Fibromyalgia and rheumatoid arthritis: Personality and psychopathology differences from the Minnesota Multiphasic Personality Inventory-2

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ARTICLE INFO

Keywords:

Fibromyalgia
Rheumatoid arthritis
MMPI-2
Personality dimensions
Psychopathology

ABSTRACT

The fibromyalgia syndrome (FM) is a chronic widespread pain condition whose etiology remains unknown. Within a psychosocial approach to FM, personality may play a role as predisposing and/or maintaining factor. A meta-analytic study has identified a distinct Minnesota Multiphasic Personality Inventory-2 (MMPI-2) clinical profile between FM female patients and healthy controls, but the differences between FM and other chronic pain conditions with clear etiology are not established. This cross-sectional study compares the clinical MMPI-2 profile in FM and rheumatoid arthritis (RA) patients, identifies typical groups of each pathology, and further characterizes these groups in the broad MMPI-2 personality and psychopathology dimensions. The MMPI-2 scales were assessed in a sample of 70 women (FM: $n = 38$, $M_{age} = 46.03$, $SD_{age} = 8.48$; RA: $n = 32$, $M_{age} = 45.31$, $SD_{age} = 8.68$). The FM group had clinically significant elevations on five clinical scales (*Hypochondriasis*, *Depression*, *Hysteria*, *Psychasthenia* and *Schizophrenia*), while RA group had none. A K-Means cluster analysis allowed the identification of a typical profile of each pathology, and subsequent MANCOVAs identified important features of FM patients on several MMPI-2 dimensions. We conclude there is specificity in the personality and psychopathology characteristics of FM patients.

1. Introduction

Fibromyalgia (FM) is a syndrome characterized by chronic widespread pain and tenderness at multiple points, joint stiffness, and related symptoms (e.g., mood disorders, fatigue, cognitive dysfunction, and insomnia) (Mease, 2005), without a well-defined underlying organic disease. The etiology and pathogenesis of FM are still not fully understood, and several aspects seem to be involved, such as dysfunction of the central and autonomic nervous systems, neurotransmitters, hormones, immune system, external stressors, psychiatric aspects, and others (Bellato et al., 2012). The main mechanism involved is central sensitivity, and it is defined by the increased response to stimulation mediated by central nervous system signaling (Yunus, 2008). As the prevalence of FM is considerably higher in women than in men (ratio of 9:1, respectively; Fitzcharles & Yunus, 2012), most of the studies use female samples, and their findings about psychological features are discussed in terms of female patients only.

The contemporary hypothesis posits that FM emerge in an

individual patient when a complex interaction of genetic predisposition, enhanced pain perception, and heightened psychological distress combine with certain environmental factors (Diatchenko, Nackley, Slade, Fillingim, & Maixner, 2006). Therefore, a biopsychosocial approach is the most appropriate. Van Houdenhove and Egle (2004) proposed a biopsychosocial model of FM, with several etiological factors, as precipitating, predisposing, and perpetuating, suggesting that multiple pathways may lead to the causation and persistence of the syndrome. Specifically, familial-genetic factors, traumatic experiences, lifestyle factors, and previous episodes of depression may increase vulnerability to FM, and various physical, perceptual-cognitive, affective, personality-related, behavioral, and social aspects may perpetuate the illness (Van Houdenhove, Luyten, & Egle, 2009; Van Houdenhove, Neerinx, Onghena, Lysens, & Vertommen, 2001).

Thereby, we are interested in personality as an important aspect in the understanding of FM, both as predisposing and perpetuating, as it is seen as one of a number of modulators or “filters” of psychological responses that might link to the clinical features of FM, in a model of

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<https://doi.org/10.1016/j.paid.2018.11.013>

Received 27 February 2018; Received in revised form 6 November 2018; Accepted 8 November 2018

Available online 20 November 2018

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FM linking emotional distress, life events and physical responses (Malin & Littlejohn, 2012). We also acknowledge that FM patients have higher levels of illness uncertainty than other chronic pain patients with a clearly defined etiology (Reich, Olmsted, & van Puymbroeck, 2006), the lack of understanding is a common feeling in these women (Juuso, Skär, Olsson, & Söderberg, 2014) and the invisibility of their pain makes interactions with others more difficult and may bring them further distress (Söderberg, Strand, Haapala, & Lundman, 2003). Although all these aspects may not be separated in the lives of FM patients, and daily experiences interact with each other and with psychological and physiological features, we consider the structural personality aspects as a basis that can predispose to FM syndrome, within a context of pre-existing physiological vulnerability.

The Minnesota Multiphasic Personality Inventory (MMPI) is the most widely used self-report questionnaire for the assessment of personality and psychopathological features in adults, in several contexts (Graham, 2012; Greene, 2000), and it has been extensively used in health and chronic disease contexts (Arbisi & Butcher, 2004; Ardic & Toraman, 2002; Malin & Littlejohn, 2012), and also with FM patients. It comprises several personality and psychopathology dimensions and enables the control of response attitudes and protocols validity. A recent meta-analysis demonstrated that MMPI has showed to be able to discriminate female patients with FM from healthy volunteers (Novo, Gonzalez, Peres, & Aguiar, 2017).

Many studies about psychosocial features in FM patients has compared this population with rheumatoid arthritis (RA) patients, because FM and AR are among the most common causes of musculoskeletal pain and disability, and they share a range of associated outcomes, which include not only pain and fatigue but also pervasive difficulties with activities of daily living. Nevertheless, the main difference is that RA has a clear pathophysiology and a range of clinical measures being able to indicate its presence, while FM does not (Walker & Littlejohn, 2007). In general, studies have identified that FM patients have more depression than AR patients (Hassett, Cone, Patella, & Sigal, 2000; Wolfe & Michaud, 2009), worse mental health (Salaffi et al., 2009) and more anxiety and alexithymia, even when the level of depression was controlled (Sayar, Gulec, & Topbas, 2004).

