less appropriate. They include common dyadic coping – i.e., trying to manage the problem together and find concrete solutions, discussing feelings and expressing them in order to calm down; positive dyadic coping – i.e., helping one's partner to see the situation from a different perspective, to relativize the problem, as well as showing interest and compassion; and negative dyadic coping – i.e., hostile, ambivalent or superficial support;
- feedback: the satisfaction and perceived effectiveness of stress management strategies within the couple.

Research confirms that positive dyadic coping is associated with good marital satisfaction, as well as a better functioning and perception of the marriage ([Bodenmann, 1997](#); [Bodenmann & Cina, 2006](#); [Bodenmann, Perez, Cina, & Widmer, 2002](#); [Bodenmann, Pihet, & Kayser, 2006](#); [Falconier, Jackson, Hilpert, & Bodenmann, 2015](#)). Training programs in coping skills to promote better dyadic coping also improve communication and the couple's satisfaction with their relationship ([Bodenmann, Hilpert, Nussbeck, & Bradbury, 2014](#)).

Dyadic coping influences many aspects of the life of patients with a chronic disease and their partners. For example, studies show that dyadic coping may alter anxiety and depression symptoms in patients with prostate cancer and their partners ([Regan et al., 2014](#)). Likewise, positive dyadic coping reduces distress in patients with breast cancer and their partners ([Badr, Carmack, Kashy, Cristofanilli, & Revenson, 2010](#); [Rottmann et al., 2015](#)) and improves the quality of life and personal satisfaction in patients after breast reconstruction ([Author et al., 2009](#)). In addition, common dyadic coping is associated with higher self-efficacy in diabetes management for patients and partners ([Johnson et al., 2013](#)).

This mounting body of evidence makes it relevant to explore how individuals diagnosed with fibromyalgia perceive dyadic coping in their couple and how this perception relates to their wellbeing. This research will improve our understanding of this disease and the care of people suffering from it. The current study proposes to examine how women diagnosed with fibromyalgia perceive dyadic coping in their couple compared to a matched control population and to investigate how dyadic coping is associated with life satisfaction and anxiety and depression symptoms in fibromyalgia patients.

## 2. Materials and methods

### 2.1. Participants

A total of 156 women from France participated in this study on a voluntary basis: 73 female patients diagnosed with fibromyalgia and 73 matched control healthy women. No compensation was given for taking part in this research study. The mean age of the patients was 43.15 ( $\pm 8.15$ ) years and they had been in a relationship for an average duration of 16.96 years ( $\pm 10.99$ ; min = 1 and max = 37). They had been diagnosed with fibromyalgia for an average timespan of 5.34 years ( $\pm 4.47$ ; min = 0 and max = 18). Regarding employment, less than half of the patients worked (45.2%). The mean age of the healthy women was 41 years old ( $\pm 10.86$ ), which was comparable to the fibromyalgia patient

group ( $t[144] = 1.35, p = .18, \text{Eta}^2 = .013$ ). They had been in a relationship for an average duration of 16.01 years ( $\pm 10.59$ ; min = 2 and max = 36), which was also comparable to the fibromyalgia patient group ( $t[144] = .53, p = .60, \text{Eta}^2 = .002$ ). Regarding employment, the majority of the healthy women worked (91.8%), which was significantly different from the fibromyalgia patient group ( $\text{Chi}^2[1] = 36.69, p = 0.000$ ).

## 2.2. Procedure

Women diagnosed with fibromyalgia were recruited in two hospitals specializing in pain evaluation and treatment. The control group was a convenient sample, which was recruited by students in psychology. One hundred and twelve heterosexual couples showed their interest in participating in this study as a control, of whom 73 women were selected by excluding those diagnosed with a chronic disease and by matching their age with the fibromyalgia group. In both the experimental and control groups, only women participated in the study. Their partners were not included in the study. Every participant received an information letter explaining the purpose of the study and gave their informed consent. Each participant completed a questionnaire regarding their sociodemographic characteristics and three standardized questionnaires.

