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Abstract

Fibromyalgia (FM) is a chronic pain syndrome characterised by high levels of psychological distress and alexithymia, a personality disposition affecting emotional self-awareness. The main aim of the present study was to investigate for the first time the relationship between alexithymia and coping strategies on one hand, and alexithymia and perceived social support on the other, in a sample of FM patients. To reach this aim, 153 FM patients completed a battery of tests assessing coping strategies, perceived social support, alexithymia, psychological distress and pain intensity. Four regression analyses were performed to assess whether alexithymia was still a significant predictor of coping strategies and perceived social support, after controlling for psychological distress. High levels of both psychological distress and alexithymia were found in our sample of FM patients. Regarding coping strategies, FM patients reported higher scores on problem-focused coping, with respect to the other two coping strategies. The regression analyses showed that the externally-oriented thinking factor of alexithymia significantly explained both problem- and emotion-focused coping, while the difficulty-describing feelings factor of alexithymia proved to be a significant predictor of perceived social support. Only the variance of dysfunctional coping ceased to be uniquely explained by alexithymia (difficulty identifying feelings factor), after controlling for psychological distress, particularly anxiety. These results highlight a negative relationship between alexithymia and both the use of effective coping strategies and the levels of perceived social support in FM patients. An adequate assessment of both alexithymia and psychological distress should therefore be included in clinical practice with these patients.

Keywords: fibromyalgia; alexithymia; coping strategies; perceived social support; psychological distress.

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Introduction

Fibromyalgia (FM) is a chronic pain syndrome, characterised by chronic, widespread musculoskeletal pain (Mease, 2005; Mease et al., 2009). The whole symptomatology is not restricted to pain, but often includes a series of other conditions, such as physical and mental fatigue, disrupted or non-restorative sleep, headache, cognitive impairment and psychological distress (Mease, 2005; Schmidt-Wilcke & Clauw, 2011).

Among the psychological factors, the high prevalence of anxiety (13-64%) and depression (20-80%) disorders has been well-established (Montoya et al., 2005; Fietta et al., 2007). More recently, researchers have also started to focus their attention on alexithymia, a personality trait that makes individuals incapable of adequately recognising their own emotions. Alexithymia is characterised by difficulty in identifying and describing subjective feelings, difficulty in distinguishing between feelings and bodily sensations of emotional arousal, restricted imagination processes, and an externally oriented cognitive style (Sifneos, 1972; Taylor et al., 1997). Most of the studies have reported high levels of alexithymia in FM patients, suggesting the presence of a deficit in emotional self-awareness (Castelli et al., 2012; Di Tella et al., 2015; Di Tella et al., 2017; Sayar et al., 2004; Steinweg et al., 2011).

The presence of alexithymic traits has been found to be positively related with maladaptive behaviours in different disorders (Fonagy et al., 2002; Kooiman et al., 2004; Montebarocci et al., 2004; Waldstein et al., 2002), suggesting that alexithymia may negatively affect the ability of an individual to adequately cope with his/her condition. Generally, coping strategies are an attempt made by a person to face an unpleasant situation and have been defined as "*cognitive and*

behavioural efforts to master, reduce, or tolerate the internal and/or external demands that are created by the stressful transaction" (Lazarus & Folkman, 1984, p. 843). Many authors have tried to classify different types of responses to stress. In particular, Lazarus & Folkman (1984) identified two main coping strategies: (1) problem-focused coping, aimed at controlling or solving the current problem by acting on the factors of the stressful event; (2) emotion-focused coping, aimed at regulating the emotional experience arising from the stressful event. Problem-focused coping appears to be more effective in situations where individuals believe that they may be able to have some control over the situation; whilst emotion-focused coping seems to be more effective in situations which individuals perceive as overwhelming and beyond their control (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984).

In addition to problem- and emotion-focused coping, another type of coping has been identified: dysfunctional coping, which is based on not accepting the problem or refusing to think about it, and includes a series of ineffective behaviours, such as giving up with the problem or denying that the stressful event ever happened (Carver et al., 1989).