Pertaining to MMPI results, in cross-sectional studies, FM patients have significantly higher levels than RA patients in *Hypochondriasis*, *Hysteria*, and several other clinical scales that refer to greater psychopathology (*Psychopathic Deviate*, *Paranoia*, *Psychasthenia*, *Schizophrenia*, and *Hypomania*), both in outpatient and in inpatient samples (Ahles, Yunus, Riley, Bradley, & Masi, 1984; Payne et al., 1982; Wolfe et al., 1984). In a reduced version of MMPI-2 considering only *Hypochondriasis*, *Depression*, and *Hysteria*, Ardic and Toraman (2002) found significantly higher levels of depression in FM. In a set of statements on the *Hypochondriasis*, *Depression*, *Hysteria* and *Schizophrenia* scales, FM patients had higher scores on 29 of the 32 statements (Leavitt & Katz, 1989). In comparison to other chronic pain samples, FM group tends to present significantly higher scores in *Hypochondriasis*, *Depression*, *Hysteria*, *Psychasthenia*, *Schizophrenia* and *Social Introversion* (Trygg, Lundberg, Rosenlund, Timpka, & Gerdle, 2002), in *Hypochondriasis*, *Depression*, *Psychasthenia* and *Schizophrenia* (Porter-Moffitt et al., 2006), and in *Psychopathic Deviate*, *Paranoia*, *Psychasthenia* and *Schizophrenia* (Pérez-Pareja, Sesé, González-Ordi, & Palmer, 2010).

Pertaining to profile configurations, Keller and Butcher (1991) have found a predominant MMPI clinical profile in the chronic pain patients, mainly characterized by elevations on scales that identify features related to the characteristics identified by *Hypochondriasis*, *Hysteria* and *Depression* scales, which have been named *neurotic triad*. Comparing FM and RA groups, only 28% of FM group had the normal profile (i.e., no clinical significant score), while 51–60% of RA group fitted within this profile (Wolfe et al., 1984), and 31% of FM group had the psychopathological profile (an elevation of at least four basic clinical scales, comparing with only 6.9% of RA group, according to Ahles et al., 1984). One study, although cross-sectional, asked FM patients about

premorbid aspects, and tried to control for a possible bias of retrospective information. After showing that FM patients showed a significant higher level of action-proneness, when referring to their premorbid style, than the control group, Van Houdenhove et al. (2001) have also showed that these patients significant others, irrespective of their attitude toward the syndrome, have confirmed this information, thereby excluding the hypothesis that these women were idealising their premorbid style. In their biopsychosocial model of fibromyalgia, they speculate that high action-proneness, by promoting an “over-active” lifestyle, may be one of the predisposing factors for the illness, and, simultaneously, contribute to its exacerbation.

Prospective studies in the field of chronic pain are scarce, and even more with FM specifically. However, there are interesting results about the antecedent role of personality in relation to chronic pain onset later in life. A population-based prospective study with 1.658 participants, showed that subjects who were free of chronic widespread pain (a central feature of FM) at baseline had an increased risk of having developed it at follow up, if they displayed features of somatization at baseline, lending powerful support to the hypothesis that chronic widespread pain can be one manifestation of the somatization of distress (McBeth, Macfarlane, Benjamin, & Silman, 2001). With MMPI/MMPI-2 specifically, Applegate et al. (2005) identified several clinical scales as predictors of the number of chronic pain conditions 30 years after this personality and psychopathology assessment, in a broad sample of university students. Bigos et al. (1991) identified that *Hysteria* scale was one of the predictors of a two-fold increase in the probability of developing lower back pain approximately four years later, in sample of 3.020 aircraft employees. Hansen, Biering-Sørensen, and Schroll (1995) following a middle-aged sample over 20 years, found some support for greater incidence of pain in those who had higher scores in the neurotic triad scales before pain onset. However, these results must be considered with care, because of some methodological flaws (Naylor, Boag, & Gustin, 2017). With other than MMPI dimensions, neuroticism predicted a broad set of physical health problems 25 years later, having a stronger effect in the case of pain conditions (Charles, Gatz, Kato, & Pedersen, 2008), and also predicted the development of severe neck trouble in a group of workers, migraine among a sample of female health workers, and headache in a broad sample of adolescents (Naylor et al., 2017).

The large majority of studies using MMPI with this population reports only data of clinical scales, and does not explore the scales pertaining to personality psychopathology disorders, content and supplementary scales, which can give a broader and deeper picture of the psychological functioning of FM patients. Thereby, we consider that it would be very useful to explore scales from other MMPI sets of scales, besides the more explored clinical ones, as it has the potential to identify a broad range of personality and psychopathological features that may act as predisposing and perpetuating of the FM syndrome.

This is a cross-sectional study, with two main goals, expressed in two levels of analysis: We want to compare the basic clinical profile of FM and RA patients, in order to identify if there are nuclear clinical features that represent the two different pathologies, and then consider the more representative patients of each pathology as typical groups (TG). We expect a FM_{TG} to have more severe psychopathology, beyond the neurotic triad scales. Subsequently, we want to assess the differences between FM_{TG} and RA_{TG} patients more broadly, in the personality psychopathology, content, and supplementary scales of the MMPI-2. To our knowledge, this is the first study that analyses such a comprehensive set of psychological and psychopathological features, whether in FM patients only or in comparison with RA sample.

2. Material and methods

2.1. Participants

The participants were 70 women between 30 and 60 years old,

Table 1

Demographical and clinical characteristics of fibromyalgia (FM) and rheumatoid arthritis (RA) groups.

	FM		RA		<i>F</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age	46.03	8.48	45.31	8.68	0.143	.707
Diagnostic duration	4.92	2.53	8.91	7.40	7.29	.009
Symptom duration	12.51	8.67	11.14	8.72	0.433	.513
Pain intensity	6.29	1.56	3.91	2.02	30.47	.000

	FM		RA		<i>U</i>	<i>p</i>		
	<i>Mdn</i>	Min	Max	<i>Mdn</i>	Min	Max		
Time between symptoms and diagnosis	4	0.50	29	1	0	19	270.50	.000

	FM		RA		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%		
Civil state					2.28	.560
Single	4	11	6	19		
Married/cohabiting	27	71	20	63		
Divorced/separated	7	18	5	16		
Widow	0	0	1	3		
Academic grade					9.78	.125
1st cycle	1	3	2	6		
2nd cycle	4	11	0	0		
3rd cycle	4	11	4	11		
Secondary	10	26	8	25		
University graduation	15	40	17	53		
Master	4	11	1	3		
Professional situation					4.00	.279
Working	26	68	27	84		
Unemployed	3	8	3	9		
Housewife	4	11	1	3		
Retired	5	13	1	3		

Note. FM (*n* = 38); RA (*n* = 32); Min = minimum value for the scale; Max = maximum value for the scale.