## 2.3. Materials and measures

The Dyadic Coping Inventory (DCI) was developed by [Bodenmann \(2008\)](#) and validated in French by [Ledermann et al. \(2010\)](#). It was used to assess the perceptions of the women who participated in the study regarding dyadic coping. It consists of 37 items with a 5-point response format (response scales range from 1 = very rarely to 5 = very often), which assesses the respondent's perception of how frequently he/she and his/her partner engage in coping behaviors. Several dimensions can be measured: stress communication, supportive dyadic coping, delegated dyadic coping, common dyadic coping, negative dyadic coping and an evaluation of dyadic coping (which reflects the quality of the self-perceived dyadic coping). The scale is constructed so that participants can assess and indicate their own stress communication and their perception of their partner's stress communication. The same instructions are given for supportive, delegated, common and negative dyadic coping. For all the sub-scores, the "own" and the "partner" scales have been merged to comprehend women's perception of dyadic coping within their couple.

The stress communication (SC) subscale is composed of 8 items and a high score indicates that the woman perceives that she and her partner express their stress to each other (typical SC subscale items are "I ask my partner to do things for me when I have too much to do"; "I show my partner through my behavior when I am not doing well or when I have problems"; "My partner lets me know that he appreciates my practical support, advice, or help" and "My partner tells me openly how he feels and that he would appreciate my support";  $\alpha = .67$ ).

The supportive dyadic coping (SDC) subscale is composed of 10 items and a high score indicates that the woman reports using supportive strategies toward her partner and that she perceives, reciprocally, that her partner uses supportive strategies toward her (typical SDC subscale items are "I listen to my partner and give him space and time to communicate what really bothers him"; "I show empathy and understanding to my partner"; "My partner shows empathy and understanding to me" and "My partner helps me analyze the situation so that I can better face the problem";  $\alpha = .90$ ).

The delegated dyadic coping (DDC) subscale is composed of 4 items and a high score indicates that the woman reports taking over responsibilities in order to reduce her partner's stress level and that she perceives, reciprocally, that her partner takes over responsibilities in order to reduce her own stress level (typical DDC subscale items are "I take on things that my partner would normally do in order to help him out"; "My partner takes on things that I normally do in order to help me out" and "When I am too busy, my partner helps me out";  $\alpha = .54$ ).

The negative dyadic coping (NDC) subscale is composed of 8 items and a high score indicates that the woman reports using hostile, ambivalent and/or superficial coping strategies toward her partner and that she perceives, reciprocally, that her partner uses hostile, ambivalent and/or superficial coping

strategies toward her (typical NDC subscale items are “I blame my partner for not coping well enough with stress”; “I do not take my partner’s stress seriously”; “My partner blames me for not coping well enough with stress” and “When I am stressed, my partner tends to withdraw”;  $\alpha = .85$ ).

The common dyadic coping (CDC) subscale is composed of 5 items and a high score indicates that the woman perceives that both her partner and herself try to manage the situation by coping together (typical CDC subscale items are “We engage in a serious discussion about the problem and think through what has to be done” and “We are affectionate to each other, make love and try that way to cope with stress”;  $\alpha = .74$ ).

Lastly, the evaluation of dyadic coping (EDC) subscale is composed of 2 items and a high score indicates that the woman is satisfied with their dyadic coping and believes it to be effective (typical EDC subscale items are “I am satisfied with the support I receive from my partner and the way we deal with stress together” and “I am satisfied with the support I receive from my partner and I find, as a couple, the way we deal with stress together is effective”;  $\alpha = .94$ ).