The use of effective coping strategies can be influenced by different factors, such as the subjective appraisal of the situation (i.e., as a threat and/or a challenge), the employment of previous models, and the presence of certain personality characteristics, all of which can condition the evaluation of a situation as being more or less stressful (Berjot & Gillet, 2011; Besharat, 2010). Since alexithymic individuals typically have difficulties in identifying and describing their own feelings (Bagby & Taylor, 1997; Sifneos, 2000), they are less likely to go to others for support and to regulate feelings of distress via imaginative mental

activities (Besharat, 2010). Alexithymic individuals might consequently find it more difficult to cope with stressful events and might feel less supported by significant others. Indeed, together with effective coping strategies, adequate perceived social support is an important resource for an individual to be able to count on in a difficult situation, such as the diagnosis of a chronic disease.

The available evidence supports the idea of a relationship between alexithymia and maladapted patterns of coping, both in clinical and healthy populations (Besharat, 2010; Parker et al., 2005; Parker et al., 1998; Tominaga et al., 2014; Vingerhoets et al., 1995). However, to the best of our knowledge, no study has so far examined the association between alexithymia and coping strategies or alexithymia and perceived social support in a sample of FM patients.

The present study therefore addressed two main objectives. The first, to evaluate the types of coping strategies used, the levels of perceived social support and the prevalence of alexithymia and psychological distress (depression and anxiety) in a group of FM patients. The second, to investigate the relationship between alexithymia and coping strategies on one hand, and alexithymia and perceived social support on the other, controlling for potentially competing factors, such as anxiety and depression. In particular, we hypothesised that high levels of alexithymia will be negatively related to the ability of FM patients to cope adequately with stressful events, with a consequent lower use of adaptive coping strategies, or to seek social support.

Materials and methods

Participants and procedure

One hundred and eighty female participants with FM were consecutively recruited

from the Fibromyalgia Integrated Outpatient Unit (FIOU), a multidisciplinary unit based on the collaboration between rheumatologists, psychologists and psychiatrists at the "*XXX*" hospital of Turin. All patients had a main diagnosis of FM, made by an expert rheumatologist. The inclusion criteria were as follows: over 18 years old, a sufficient educational level (>5 years) or knowledge of the Italian language, and no presence or history of a neurological or severe psychiatric disorder, according to an expert psychiatrist examination. One hundred and fifty-three FM patients met the inclusion criteria and made up the final sample of patients enrolled in the study.

The study was approved by the "*XXX*" hospital ethics committee and was conducted in accordance with the Declaration of Helsinki. All the participants gave their written informed consent to the study.

Measures

Coping strategies

The coping strategies were assessed using the Italian version of the short form of the Coping Orientations to Problems Experienced scale (Brief COPE) (Carver, 1997; Conti, 2000).

The Brief COPE is a self-report measure which consists of 28 items. The participants are instructed to report what they usually do under stress on a 4-point scale ranging from 1 (never do) to 4 (always do). The items can be classified into 14 coping strategies (subscales), each with two items, which can be grouped into three main types of coping, according to the classification by Coolidge et al. (2000). This is based on the original by Carver (1997), but includes "denial" in

dysfunctional coping.

The three types of coping are: *problem-focused coping*, which comprises three coping strategies (active coping, instrumental support and planning); *emotion-focused coping*, which includes five (acceptance, emotional support, humour, positive reframing and religion); and *dysfunctional coping*, which comprises six (behavioural disengagement, denial, self-distraction, self-blame, substance use and venting).

The Brief COPE has shown good psychometric properties regarding the internal consistency (Cronbach α scores: 0.72-0.84), test–retest reliability (Pearson's *r*: 0.51-0.71) and construct validity (Cooper et al., 2008).

Social support

As an index of social support, the total score of the Italian version of the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988; Prezza & Principato, 2002) was used. This is a validated self-report measure of subjectively assessed social support. The MSPSS consists of 12 items, each scored on a seven-point Likert-type scale. This scale has shown good internal consistency (Cronbach α scores: 0.87-0.94) and test-retest reliability (Osman et al., 2014).

The total score was calculated by averaging the results for all items.