divided in two groups: FM group (*n* = 38) and RA group (*n* = 32). The two groups were part of a previously studied wider sample (Gonzalez, 2013) and we now selected less participants of each group in order to obtain a more homogeneous age range. The inclusion criteria for FM and RA patients were: Being > 18 years old, having a pure FM or RA diagnosis (not having another rheumatic disease or painful condition), having the diagnosis for at least six months and having no psychiatric diagnosis, psychotropic medication and psychological counselling. Finally, the levels of response consistency to the MMPI-2 (obtained through the VRIN and TRIN validity scales) had to be within the normal range, and all the participants had it. The characterization features are presented in Table 1, and besides the sociodemographic variables, the reported pain intensity in the last week is also presented. As the time between the onset of the symptoms and the diagnosis has no normal distribution, we present median and maximum and minimum values, and nonparametric Mann-Whitney test was used to test the differences between the two patients' groups in this variable. We used the Chi-Square test with Monte Carlo simulation for the civil state, academic grade and professional situation, as these variables had some cells with expected count < 5. The two groups have significant differences in the diagnosis duration in years, time between the onset of the symptoms and diagnosis, and reported pain intensity, being that the RA group had higher diagnosis duration and the FM group had higher time between the onset of the symptoms and diagnosis, and higher reported mean pain.

2.2. Instruments

We used the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), in a Portuguese version (Silva, Novo, Prazeres, & Pires, 2006) to assess clinical and personality psychopathology. It is a self-administered inventory with 567 items, in response format of "True" or "False" categories. The MMPI-2 was designed for evaluating adults who are 18 years of age and older and provide several sets of scales: validity, clinical, content, personality psychopathology, and supplementary. The results obtained in each scale are converted into normalized T-scores, which allows a graphically interpretable profile. In general terms, T-scores higher than 65 are significant and suggestive of possible problems or difficulties. In clinical scales, internal consistency coefficients range between 0.34 and 0.87, most of them in 0.80 and test-retest coefficients range between 0.54 and 0.93, most of them in 0.70. To measure the reported pain intensity, we used the *Verbal Numerical Rating Scale*, with 11 points, asking the patients to rate the pain they felt in the last seven days, between 0 ("no pain") and 10 ("the worst pain possible"). This scale has a generalized clinical use due to simple administration that favors compliance (Hartrick, Kovan, & Shapiro, 2003).

2.3. Procedure

The FM patients were recruited through the National Association Against Fibromyalgia and Chronic Fatigue Syndrome (MYOS), contacted by telephone and asked about the inclusion criteria and availability to participate in the study. The ones that fulfilled the requirements came to an assessment session in MYOS. The RA patients were recruited through the National Association of Rheumatoid Arthritis Patients (ANDAR), and we followed the same procedure. The patients that fulfilled the requirements came to an assessment session in ANDAR. For both groups, an informed consent was obtained and the privacy was observed in accordance with the principles of the Declaration of Helsinki. The protocol was administered individually, in the form of interview and filled by the main researcher, as according to Edwards, Holmes, and Carvajal (1998), there were no significant differences between self-administration and interview format. We used this format because of the length and great difficulty of self-administration, caused by the attention/concentration and motor functions deficits that characterize both FM and RA. The average duration of the interviews was approximately 90 min.

2.4. Data analysis

Data were analyzed using Statistical Package for Social Sciences (v.24 SPSS Inc. Chicago, IL). We divided our analysis into two main steps. In the first step, we used one-way analysis of variance (ANOVA) to test the differences between the FM and RA groups in characterization variables (age, diagnosis duration, symptom duration, reported mean pain intensity and difference between symptom duration and diagnosis duration); we decided to label this last variable "Pain without diagnosis" (PWD), as it represents time in which the symptoms (e.g., pain) were present, but diagnosis had not yet been achieved. Therefore, we consider it could be related to the invisibility and subsequent stigma that has been associated with FM syndrome, as stated in the Introduction. As this variable is strongly non-normal and does not satisfy the conditions for parametric statistic, we made a rank order transformation and used it in the subsequent analysis, as PWD_{Ro}. We used correlational coefficients to analyze the potential association among variables in which there were significant differences between the two groups (diagnosis duration, reported mean pain intensity and PWD_{Ro}) and the validity and eight clinical MMPI-2 scales. We excluded *Masculinity/Femininity* and *Social Introversion* scales, which are not considered true clinical scales, according to Graham (2012). We used Pearson coefficient for pain intensity, and Spearman coefficient for

diagnosis duration and PWD_{Ro} . As reported mean pain intensity and PWD_{Ro} had significant correlations with the dependent variables, we used multivariate analysis of covariance (MANCOVA) to test the differences between the FM and RA groups across MMPI-2 validity and clinical scales, controlling for those two variables. We conducted TwoStep cluster analysis and Hierarchical cluster analysis to explore the number of clusters that would spontaneously emerge from the whole sample, based on eight MMPI-2 clinical scales scores. As a two clusters solution was found, we conducted K-means non-hierarchical cluster analysis with the whole sample, in order to identify the distinctive clinical features organizing the two clusters and how the FM and RA patients would be organized within each cluster.

In the second step, in order to explore the differences between the two clusters, we firstly used correlation coefficients to analyze the relation between reported mean pain intensity, diagnosis duration and PWD_{Ro} (the three variables in which there were differences between the two clusters) and most of the MMPI-2 clinical, personality psychopathology, supplementary, and content scales, in order to assess when to control for these variables. Thereby, we used MANCOVA with both reported pain and PWD_{Ro} as covariates, to test the differences between the two identified clusters across MMPI-2 clinical and content scales, and we used MANCOVA with PWD_{Ro} only as covariate, to test the differences between the two clusters in the personality psychopathology and supplementary scales, as pain showed no significant correlations with these scales.

3. Results

3.1. First step of the analysis

In this step of analysis, we wanted to compare the clinical basic profile of FM and RA patients, in order to identify if there are nuclear clinical features that represent the two different pathologies. In the set of validity scales, the MANCOVA with the reported pain intensity as covariate showed no significant differences between the FM and RA groups in the composite of eight validity scales (Wilk's $\Lambda = 0.911$; $F(8,60) = 0.74$; $p = .658$). Pertaining to the correlations between the PWD_{Ro} and the clinical scales, the FM group had only one significant correlation, a positive relation with *Hypochondriasis* ($r = 0.37$, $p < .05$). In the composite of eight basic clinical scales, the MANCOVA showed significant differences between the two groups (Wilk's $\Lambda = 0.759$; $F(8,59) = 2.34$; $p = .030$; $\eta^2_{par} = 0.241$), with the covariate reported pain also being significant (Wilk's $\Lambda = 0.746$; $F(8,59) = 2.51$; $p = .020$; $\eta^2_{par} = 0.254$) and the covariate PWD_{Ro} not being significant (Wilk's $\Lambda = 0.935$; $F(9,59) = 0.51$; $p = .844$). As presented in Table 2, the FM group had significantly higher scores in six of the eight clinical scales (*Hypochondriasis*, *Depression*, *Hysteria*,

Paranoia, *Psychasthenia* and *Schizophrenia*), and these were all clinically significant scores, except for *Paranoia*.