The Hospital Anxiety and Depression Scale (HADS) was developed by [Zigmond and Snaith \(1983\)](#) and validated in French by [Lepine, Godchau, and Brun \(1985\)](#). This questionnaire measures symptoms of anxiety (typical anxiety subscale items are “I feel tense or ‘wound up’” and “I get sudden feelings of panic”) and depression (typical depression subscale items are “I feel as if I am slowed down” and “I have lost interest in my appearance”) during the past week and the 14 items are scored on a 4-point Likert scale (response scales range from 0 to 3). A high score on the HADS indicates higher levels of anxiety or depression. The cutoff score for an anxiety or depression disorder is 10. Internal consistency in our sample was  $\alpha = .69$  for the anxiety subscale and  $\alpha = .83$  for the depression subscale.

The Satisfaction with Life Scale (SWLS) was developed by [Diener, Emmons, Larsen, and Griffin \(1985\)](#) and validated in French by [Blais, Vallerand, Pelletier, and Brière \(1989\)](#). It measures the perceived satisfaction with life through 5 items (typical items are “If I could live my life over, I would change almost nothing” and “In most ways my life is close to my ideal”), scored on a 7-point Likert scale (response scales range from 1 = strongly disagree to 7 = strongly agree). A high score on the SWLS indicates higher levels of satisfaction with one’s life. Internal consistency in our sample was  $\alpha = .90$ .

## 2.4. Statistical analysis

One-way analyses of variance (ANOVAs) were conducted to test whether fibromyalgia patients and healthy women differ with respect to anxiety, depression, and satisfaction with life. Analyses of covariance (ANCOVAs) were conducted to test whether fibromyalgia patients and healthy women differ with respect to dyadic coping and by controlling the effects of anxiety and depression on dyadic coping variables.

Correlations and multiple linear regressions were also carried out to calculate the relationship between dyadic coping strategies, anxiety, depression and satisfaction with life of fibromyalgia patients. Only the dyadic coping strategies sub-scores that showed significant correlations to anxiety, depression and satisfaction with life were used to conduct the regressions. Regarding the multiple regressions, a standard approach was chosen, adding all potential predictors simultaneously to the equation. The risk of collinearity was controlled. All statistical analyses were performed with SPSS (IBM, version 24).

## 3. Results

### 3.1. Differences between patients diagnosed with fibromyalgia and the control group

[Table 1](#) presents the means and standard deviations of the participants' scores for anxiety, depression, satisfaction with life and dyadic coping as well as the results from the analyses of variance and covariance.

Fifty-three patients (73%) versus 28 control women (38%) reached the HADS-anxiety clinical cut-off score, which strongly suggests the presence of an anxiety disorder. Similarly, 38 patients (53%) versus 4 control women (5%) reached the HADS-depression clinical cut-off score, which strongly suggests the presence of a depression disorder. Hence, fibromyalgia patients had higher

**Table 1**  
Comparison of scores for anxiety and depression (HADS), satisfaction with life (SWLS), and dyadic coping (DCI) between fibromyalgia patients and the control group.

Measure	Patients (n = 73)		Control group (n = 73)		ANOVA			ANCOVA		
	M	SD	M	SD	F	p	Eta <sub>2</sub>	F	p	Eta <sub>2</sub>
HADS dimensions										
Anxiety	12.05	3.68	9.10	2.97	28.58	<.001***	.17			
Depression	10.11	4.69	5.27	2.98	55.27	<.001***	.28			
SWLS										
Satisfaction with life	17.38	7.50	25.16	6.08	47.38	<.001***	.25			
DCI dimensions										
Stress communication (SC)	21.90	5.09	22.99	5.39	1.56	.21	.01	.52	.47	.00
Supportive dyadic coping (SDC)	32.26	8.13	35.05	8.20	4.27	.04*	.03	.01	.94	.00
Delegated dyadic coping (DDC)	13.58	2.86	12.38	2.78	6.53	.01*	.04	6.64	.01*	.05
Negative dyadic coping (NDC)	18.37	6.78	13.63	5.01	23.05	<.001***	.14	5.46	.02*	.04
Common dyadic coping (CDC)	12.27	3.44	16.79	4.09	52.18	<.001***	.27	20.90	<.001***	.13
Evaluation of dyadic coping (EDC)	5.68	2.37	6.96	2.35	10.65	.001**	.07	.44	.51	.00

M: mean; SD: standard deviation; for ANCOVA, anxiety and depression were controlled.