Alexithymia

Alexithymia was assessed using the Italian version of the Toronto Alexithymia Scale (TAS-20) (Bagby et al., 1994; Taylor et al., 2003; Bressi et al., 1996). The subjects were asked to indicate the extent to which they agreed or disagreed with

each statement on a five-point Likert scale. The results provide a TAS-20 total score, and three subscale scores that measure different aspects of alexithymia: difficulty identifying feelings (DIF), which measures the inability to distinguish specific emotions and to tell emotions from the bodily sensations of emotional arousal; difficulty describing feelings (DDF), which assesses the inability to verbalise one's emotions to other people; and externally-oriented thinking (EOT), which evaluates the tendency of individuals to focus their attention externally and not on the inner emotional experience (Lumley et al., 2007; Taylor et al., 2003). The TAS-20 cut-off scores are as follows: ≤51 no alexithymia, 52–60 borderline alexithymia, ≥61 alexithymia. This scale has shown good internal consistency and test-retest reliability, as well as convergent, discriminant and concurrent validity (Taylor & Bagby, 2004), and is currently one of the most utilised instruments in the study of alexithymia.

Psychological distress

The presence of depressive and anxiety symptoms was assessed using the Italian version of the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983; Costantini et al., 1999). This consists of 14 items on a range of 0 to 3 and is divided into two subscales, one for depression (HADS-D) and one for anxiety (HADS-A). Each subscale score ranges from 0 to 21, with a score of 8 or more suggesting a clinically relevant level of depression/anxiety symptoms (Zigmond & Snaith, 1983). The HADS has shown good concurrent validity, test-retest reliability and internal consistency (Cronbach α scores: = 0.82-0.90) (Bjelland et al., 2002; Smarr & Keefer, 2011).

Throughout the paper, the term "psychological distress" will be used with

reference to depression and anxiety subscales considered together.

Pain evaluation

As an index of pain intensity, a Visual Analogue Scale (VAS), ranging to 0 (No pain) to 10 (Extreme pain), was used to assess the average intensity of pain in the previous week (McCormack et al., 1988). The VAS has shown good test–retest reliability and construct validity for the evaluation of pain in patients with different rheumatic diseases (Hawker et al., 2011).

Statistical analyses

All the statistical analyses were conducted using IBM SPSS Statistics, version 22.0.

Indices of asymmetry and kurtosis were used to test for normality of the data. The values for asymmetry and kurtosis between – 1 and + 1 were considered acceptable in order to prove normal univariate distribution. On the basis of these values, all of the variables resulted normally distributed.

Since the three types of coping of the Brief COPE (i.e., problem-focused coping, emotion-focused coping and dysfunctional coping) range differently, we calculated them on the same scale of dysfunctional coping (12-48) in order to make them comparable to each other. From then on, only the adjusted scores were reported.

One-sample t-tests were used to compare the mean scores of our FM patients on the MSPSS and TAS-20 and those of the Italian population (Prezza & Principato, 2002, for the Italian normative data of the MSPSS; Bressi et al., 1996, for the Italian normative data of the TAS-20).

Pearson correlations were then computed to evaluate the possible relationships between alexithymia and coping strategies, perceived social support, psychological distress (depression and anxiety), and demographical/clinical variables (age, educational level, duration of illness and pain intensity).

Finally, hierarchical multiple regression analyses were run to assess whether alexithymia was still a significant predictor of coping strategies and perceived social support when competing predictors (depression and anxiety) were controlled for. Coping strategies and perceived social support were used as outcome variables. The predictor groups were entered into the regression model according to the following schema: potentially confounding variables (age, educational level, duration of illness and pain) in the first block, alexithymia in the second, and competing predictors (depression and anxiety) in the third one.

To avoid unnecessary reductions in statistical power, confounding and competing predictors variables were included in the regression models only when they were significantly correlated with the outcome variables (p <0.05). Collinearity was assessed through the statistical factor of tolerance and Variance Inflation Factor (VIF).

Results

Descriptive data

The data on the demographic and clinical characteristics of the FM sample are presented in **Table 1**.

Regarding coping strategies, FM patients reported higher scores on problem-focused coping, with respect to the other two coping strategies (i.e., emotion-focused coping and dysfunctional coping). Concerning, instead, the MSPSS, the

FM group reported a mean score which was not significantly different from that of the Italian population (Prezza & Principato, 2002) (FM group vs. Italian population, mean ± SD: 5.1 ± 1.3 vs. 5.3 ± 1.1; t(109) = -1.19, $p = 0.182$).

As far as psychological distress was concerned, the FM patients presented high levels of depressive and anxiety symptoms, with 56.5% of the patients exceeding the cut-off point for the anxiety subscale (HADS-A ≥ 8), while 63.6% exceeding the cut-off point for depression (HADS-D ≥ 8).