We then wanted to identify the nuclear clinical features that clearly represent the two different pathologies, to identify the more representative patients of each pathology as typical groups and pursue further analysis. In the K-means two-cluster solution, based on the scores on the eight clinical MMPI-2 scales of the whole sample, convergence was achieved due to none or small change in cluster centers after two iterations. The distance between final cluster centers was 52.463. The larger cluster ($n = 41$) was characterized by clinically significant elevations in five clinical scales: *Hypochondriasis*, *Depression*, *Hysteria*, *Psychasthenia* and *Schizophrenia*. The other cluster ($n = 29$) had significantly lower center means in seven of the eight clinical scales, and had no clinically significant elevations (T-scores ≥ 65).

The first cluster identified 33 FM patients and eight AR patients, and the second cluster identified five FM patients and 24 AR patients. Based on this distribution, as the first cluster was composed mainly by FM patients (87% of the whole FM sample) and the second cluster was composed mainly by RA patients (75% of the whole RA sample), we considered each of these clusters could be addressed as representative of each pathology most typical profile. We then decided to exclude the other pathology patients of each cluster (five FM patients and eight RA patients), in order to pursue further analysis based on the core clinical MMPI-2 features. Therefore, the FM type cluster ($n = 33$) was labelled FM typical group (FM_{TG}), and the RA type cluster ($n = 24$) was labelled RA typical group (RA_{TG}). We state this classification of typical groups has an exploratory value, in order to enable a further comprehension of the characteristic features of these two types of patients.

The FM_{TG} identified 33 participants ($M_{age} = 45.70$, $SD_{age} = 8.90$), with diagnosis duration in years ($M = 5.06$, $SD = 2.46$), symptom duration in years ($M = 12.92$, $SD = 9.00$), PWD in years ($Mdn = 4$, Minimum = 0.50, Maximum = 29), and reported mean pain intensity ($M = 6.42$, $SD = 1.48$). The RA_{TG} identified 24 participants ($M_{age} = 45.54$, $SD_{age} = 9.41$), with diagnosis duration in years ($M = 8.00$, $SD = 7.22$), symptom duration in years ($M = 10.00$, $SD = 8.44$), PWD in years ($Mdn = 1$, Minimum = 0, Maximum = 10.50), and reported mean pain intensity ($M = 3.50$, $SD = 2.04$). The groups have significant differences in the diagnosis duration, PWD and reported mean pain intensity, being that the FM_{TG} has higher PWD ($U = 170.5$; $p = .000$) and higher pain intensity ($F(1,55) = 39.35$; $p = .000$), while the RA_{TG} has higher diagnosis duration ($F(1,55) = 4.74$; $p = .034$).

Pertaining to the significant correlations between PWD_{Ro} and MMPI-2 variables, in the FM group there were only four: a positive relation with *Hypochondriasis* clinical scale ($r = 0.39$, $p < .05$), and with *Repression* supplementary scale ($r = 0.36$, $p < .05$), and a negative correlation with *Disconstraint* personality psychopathology scale ($r = -0.50$, $p < .01$), and with *Ego Strength* supplementary scale ($r = -0.48$, $p < .01$).

The MANCOVA with the PWD_{Ro} and the reported pain intensity as covariates confirmed significant differences between the two groups in the composite of clinical scales (Wilk's $\Lambda = 0.416$; $F(8,46) = 8.06$; $p = .000$; $\eta^2_{par} = 0.584$), and neither the PWD_{Ro} (Wilk's $\Lambda = 0.929$; $F(8,46) = 0.44$; $p = .889$), nor the reported pain (Wilk's $\Lambda = 0.758$; $F(8,46) = 1.83$; $p = .095$), were significant. We may see in Table 3 that the FM_{TG} had significantly higher scores in seven of the eight clinical scales, all except for *Hypomania*.

3.2. Second step of the analysis

We then wanted to assess the differences between the two characteristic patients' groups, in the personality psychopathology, supplementary and content scales. The MANCOVA with the PWD_{Ro} as covariate showed significant differences between the two groups in the composite of personality psychopathology scales (Wilk's $\Lambda = 0.789$; $F(5,50) = 2.68$; $p = .032$; $\eta^2_{par} = 0.211$), and the PWD_{Ro} was not

Table 2

Mean T-scores, Standard Deviations and ANCOVAs of MMPI-2 eight clinical scales for fibromyalgia (FM) and rheumatoid arthritis (RA) groups.

	FM		RA		F	η^2	p
	M	SD	M	SD			
Hs	80.00	9.29	59.38	13.71	14.58	0.181	.000
D	76.11	11.61	62.19	13.25	4.57	0.065	.036
Hy	76.50	11.99	56.84	13.47	10.96	0.142	.002
Pd	59.32	11.49	52.78	11.02	2.23	0.033	.140
Pa	59.34	12.40	47.63	13.27	5.98	0.083	.017
Pt	64.58	11.30	51.28	10.83	5.78	0.080	.019
Sc	68.79	12.14	54.69	11.33	6.07	0.084	.016
Ma	57.13	8.63	53.94	11.12	0.582	0.009	.448

Note. FM ($n = 38$); RA ($n = 32$); Hs = *Hypochondriasis*; D = *Depression*; Hy = *Hysteria*; Pd = *Psychopathic Deviate*; Pa = *Paranoia*; Pt = *Psychasthenia*; Sc = *Schizophrenia*; Ma = *Hypomania*.

Table 3

Mean T-scores, Standard Deviations and ANCOVAs of MMPI-2 eight basic clinical scales for fibromyalgia typical group (FM_{TG}) and rheumatoid arthritis typical group (RA_{TG}).