\* p < .05.

\*\* p < .01.

\*\*\* p < .001.



mean scores of anxiety ( $M_1 = 12.05 > M_2 = 9.10$ ,  $F[1,144] = 28.58$ ,  $p < .001$ ,  $Eta^2 = .17$ ), and depression ( $M_1 = 10.11 > M_2 = 5.27$ ,  $F[1,144] = 55.27$ ,  $p < .001$ ,  $Eta^2 = .28$ ), as well as lower levels of satisfaction with life ( $M_1 = 17.38 < M_2 = 25.16$ ,  $F[1,144] = 47.38$ ,  $p < .001$ ,  $Eta^2 = .25$ ) than the control group.

Significant group differences were also found in the measures of dyadic coping. When controlling anxiety and depression levels, patients reported using more delegated dyadic coping ( $M_1 = 13.58 > M_2 = 12.38$ ,  $F[1,144] = 6.64$ ,  $p < .05$ ,  $Eta^2 = .05$ ), and more negative dyadic coping in their relationship ( $M_1 = 18.37 > M_2 = 13.63$ ,  $F[1,144] = 5.46$ ,  $p < .05$ ,  $Eta^2 = .04$ ). Moreover, patients considered that they used fewer common dyadic coping strategies with their partner than the healthy women ( $M_1 = 12.27 < M_2 = 16.79$ ,  $F[1,144] = 20.90$ ,  $p < .001$ ,  $Eta^2 = .13$ ).

### 3.2. Associations between DCI scores, HADS scores and the SWLS score in fibromyalgia patients

Table 2 shows the correlations between the scores of dyadic coping, anxiety, depression and satisfaction with life for the fibromyalgia patients.

Table 3 presents the results from the multiple linear regression analyses for these latter three variables.

#### 3.2.1. Anxiety and depression in fibromyalgia patients

The results indicate that patients' anxiety and depression correlated positively with negative dyadic coping ( $r = .28$ ,  $p < .05$ ;  $r = .36$ ,  $p < .01$ , respectively). Patients' depression correlated negatively with supportive dyadic coping ( $r = -.36$ ,  $p < .01$ ), common dyadic coping ( $r = -.30$ ,  $p < .01$ ) and evaluation of dyadic coping ( $r = -.37$ ,  $p < .01$ ).

Regression analysis showed that the model including negative dyadic coping ( $\beta = .28$ ,  $p < .05$ ) accounted for 8% of the variance in anxiety ( $F[1.71] = 5.83$ ,  $p < .05$ ). Thus, these results reveal that the use of negative dyadic coping was associated with the patients' higher anxiety symptoms.

Regression analysis showed that the model including supportive dyadic coping ( $\beta = -.09$ , ns), negative dyadic coping ( $\beta = .17$ , ns), common dyadic coping ( $\beta = -.10$ , ns) and evaluation of dyadic coping ( $\beta = -.14$ , ns) accounted for 17% of the variance in depression ( $F[4.68] = 3.58$ ,  $p < .05$ ). Nevertheless, none of these variables was significantly associated with depression symptoms.

#### 3.2.2. Satisfaction with life in fibromyalgia patients

Patients' satisfaction with life negatively correlated with negative dyadic coping ( $r = -.47$ ,  $p < .01$ ), and positively correlated with supportive dyadic coping ( $r = .45$ ,  $p < .01$ ), as well as with common dyadic coping ( $r = .42$ ,  $p < .01$ ) and evaluation of dyadic coping ( $r = .41$ ,  $p < .01$ ).