Finally, on the TAS-20, FM patients reported significantly higher scores on the total score compared to Italian normative data (Bressi et al., 1996) (FM group vs. Italian population, mean ± SD: 51.6 ± 13.5 vs. 44.7 ± 11.3; t(152) = 6.31, $p <$ 0.001), DIF factor (20.1 ± 7.3 vs.14.6 ± 6.0; t(152) = 9.26, $p < 0.001$), and EOT factor (18.1 ± 5.0 vs.17.1 ± 4.9; t(152) = 2.34, $p = 0.021$). No significant difference was found on the DDF factor (FM group vs. Italian population, mean ± SD: 13.4 ± 4.9 vs.13.1 ± 4.8; t(152) = 0.83, $p = 0.410$).

Table 1 about here

Correlation Analyses

The results of the bivariate correlations are presented in **Table 2**. Significant negative correlations were found between alexithymia (total and EOT) and problem-focused coping, and between alexithymia (total, DDF and EOT) and emotion-focused coping; while significant positive correlations were found between alexithymia (total and DIF) and dysfunctional coping, and between all the alexithymia scores (total, DIF, DDF and EOT) and psychological distress

(both anxiety and depression). Finally, lower scores on perceived social support (MSPSS) were significantly correlated with higher scores on alexithymia (total, DIF and DDF).

Table 2 about here

Multiple regressions

Hierarchical multiple regression analyses were performed in order to investigate whether alexithymia was a significant predictor of coping strategies and perceived social support, after controlling for potentially competing predictors (depression and anxiety). Since the variables of age, educational level, duration of illness, and pain intensity did not correlate with the outcome variables, they were no longer included in the regression analyses.

Regarding problem-focused coping, no significant correlation emerged between this variable and psychological distress, so the regression analysis was performed with only alexithymia scores as predictor variables. The full model of the alexithymia total and the EOT factor scores to predict problem-focused coping was statistically significant, $R^2 = .11$, $F(2, 150) = 9.51$, $p < 0.001$; adjusted $R^2 = .10$ (**Table 3**). Only the alexithymia EOT factor ($\beta = -0.30$, $p = 0.003$) was a significant predictor of the model, while the TAS-20 total score was not significant ($\beta = -0.05$ $p = 0.609$).

As far as emotion-focused coping was concerned, the full model of alexithymia, anxiety and depression to predict emotion-focused coping (Model 2) was statistically significant, $R^2 = .13$, $F(3, 149) = 7.09$, $p < 0.001$; adjusted $R^2 = .11$;

ΔR^2 = .07, $\Delta F(2, 149) = 6.25$, $p = 0.002$ (**Table 3**). In this case, both the alexithymia EOT factor ($\beta = -0.18$, $p = 0.028$) and depression ($\beta = -0.33$, $p = 0.004$) were significant predictors in the final model, while the TAS-20 total score ($\beta = 0.05$, $p = 0.713$), the DDF factor ($\beta = -0.03$, $p = 0.768$), and the HADS-A ($\beta = 0.08$, $p = 0.470$), were not found to be significant predictors.

With regard to dysfunctional coping, however, the alexithymia DIF factor ceased to uniquely predict dysfunctional coping with the introduction to the model of psychological variables, specifically anxiety (**Table 3**). The full model of alexithymia, anxiety and depression to predict dysfunctional coping (Model 2) was statistically significant, $R^2 = .01$, $F(4, 148) = 3.94$, $p = 0.005$; adjusted $R^2 = .07$; $\Delta R^2 = .03$, $\Delta F(2, 148) = 2.66$, $p = 0.074$ (**Table 3**). Anxiety ($\beta = 0.28$, $p = 0.027$) was the unique contributor of the final model, while the TAS-20 total score ($\beta = -0.14$, $p = 0.372$), the DIF factor ($\beta = 0.25$, $p = 0.110$), and the HADS-D ($\beta = -0.11$, $p = 0.381$), were not significant predictors.

Finally, with regard to MSPSS, the full model of alexithymia, anxiety and depression to predict perceived social support (Model 2) was statistically significant, $R^2 = .21$, $F(5, 103) = 5.61$, $p < 0.001$; adjusted $R^2 = .18$; $\Delta R^2 = .12$, $\Delta F(2, 103) = 7.63$, $p = 0.001$ (**Table 4**). In this case, both the alexithymia DDF factor ($\beta = -0.41$, $p = 0.018$) and depression ($\beta = -0.32$, $p = 0.028$) were significant predictors of the final model, while the TAS-20 total score ($\beta = 0.50$, $p = 0.070$), the DIF factor ($\beta = -0.09$, $p = 0.639$), and the HADS-A ($\beta = -0.18$, $p = 0.227$), were not significant predictors. In all the regression analyses, the statistical factor of tolerance and VIF showed that there was no multicollinearity between the variables.