	FM _{TG}		RA _{TG}		F	η^2	P	FM _{TG} (%)		RA _{TG} (%)	
	M	SD	M	SD				T ≥ 65	T ≤ 40	T ≥ 65	T ≤ 40
Hs	81.91	8.32	55.50	12.80	24.54	0.316	.000	100	0	21	13
D	78.45	10.08	57.29	8.90	26.16	0.330	.000	91	0	29	4
Hy	78.82	10.33	51.96	10.63	28.27	0.348	.000	91	0	17	13
Pd	60.42	11.71	48.92	8.56	10.55	0.166	.002	30	0	4	17
Pa	61.27	12.04	42.50	8.28	28.47	0.349	.000	36	3	0	42
Pt	67.27	9.04	47.21	8.71	23.51	0.307	.000	58	0	0	33
Sc	70.88	10.26	49.63	6.74	33.96	0.391	.000	73	0	0	8
Ma	56.85	8.51	51.79	10.66	1.36	0.025	.248	21	0	13	8

Note. FM_{TG} (n = 33); RA_{TG} (n = 24); Hs = *Hypochondriasis*; D = *Depression*; Hy = *Hysteria*; Pd = *Psychopathic Deviate*; Pa = *Paranoia*; Pt = *Psychasthenia*; Sc = *Schizophrenia*; Ma = *Hypomania*.

Table 4

Mean T-scores, Standard Deviations and ANOVAs of MMPI-2 personality psychopathology scales for fibromyalgia typical group (FM_{TG}) and rheumatoid arthritis typical group (RA_{TG}).

	FM _{TG}		RA _{TG}		F	η^2	p	FM _{TG} (%)		RA _{TG} (%)	
	M	SD	M	SD				T ≥ 65	T ≤ 40	T ≥ 65	T ≤ 40
AGGR	52.18	8.90	56.58	7.99	3.42	0.060	.070	15	0	25	0
PSYC	58.21	9.15	54.58	9.39	1.59	0.029	.213	21	0	17	4
DISC	46.00	6.82	46.79	7.62	0.21	0.004	.650	0	21	0	21
NEGE	59.94	11.05	52.21	9.51	7.33	0.120	.009	45	0	17	4
INTR	56.09	9.55	50.33	9.97	2.95	0.052	.091	21	3	8	17

Note. FM_{TG} (n = 33); RA_{TG} (n = 24); AGGR = *Aggressiveness*; PSYC = *Psychoticism*; DISC = *Disconstraint*; NEGE = *Negative Emotionality/Neuroticism*; INTR = *Introversion/Low Positive Emotionality*.

significant (Wilk's $\Lambda = 0.924$; $F(5,50) = 0.82$; $p = .543$). As presented in Table 4, the FM_{TG} had significantly higher levels in *Negative Emotionality/Neuroticism* scale. None of the scales had clinically significant elevations (T-scores ≥ 65 or ≤ 40) (Graham, 2012).

The MANCOVA showed significant differences between the two groups in the composite of supplementary scales (Wilk's $\Lambda = 0.332$; $F(9,46) = 10.27$; $p = .000$; $\eta^2_{\text{par}} = 0.668$), and the covariate PWD_{Ro} was not significant (Wilk's $\Lambda = 0.854$, $F(9,46) = 0.87$; $p = .555$). As presented in Table 5, the FM_{TG} had significantly higher levels in *Anxiety*, *College Maladjustment*, *Post-Traumatic Stress Disorder*, *Marital Distress* and *Over-Controlled Hostility* scales. In contrast, the FM_{TG} had significantly lower levels in *Ego Strength* and *Gender Role-Masculine* scales. Clinically significant elevations were present in *College Maladjustment*, *Post-Traumatic Stress Disorder* (T-scores ≥ 65), and *Ego Strength* (T-scores ≤ 40) scales.

Finally, the MANCOVA showed significant differences between the two groups in the composite of content scales (Wilk's $\Lambda = 0.378$; F

(11,43) = 6.44; $p = .000$; $\eta^2_{\text{par}} = 0.622$). The covariate PWD_{Ro} was also significant (Wilk's $\Lambda = 0.639$; $F(11,43) = 2.21$; $p = .032$; $\eta^2_{\text{par}} = 0.361$), and the reported pain was not significant. (Wilk's $\Lambda = 0.690$; $F(11,43) = 1.76$; $p = .092$). As presented in Table 6, the FM_{TG} had significantly higher levels in *Anxiety*, *Depression*, *Health Concerns*, *Bizarre Mentation*, *Low Self-Esteem*, *Family Problems* and *Work Interference* scales. Clinically significant elevations were present in *Anxiety* and *Health Concerns* scales only (T-scores ≥ 65). It is relevant that 48% of the FM_{TG} participants had clinically significant scores in *Depression* scale and 45% had it in the *Work Interference* scale, versus only 4% and 8%, respectively, in the RA_{TG}.

4. Discussion

The first main goal of this study was to identify if there are distinct clinical profiles in FM and RA groups of patients, and then consider the more typical patients of each pathology to further explore their broader

Table 5

Mean T-scores, Standard Deviations and ANCOVAs of MMPI-2 supplementary scales for fibromyalgia typical group (FM_{TG}) and rheumatoid arthritis typical group (RA_{TG}).

	FM _{TG}		RA _{TG}		F	η^2	p	FM _{TG} (%)		RA _{TG} (%)	
	M	SD	M	SD				T ≥ 65	T ≤ 40	T ≥ 65	T ≤ 40
A	59.33	7.22	50.33	6.46	25.37	0.320	.000	21	0	4	4
R	60.30	9.53	55.50	10.45	1.57	0.028	.216	33	0	25	4
Es	31.73	2.97	41.88	8.21	35.37	0.396	.000	0	97	0	38
Mt	67.85	6.61	52.83	6.59	66.25	0.551	.000	58	0	4	0
PK	64.88	8.93	50.50	6.73	35.04	0.394	.000	42	0	0	8
MDS	63.42	9.56	54.38	9.63	10.91	0.168	.002	30	0	13	0
Ho	58.15	8.49	54.25	7.68	3.14	0.055	.082	21	6	8	0
O-H	57.33	7.97	49.00	9.19	7.09	0.116	.010	21	0	8	17
GM	41.48	7.09	52.33	9.97	29.91	0.356	.000	0	45	4	13

Note. FM_{TG} (n = 33); RA_{TG} (n = 24); A = *Anxiety*; R = *Repression*; Es = *Ego Strength*; Mt. = *College Maladjustment*; PK = *Post-Traumatic Stress Disorder*; MDS = *Marital Distress*; Ho = *Hostility*; O-H = *Over-Controlled Hostility*; GM = *Gender Role-Masculine*.

Table 6Mean T-scores, Standard Deviations and ANCOVAs of MMPI-2 content scales for fibromyalgia typical group (FM_{TG}) and rheumatoid arthritis typical group (RA_{TG}).