Regression analysis showed that the model including supportive dyadic coping ( $\beta = .12$ , ns), negative dyadic coping ( $\beta = -.30$ ,  $p < .05$ ), common dyadic coping ( $\beta = .21$ , ns) and evaluation of dyadic

**Table 2**

Pearson's correlations between the subscale scores of dyadic coping (DCI) and the scores of anxiety, depression (HADS) and satisfaction with life (SWLS).

Measure	Anxiety	Depression	SWL	SC	SDC	DDC	NDC	CDC	EDC
Anxiety	1								
Depression	.58**	1							
SWL	-.42**	-.57**	1						
SC	.17	.00	-.00	1					
SDC	-.20	-.36**	.45**	.30**	1				
DDC	.01	.01	.11	.25*	.33**	1			
NDC	.28*	.36**	-.47**	.07	-.63**	-.33**	1		
CDC	-.19	-.30**	.42**	.11	.63**	.24*	-.41**	1	
EDC	-.22	-.37**	.41**	.10	.72**	.37**	-.65**	.56**	1

SWL for Satisfaction with Life, SC for Stress Communication, SDC for Supportive Dyadic Coping, DDC for Delegated Dyadic Coping, NDC for Negative Dyadic Coping, CDC for Common Dyadic Coping, EDC for Evaluation of Dyadic Coping.

\*  $p < .05$ .

\*\*  $p < .01$ .



**Table 3**  
 Multiple linear regression analyses for anxiety, depression and life satisfaction.

Measure	B	SD B	$\beta$	t	p
Prediction of anxiety					
Negative dyadic coping	.15	.06	.28	2.42	.02*
CONSTANT	9.31				
$R^2 = .08, F(1.71) = 5.84, p = .02^*$					
Prediction of depression					
Supportive dyadic coping	-.05	.10	-.09	-.50	.62
Negative dyadic coping	.12	.10	.17	1.12	.27
Common dyadic coping	-.13	.20	-.10	-.67	.51
Evaluation of dyadic coping	-.26	.35	-.14	-.80	.43
CONSTANT	12.79				
$R^2 = .17, F(4.68) = 3.58, p = .01^*$					
Prediction of life satisfaction					
Supportive dyadic coping	.11	.16	.12	.74	.46
Negative dyadic coping	-.33	.16	-.30	-2.11	.04*
Common dyadic coping	.47	.30	.21	1.59	.12
Evaluation of dyadic coping	.02	.51	.01	.04	.97
CONSTANT	13.89				
$R^2 = .29, F(4.68) = p = 0.000^{***}$					

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

coping ( $\beta = .01, ns$ ) accounted for 29% of the variance in the patients' satisfaction with life score ( $F[4.68] = 6.9, p < .001$ ). Thus, these results reveal that only the use of low negative dyadic coping in the couple was significantly associated with greater patients' satisfaction with life. The results for the other variables were not statistically significant.

#### 4. Discussion

This study shows that patients diagnosed with fibromyalgia have more anxiety and depression symptoms, are less satisfied with their life and perceive lower common dyadic coping and higher delegated and negative dyadic coping in their own couple compared to a matched control population who do not have this disease. Moreover, the use of negative dyadic coping is associated with higher anxiety and lower life satisfaction in these patients.

To our knowledge, this is the first study comparing the perceived dyadic coping of patients with fibromyalgia to matched controls. Our results show that fibromyalgia patients report poorer dyadic coping than the matched control group, especially regarding negative and common dyadic coping. This is in agreement with findings that populations suffering from chronic diseases are associated with using less positive and more negative dyadic coping (Meier et al., 2012). However, in our study, delegated dyadic coping (considered a positive strategy) is higher in patients with fibromyalgia than in matched controls, which means that each partner in the couple takes over the responsibilities of the other partner in order to reduce their partner's stress. Yet, this result should be taken with caution as the internal consistency of the delegated dyadic coping subscale was weak. Moreover, it is surprising to find no differences between fibromyalgia patients and matched controls regarding stress communication, supportive dyadic coping and the evaluation of dyadic coping. For stress communication, difficulties in closeness and trust may explain this result. Partners may avoid sharing their stress in order to protect each other, which then inhibits the development of supportive dyadic coping.