Tables 3 and 4 about here

Discussion

The present study aimed to investigate, for the first time, the relationship between alexithymia and coping strategies, and alexithymia and perceived social support in a sample of FM patients. To reach this goal, the following two objectives were addressed. First, we evaluated the prevalence of alexithymia, psychological distress, the types of coping strategies used and the levels of perceived social support in a group of FM patients. Second, we investigated the relationship between alexithymia and coping strategies on one hand, and alexithymia and perceived social support on the other, controlling for psychological distress. Our analyses showed three main results: (1) a significant predictor role of the alexithymia EOT factor in explaining both problem-focused coping and emotion-focused coping, (2) a significant predictor role of the alexithymia DIF factor in explaining dysfunctional coping, which is no longer present after controlling for psychological distress, in particular anxiety, and (3) a significant predictor role of the alexithymia DDF factor in explaining perceived social support, which is still present after controlling for psychological distress.

With regard to the first aim of this study, the results showed significantly higher scores on alexithymia (i.e., TAS-20 total, DIF and EOT factors scores) in our group of FM patients compared to the Italian normative data (Bressi et al., 1996). These results confirm previous studies evaluating the prevalence of alexithymia in FM patients, highlighting impairments in the recognition of their own emotions (Di Tella & Castelli, 2016; Sayar et al., 2004; Steinweg et al., 2011).

In the same way, the FM patients presented high levels of depressive (64%) and anxiety (57%) symptoms, corroborating once again the high prevalence of psychological distress reported in most studies on FM syndrome (Montoya et al., 2005; Fietta et al., 2007; Castelli et al., 2012).

However, as far as the three types of coping investigated are concerned, i.e. problem-focused coping, emotion-focused coping and dysfunctional coping, our group of FM patients reported higher scores on problem-focused coping, with respect to the other two coping strategies.

To the best of our knowledge, only few previous studies analysed coping strategies in FM patients (Boehm et al., 2011; Alok et al., 2014). In their study, Boehm et al. (2011) found significantly higher scores on problem-focused coping compared with emotion-focused coping, in a sample of FM sufferers. These results, together with ours, might suggest that FM patients mainly use coping strategies directed at seeking and providing resources to control or solve the source of the problem (i.e., active coping, instrumental support and planning). Although problem-focused coping appears to be generally more effective in handling distress (Assumpção et al., 2009; Ransom et al., 2005), it does not seem to work in those situations where it is beyond the individual's control to remove the source of distress (Wartella et al. 2009). FM is a syndrome that has only recently been recognised and whose causes are yet poorly understood (Abeles et al., 2007). Consequently, FM patients may wait a long time for a diagnosis and appropriate treatment, and thus perceive their condition as uncontrollable or unpredictable. The use of problem-focused strategies, which tend to be more effective in high-control situations, might thus be counterproductive in handling a low-control condition, as FM can be. This could also explain the lack of a

significant association between problem-focused coping and both anxiety and depression, suggesting that an emotion-focused approach could be more effective in handling psychological distress in FM patients.

Finally, with regard to perceived social support, our group of FM patients reported a mean score in line with that of the Italian population (Prezza & Principato, 2002). However, previous studies showed a lack of social support in FM patients (Arnold et al., 2008; Bernard et al., 2000). Arnold et al. (2008) revealed, through a series of focus groups, that FM patients were unable to plan events or take part in regular social activities, due to the unpredictability of FM symptoms. In addition, they reported not being able to care for their own family, with consequences on childcare and marital life. In the same way, Bernard et al. (2000) reported that only 1.5% of the FM patients felt that others were sympathetic with regard to their condition, while 85.6% felt that people thought that they exaggerated their symptoms. Moreover, the evaluation of perceived social support in FM patients should take in account not only the amount of support reported by the patients, but also the type of support they received. Indeed, the impact of social support on pain-related disability might depend on the extent to which it fosters functional autonomy (i.e., the ability to perform activities of daily living without assistance; Pinsonnault et al., 2003) or functional dependence (i.e., the need for assistance to carry out activities of daily living; Katz et al., 1963). A recent study of Matos et al. (2016) have, in fact, shown that in a chronic pain condition, pain-related social support might be adaptive or maladaptive, depending on the extent to which it promotes functional autonomy or dependence.