	FM _{TG}		RA _{TG}		F	η^2	p	FM _{TG} (%)		RA _{TG} (%)	
	M	SD	M	SD				T ≥ 65	T ≤ 40	T ≥ 65	T ≤ 40
ANX	66.33	9.84	50.71	6.55	16.96	0.242	.000	58	0	0	8
FRS	60.03	13.81	52.38	12.06	1.54	0.028	.220	30	6	13	17
OBS	54.64	8.80	50.71	6.79	1.10	0.020	.299	18	0	8	0
DEP	63.21	8.12	52.67	4.91	23.57	0.308	.000	48	0	4	0
HEA	79.79	9.46	58.13	7.68	23.20	0.305	.000	94	0	21	0
BIZ	57.58	9.55	52.67	7.92	4.53	0.079	.038	15	6	8	8
ANG	54.12	9.42	52.92	11.06	2.78	0.050	.101	12	6	21	17
LSE	55.61	8.02	49.13	8.31	9.34	0.150	.004	15	3	8	13
FAM	55.39	11.26	47.08	9.22	7.78	0.128	.007	18	3	4	25
WRK	62.55	10.01	51.46	7.25	20.75	0.281	.000	45	0	8	0
TRT	58.45	9.99	53.38	8.15	3.58	0.063	.064	21	0	4	8

Note. FM_{TG} (n = 33); RA_{TG} (n = 24); ANX = Anxiety; FRS = Fears; OBS = Obsessiveness; DEP = Depression; HEA = Health Concerns; BIZ = Bizarre Mentation; ANG = Anger; LSE = Low Self-Esteem; FAM = Family Problems; WRK = Work Interference; TRT = Negative Treatment Indicators.

psychological characterization. In this first step of our analysis, the FM group had significantly higher mean scores on six of the eight clinical scales, and is relevant that the AR group did not have any clinically significant elevation, even on the neurotic triad scales, in which it is predictable that chronic pain patients have significant elevations (Keller & Butcher, 1991). FM group, on the contrary, has significant elevations on five scales, the neurotic triad scales, *Psychasthenia* and *Schizophrenia*, which refer to more severe psychopathology.

It has been showed that in FM patients with a high psychological disturbance profile, one or both of these scales often appear elevated (Ahles et al., 1984; Payne et al., 1982; Pérez-Pareja et al., 2010; Porter-Moffitt et al., 2006). Thereby, these differences between FM and RA patients are in line with the literature (Ardic & Toraman, 2002; Leavitt & Katz, 1989; Wolfe et al., 1984) and led us to a further exploration of these major differences. A cluster analysis of the basic clinical profiles obtained two clusters of scales that identified the typical patients of each pathology, and the FM_{TG} had clinically significant scores on five of the eight clinical scales, and higher than RA scores on seven of them, while the RA_{TG} had no significant elevation. Given the sample dimension and the possibility of overfitting that must be considered, these results should be seen as exploratory endeavors, which should be further explored in the future.

Subsequently, our second main goal was to assess the differences between the FM_{TG} and RA_{TG} more broadly, in the personality psychopathology, content, and supplementary scales of the MMPI-2. On the personality psychopathology scales, the fact that the FM_{TG} had significantly higher levels of *Negative Emotionality/Neuroticism* is in line with the literature. Neuroticism, as one of the five normative personality dimensions and measured with, among others, the *Revised NEO Personality Inventory* (Costa & McCrae, 1992), has been found higher in FM than in AR (Besteiro et al., 2008; Bucourt et al., 2017; Walker et al., 1997), and Neuroticism here measured as a personality psychopathology scale may be considered an extreme variant of the former (Egger, De Mey, Derksen, & van der Staak, 2003; Trull, Useda, Costa, & McCrae, 1995). Although the mean value is not clinically significant, when we look at the percentage of patients in FM_{TG} with clinically significant elevations in *Negative Emotionality/Neuroticism*, we may see that almost half of the group had it.

On the set of supplementary scales, FM_{TG} has significantly higher levels on scales that involve ineffectiveness, pessimism, low self-esteem, intense emotional distress, dissatisfaction with marriage or romantic relationship and defensiveness and emotional overcontrol. On the other hand, FM_{TG} has significantly lower levels on scales that involve general adjustment, resources for coping with life demands, power in face to face personal situations and self-confidence. The emotional distress and maladjustment are significantly high, and self-confidence and self-esteem are significantly low in this group.

Pertaining to *College Maladjustment*, this scale scores have been found to be associated with increased stress and lowered social and general adjustment (Stewart & Cairns, 2002), and may also indicate, on a global level, that the client has a history of inadequate coping and functioning. It assesses maladjustment in a manner similar to that of the *Anxiety* and *Ego Strength* scales, and is strongly related to the clinical *Schizophrenia* scale, due to aspects tapped by this scale as depression and hopelessness, feeling that life is a strain, having difficulty coping and worrying excessively (Barthlow, Graham, Ben-Porath, & McNulty, 2004). So, *College Maladjustment* scale being clinically elevated in the FM_{TG} is congruent with also clinically significant *Schizophrenia* and *Ego Strength* scales.

Regarding *Post-Traumatic Stress Disorder* scale, it is suggested that this scale is more a measure of general psychopathology, maladjustment and dysphoric feelings than it is a measure of post-traumatic stress disorder (PTSD) (Moody & Kish, 1989). In a sample of women with somatization disorder, without any reported exposure to a life-threatening event, more than half had significant elevations on this scale and, as it was quite unlikely that they would have PTSD, the authors state that this scale, in women with somatization disorder, appears to be measuring features not specific to having a traumatically caused psychiatric condition (Wetzel et al., 2000). Higher *Post-Traumatic Stress Disorder* scale scores has been associated with higher general level of emotional and psychological distress scores and lower ego strength scores (Moody & Kish, 1989) and higher neuroticism and introversion/low positive emotionality (Haisch & Meyers, 2004), which is in line with our results in the FM_{TG}. As these authors claim, individuals with higher *Post-Traumatic Stress Disorder* scale scores are best described as being at higher risk of PTSD, and it may be that very high scores are indicative of PTSD, but more moderate elevations reflect general distress (Graham, 2012). In any case, it is well known that patients with comorbid chronic pain and PTSD report more severe pain and life interference (Turk & Okifuji, 1996), more intense pain and affective distress (Geisser, Roth, Bachman, & Eckert, 1996) and greater disability (Sherman, Turk, & Okifuji, 2000) than pain patients without trauma or PTSD.