Being diagnosed with fibromyalgia may lead to additional stress, which further hinders stress management in couples. For example, the partners' lack of comprehension of the disease is probably a relevant factor that limits the effectiveness of their help and support (Bernard et al., 2000). The use of negative dyadic coping strategies could therefore follow from such incomprehension.

People diagnosed with fibromyalgia seem to operate according to an "all-or-nothing" binary mindset. Thus, their attention oscillates between fully focusing on their pain and completely ignoring it,

including the associated limitations due to fear of rejection and feelings of worthlessness. The “Stop Rules and Current Mood Model” explains this type of behavior (Vlaeyen & Morley, 2004). According to this model, patients are driven by the desire to surpass themselves, scarcely respecting their limitations, which inevitably leads them toward failure. This outcome strengthens their negative expectations about their fear of pain and their belief that they are worthless. Consequently, they often appraise situations catastrophically, making them reluctant to make an effort and leading them to adopt introversion (Theadom, Cropley, Smith, Feigin, & McPherson, 2015; van Dessel et al., 2015; Theadom et al., 2015). This tendency to perceive their experience negatively may explain why patients with fibromyalgia use negative dyadic coping while their tendency to be introverted may explain why they use common dyadic coping less. However, these assumptions should be considered with caution regarding our own results since the DCI assesses general functioning in couples and is not specific to the stress caused by fibromyalgia.

Our results also reveal that dyadic coping is associated with mental health and wellbeing in patients with fibromyalgia. More specifically, the regression analyses show that the use of negative dyadic coping is the only factor significantly associated with higher anxiety and that negative dyadic coping is associated with satisfaction with life. These results underline the damaging effect of negative dyadic coping strategies (e.g., hostile, ambivalent or superficial support), and appear consistent with those of Regan et al. (Regan et al., 2014) who showed the association of negative dyadic coping with anxiety in couples facing prostate cancer. They also agree with the findings that dyadic coping influences many life aspects of patients with a chronic disease (Badr et al., 2010; Johnson et al., 2013; Regan et al., 2014; Author et al., 2009) and confirm that the quality of dyadic stress management is associated with the wellbeing of patients. Regression analyses show that negative dyadic coping is the best predictor of depression, but the effect is not significant, contrary to what has been found in the literature (Bodenmann, Charvoz, Widmer, & Bradbury, 2004; Regan et al., 2014). It should be remembered that our study only included female patients, which could explain these results.

Despite our findings, certain limitations warrant mention. The first one is the cross-sectional design of the study. The results have to be taken with caution regarding the associations between dyadic coping, anxiety, depression and satisfaction with life. Longitudinal studies are needed to determine the long-term predictions of dyadic coping, not only including patients after diagnosis but also trying to take into account their first experience of pain, which often occurs a long time before diagnosis. In addition, some patients' diseases evolved over time in to more severe forms (Atzeni et al., 2019). A longitudinal follow-up would allow researchers to account for the effects of this evolution. Also, in this study we did not explore the degree of severity of the disease, which can be expressed in four levels or classes (Atzeni et al., 2019). We also did not consider co-morbidities that contribute to the severity of the disease. All these elements may have influenced the results. Another limitation concerns the self-reported data. Patients reported on their partner's coping strategies, which may be subject to biases, and further studies should require partners to complete the dyadic coping inventory also. In addition, a few of the Cronbach's alphas are low for some subscales, specifically the delegated dyadic coping subscale ( $\alpha = .54$ ), and so the reliability of these subscales is lower than expected. This could have influenced the results, notably with regard to some analyses that had significant relationships and/or a small effect size. Finally, our small sample size may explain why some of our results, particularly those concerning the regression on the depression variable, are not significant. This should therefore prompt readers to consider the results with caution.