With regard to *Marital Distress* scale, it has been known that, in pain samples, marital discord and spouse responses to pain are positively related to pain intensity and physical disability, and that marital dissatisfaction and negative spouse responses are also associated with elevated depressive symptoms (Cano, Weisberg, & Gallagher, 2000; Kerns, Haythornthwaite, Southwick, & Giller Jr., 1990; Turk, Kerns, & Rosenberg, 1992). In a study with FM patients and their co-residing partners, these partners, on average, rated patient fatigue significantly lower than patients (Lyons, Jones, Bennett, Hiatt, & Sayer, 2013), and in the same line, with RA patients and their spouses, there were considerable differences in estimations of the patient's functional

disabilities, and these differences were associated with the patient's poorer mental health status (Riemsma, Taal, & Rasker, 2000). So, it seems that it is difficult for the chronic pain patient partner to correctly estimate the patient pain and disability, and this seems to be worse in the case of FM, as invisibility causes difficulty for those who interact with patients, namely, the spouse (Söderberg et al., 2003).

In studies with AR patients and their partners, both patients and spouses were generally satisfied with their marriages (Bermas, Tucker, Winkelman, & Katz, 2000) and 75% of the respondents had scores reflecting normal marital satisfaction (van Lankveld, Ruitkamp, Näring, & de Rooij, 2004). We found no study comparing marital satisfaction in FM and AR patients, but in a study comparing FM and osteoarthritis (OA) patients, although FM and OA partners both had comparable levels of burden, increased partner burden was associated with lower levels of partner support in the FM group only. Patients with FM had higher levels of illness uncertainty, and it negatively influenced their dyadic relationship, contrarily to the OA patients, and the authors stated that the obviousness of disability of OA patients, combined with the well understood etiology of OA, appear to protect these patients and their partner's relation (Reich et al., 2006). Finally, it seems plausible that it is this pattern of high distress and psychological turmoil in the FM_{TG} to contribute to the marital distress, as psychological distress and social support are more important in explaining marital satisfaction than the patient's disease status (van Lankveld et al., 2004).

Pertaining to *Ego Strength* and *Gender Role-Masculine* scales, in the context of disease, headaches patients scored lower than healthy controls on *Ego Strength* scale (Sances et al., 2010) and low ego strength, along with introverted hostility, played a crucial role in the psychiatric symptom formation in multiple sclerosis patients (Hyphantis et al., 2008). In what respects to *Gender Role-Masculine* scale, higher scores are associated with less psychopathology (Castlebury & Durham, 1997) and more psychological well-being, and higher ego strength and self-esteem (Woo & Oei, 2006). So, the lower levels of the FM_{TG} in this triad of scales reflect more insecurity and less assertiveness in these patients.

Pertaining to *Over-Controlled Hostility*, Megargee, Cook, and Mendelsohn (1967) suggested that persons with significantly high scores on this scale would have low assertiveness and a high level of inhibition that prevents them from regularly exhibiting their anger, and occasionally may act out with extreme aggressiveness. We hypothesize that the higher over-controlled hostility in the FM_{TG}, although not significantly high, is combined with a set of features that, although not clinically significant by themselves, may have a relevant role in the FM functioning, in association with each other and with the clinically significant ones, as low ego strength and masculine gender role. We have not found any study discussing over-controlled hostility in chronic pain patients but, as there is evidence of a close conceptual relation between anger and hostility (Forgays, Forgays, & Spielberger, 1997), and we think it is possible to compare over-controlled hostility with anger control and anger-in, two dimensions assessed by the *State-Trait Anger Expression Inventory* (Spielberger, 1988).

Anger-in or anger suppression is defined as the inhibition of anger and it refers to the frequency with which angry feelings are experienced but not expressed (Spielberger, 1999), and it has been associated with conflict avoidance, guilt, irritability, rumination, depressive symptoms, and decreased life satisfaction (Gross & John, 2003; Martin & Dahlen, 2007) and with a stronger perception of lacking social support (Palfai & Hart, 1997). Anger control is similar to anger-in or anger suppression, in that it involves not displaying anger to others and so not risking relational harmony (Yamaguchi, Kim, Oshio, & Akutsu, 2017). FM patients showed higher scores of anger-in compared to RA and when the severity of pain was controlled, trait-anger and anger-out were higher in the RA group, whereas anger in was still higher in the FM group (Sayar et al., 2004), and this is similar to our finding that RA has significantly lower over-controlled hostility. In a FM sample, a general tendency to inhibit anger was associated with more pain (van Middendorp et al., 2010). Thereby, the combination of higher over-

controlled hostility and, although non-significant, an absolute higher value of hostility and of anger, may constitute a pattern of low assertiveness and contained emotional expression that may undermine these patients.

Pertaining to the content scales, the FM_{TG} had significantly higher levels on scales that involve tension, pessimism, depressive thoughts and feeling unsupported by others, worries about health and multiple somatic complaints, tendency to paranoid ideation and low frustration tolerance, passiveness and lack of self-confidence, resentment with family members, sensitivity to criticism and inability to tolerate stress, negative attitudes toward coworkers, lack of achievement orientation, feeling misunderstood and overwhelmed by adversities (Graham, 2012). The tension, worries, difficulty in making decisions, pessimism, and presentation of multiple somatic complaints are clinically significant, and almost half of the FM patients have clinically significant depressive thoughts and sensitivity to criticism and negative attitudes toward coworkers.

Although the *Health Concerns* scale is normally elevated in chronic pain patients (Keller & Butcher, 1991; Slesinger, Archer, & Duane, 2002), it goes beyond physical concerns clearly associated with the health problems, and better reflects the psychological representation of health problems. In a sample of non-chronic pain, victims of work bullying, the group with the lowest exposure specific negative actions had a more disturbed MMPI-2 clinical profile, and significantly higher anxiety, depression and health concerns, showing this scale is associated with psychological suffering (Matthiesen & Einarsen, 2001).

The higher level on the *Family Problems* scale may be related to the also higher *Marital Distress* scale, as they both tap feelings of being misunderstood, resentment, feeling lack of love and affection both in the marriage and in the larger family. The only study we know comparing family features in FM and RA patients showed that the families of FM patients were no less cohesive or higher in conflict than RA families, contrary to what the authors had anticipated (Nicassio & Radojevic, 1993). Kool et al. (2010) found that patients with FM experienced significantly more lack of understanding, denying and patronizing from their family, spouses, medical professionals, colleagues and social services than did patients with RA. Lack of mutual understanding is a common feeling in these women, from their closest family members and from other relatives (Juuso et al., 2014).

Finally, the *Work Interference* scale refers to a wide variety of attitudes and behaviors that are likely to contribute to poor work performance, as low self-confidence, poor concentration, obsessiveness, tension, indecisiveness, not having strong achievement orientation and possibly having negative attitude toward coworkers (Graham, 2012). So, it encompasses a whole set of features beyond work environment directly. Wentz, Lindberg, and Hallberg (2004) showed that psychological stress at work among women with FM increases their sense of lack of control. Several studies report decreased work ability in FM (Henriksson, Liedberg, & Gerdle, 2005) and that the symptoms impair the performance, there is a physical and mental overload and superiors or colleagues do not understand and respect these consequences of FM (Arnold et al., 2008; Juuso et al., 2014; Mannerkorpi & Gard, 2012; Sallinen, Kukkurainen, Peltokallio, & Mikkelsen, 2010).

In sum, relational uncertainty is a main theme found in the experience of FM patients, pertaining to interactions with everybody in the patient's life: family, friends, doctors, colleagues and even support groups; all these interactions are seen as unpredictable and, for many participants, there was an undercurrent of defensiveness running through all interactions (Dennis, Larkin, & Derbyshire, 2013). As these authors stated, it is important that participants who reported negative experiences, tended to report them in multiple interactions, suggesting individual differences in interpretations and expectations. The harmful impact of negative social interactions on pain has been demonstrated (Eisenberger & Lieberman, 2004), as neural systems underlying the experiences of physical pain and social rejection overlap, suggesting that invalidation experiences may amplify pain, but pain sensitivity

may also increase the invalidation experiences (Eisenberger, Jarcho, Lieberman, & Naliboff, 2006). This is very important to consider when we interpret the higher pain reported by our FM_{TC}, compared to the RA_{TC}, as FM combines more psychopathology and distress linked to feelings of social alienation as expressed by *Schizophrenia* clinical scale, and high intensity of reported pain.

In conclusion, recalling the main goal of this work, we wanted to investigate if the differences presented by FM patients in comparison with healthy controls in psychopathology (Novo et al., 2017) would remain when compared with a chronic medically explained pain group. In effect, these differences remained, showing the specificity of FM, mainly characterized by much higher psychological and emotional distress and difficulties in coping and dealing with life and others. The symptomatology expressed through the clinical scales is much higher than RA and clinically significant; in what concerns the personality psychopathology, the mean pattern is globally within the normal range, but there is a considerable percentage of patients with significantly high levels of neuroticism, showing negative affectivity, guilt, self-criticism and focus on the negative side of things.

Finally, the time these women spend between the onset of their FM symptoms and having a diagnosis shows some interesting associations with personality and psychopathology features, which all share some common meaning; this pain without diagnosis is related to more focus in the body and bodily sensations, more repression and constraint, and less ego strength. It is plausible that the time before a diagnosis is given has a high negative impact in the patients' psychological and social adjustment, because the uncertainty affects them and the way they feel others perceive them, leading to a tendency to withdraw verbalization of emotions (Herbette & Rimé, 2004). Therefore, this longer period in the FM group, where the suffering “has no name” may contribute to more inhibition and growing psychological vulnerability in these women, possibly acting to exacerbate the whole suffering beyond the physical symptoms, and then being a perpetuating factor. We acknowledge that albeit this was not the focus of this study, and the measurement of time between the onset of pain and the diagnosis cannot be sufficiently precise in our sample, the impact of stigma or prolonged periods of experiencing pain without diagnosis likely play a role that should be adequately addressed in future research.

This study is, to our knowledge, the only study exploring the differences between FM and RA patients (or other chronic pain patients) in most of the scales of the whole set of MMPI-2 personality psychopathology, supplementary and content scales. It allowed the identification of a set of features that have shown to be very relevant in distinguishing a more psychopathological group from a less one, in association with the clinical scales, both in the comparison between FM_{TC} and RA_{TC}. Thereby, we think the potential of these set of scales in this field has been highlighted, and MMPI-2 gives us a broad personality and psychopathology analysis that may be relevant in the individual psychological assessment of FM patients. Moreover, we have a relatively homogeneous sample of adult and middle-aged women, without psychiatric diagnosis and psychological treatment, what makes it a “normative” sample of female chronic pain patients (although it obviously does not mean that the sample is completely free from a psychiatric disorder, what cannot be guaranteed).

The sample dimension is a limitation of this study, and it may have limited the significance of differences found between the groups. On the other hand, given the sample size, there is a risk of overfitting, concerning the groups extracted from cluster analysis, and for this reason these results must be regarded as exploratory and should be replicated with larger and representative samples. All the sample was recruited through associations of patients, and these patients may have distinct features from other patients in the community; in any case, the fact that both FM and RA groups were in the same condition reduces this potential issue. Finally, the cross-sectional design of this study does not allow considerations about causality.

In terms of intervention, this study results enhance the idea that is

not possible to diagnose and adequately treat FM patients without attending the psychological aspects associated with this syndrome. The FM_{TC} seem to have a psychological pattern that goes beyond the impact of chronic pain. They seem to be repressing their difficulties and problems, in an ineffective way, as despite this inhibition they still manifest clinically significant levels of anxiety and distress. Their pattern of low assertiveness and affirmation increases their vulnerability, and a clinical intervention should enhance the externalizing of their problems, emotions and needs. Three studies with FM patients have shown positive outcomes of written emotional disclosure or expressive writing, as a way of accessing previously avoided negative memories and emotions in writing (Broderick, Junghaenel, & Schwartz, 2005; Gillis, Lumley, Mosley-Williams, Leisen, & Roehrs, 2006; Junghaenel, Schwartz, & Broderick, 2008). Recently, Lumley et al. (2017) developed an emotional awareness and expression therapy with FM patients, and this intervention targeting emotional awareness and expression related to psychosocial adversity and emotional conflict, had promising results.

We suggest an intervention that focuses not only on the processing of stressful experiences, but most of all on the feelings of resentment and potential hostility they may be having toward significant others, and not expressing with worry about rejection, and perhaps, in some way, turning against themselves, what enhances their passiveness and lack of ego strength. In parallel, as suggested by Middentorp et al. (2010), the patients could be taught to respond to anger in adaptive ways with healthy expression, including appropriate assertion or sharing of feelings with appropriate targets.

Funding

This work was supported by grants from the Portuguese Foundation for Science and Technology (SFRH/BD/44141/2008).

Declarations of interest

None.

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