This study briefly includes the impact of stress on partners and the various means by which dyadic coping could improve their wellbeing. Future studies focusing on these aspects seem necessary given that partners are often the closest relatives affected by the pathology (Bernard et al., 2000; Franks, Cronan, & Oliver, 2004; Peterson, 2007; Tikiz et al., 2005; Yilmaz et al., 2012). For example, a qualitative study showed how fibromyalgia and the perception of a lack of information about the disease are detrimental to the wellbeing of the patient's partner (Söderberg, Strand, Haapala, & Lundman, 2003). Partners of patients diagnosed with fibromyalgia show greater signs of depression, stress and loneliness, as well as poorer health and emotional balance compared to matched control groups (Bigatti & Cronan, 2002). Furthermore, self-reported feelings of being affected by their partner's disease (e.g., when their partner presents sleep disturbance and lower self-adaptability) are associated with numerous psychological issues (Bigatti & Cronan, 2002).

Finally, our results show that patients diagnosed with fibromyalgia perceive greater difficulties in dyadic coping than matched controls. In this way, our study indicates that there may be some benefit in working with couples on their common dyadic coping, such that both spouses could identify their personal and marital resources. These therapeutic approaches should aim to guide and help couples discover effective strategies to cope with stress, as dyadic coping seems to be an essential factor associated with patients' wellbeing and mental health. It is also relevant to distinguish what is related to the functioning of the patient versus the functioning of the couple in order to improve stress management. Educational interventions through cognitive-behavioral therapy appear well-adapted to improve the overall understanding of the disease, increase patients' awareness of their level of functioning and help them find appropriate strategies to deal with their difficulties (Atzeni et al., 2019). This type of support has already proved to be effective (Theadom et al., 2015; van Dessel et al., 2015). It follows that including the partners within certain facets of the therapy may prove beneficial in addressing their perceived lack of information about the disease, which may contribute to mutual misunderstanding (Söderberg et al., 2003). Working with the couple on communication skills and dyadic stress management, so that both partners can feel understood and supported, is also central. This approach would provide them with the tools needed to increase their sense of self-efficacy when dealing with various difficult situations. This assessment is consistent with our findings showing that common dyadic coping increases patients' satisfaction. In addition, therapeutic groups may enable couples to appraise their situation from each other's perspective and learn from sharing their experiences. For example, Bodenmann et al.'s "Couples Coping Enhancement Training (CCET)" (Bodenmann & Shantinath, 2004) is a couple-oriented therapeutic approach that largely stems from research on stress (Lazarus & Folkman, 1984; Murray et al., 2007), cognitive-behavioral methods and systemic theory (Gottman, 2014; Jacobson, 1992). It includes several modules (Introduction to the stress thematic; Optimization of individual strategies to cope with stress; Enhanced common stress management; Improved communication; Justice and equity in the couple; Effective problem-solving to reduce stress), which could be adapted to fibromyalgia patients and their partners.

In conclusion, this study highlights the impact of fibromyalgia on dyadic coping by comparing patients to matched controls. Moreover, the findings reveal the damaging association between negative dyadic coping and anxiety as well as life satisfaction. Additional longitudinal studies are needed to explore the causal mechanisms that underlie these relationships. Do issues in relationships predate fibromyalgia, or are they linked to factors associated with the onset of the disease? Do they precipitate and/or maintain these factors? Do they arise from the stress associated with experiencing the multiple symptoms and/or the stigma of having fibromyalgia? The quality of the interactions between partners and the perception of an effective mutual support represent key elements in adjusting to this chronic disease. Answering these questions is thus crucial to improving the wellbeing of individuals with fibromyalgia. The results could also provide important information that would help identify beneficial skills in order to promote wellbeing within the couple.

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## Disclosure of interest

The authors declare that they have no competing interest.

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