Future studies are thus needed to clarify both these aspects, i.e., the levels and the

type of perceived social support in FM patients, in order to improve their interpersonal communication skills and social networks.

As far as the second goal of this study is concerned, we investigated whether alexithymia was a contributing factor in explaining the coping strategies used and perceived social support, beyond the effect of psychological distress.

While few studies have analysed coping strategies as well as social support, this is the first to investigate the possible impact of alexithymia on coping strategies and perceived social support in a sample of FM patients.

As far as problem-focused coping is concerned, negative correlations emerged between this variable and the alexithymia total and EOT scores, while no correlation was found with psychological distress. A multiple regression analysis was thus run with only alexithymia scores as predictor variables. The results showed that the EOT alexithymia factor was the variable that best explained the variance of problem-focused coping. In the same way, the EOT alexithymia factor, together with depression, proved to be a significant predictor of emotional-focused coping variance. The EOT factor reflects an individual's difficulty in recognising his/her own emotional reaction associated to an experience, because of a tendency to focus thinking on the factual aspects of the events themselves and not on their emotional impact. Individuals with high EOT scores are thus less able to cope with the stress of a difficult situation by acting directly on the source of the event. The fact that problem-focused coping strategies are used less may therefore be partly due to difficulties in identifying the source of the stress and working toward an appropriate solution for the problem (Tominaga et al., 2014). Similarly, individuals with high EOT scores tend to use emotion-focused coping strategies less, as they cannot focus their attention on the psychological/emotional

experience related to the stressful situation.

A different pattern of results was found, however, with dysfunctional coping. In this case, alexithymia, in particular the DIF factor, ceased to be a significant predictor when psychological variables, specifically anxiety, were introduced to the model. These results might suggest a possible effect of anxiety in mediating the relationship between alexithymia DIF factor and dysfunctional coping strategies. The DIF alexithymia factor represents an individual's difficulty in correctly distinguishing emotions from physical sensations. As a consequence, the individual might misinterpret his/her emotional arousal as a sign of disease, and with FM patients this could lead to a further worsening of their painful condition (Lumley et al., 1996; Tuzer et al., 2011). In addition, alexithymia might interfere with adequate emotion regulation processes, resulting in increased negative affects such as anxiety, which in turn may lead FM individuals to use more dysfunctional coping strategies to deal with stressful situations.

The association between anxiety, alexithymia and dysfunctional coping strategies has also been found in previous studies carried out on healthy samples (Grant et al., 2004; Stewart et al., 2002; Tómasson & Vaglum, 1995). In particular, Stewart et al. (2002) showed in a healthy sample of students that high levels of anxiety sensitivity, alexithymic coping (i.e., an individual tendency to suppress emotions), and experiential avoidance (i.e., an individual propensity to avoid certain unpleasant private events) were positively related to an increased likelihood of drinking for internal or external reasons (i.e., coping or conformity).

This evidence suggests thus the importance of an adequate assessment and treatment of both alexithymia and anxiety disorders in order to reduce the tendency of FM patients to employ dysfunctional coping behaviours (Castelnuovo

et al., 2016).

Finally, with regard to perceived social support, the alexithymia DDF factor, was found to be a significant predictor in explaining the variance of the MSPSS, even after controlling for psychological distress. To the best of our knowledge, no previous study has shown this kind of association in FM patients. This said, former studies on other syndromes found a negative association between alexithymia scores and social support (Fukunishi & Rahe, 1995; Tominaga et al., 2014).

In particular, Tominaga et al. (2014) investigated the relationship between alexithymia and coping in a group of patients with somatoform disorder, finding a specific association between DDF scores and social support coping strategies. Patients who display difficulties in describing feelings may experience trouble with social interactions and a lack of interpersonal communication, which may lead, in turn, to less social functioning and to social support being sought less. A previous study of Lumley et al. (1996) has also shown that in healthy individuals the DDF factor of alexithymia was related only to new relationships (i.e., the presence of a steady relationship or close friends), but not to those that are predetermined and independent of one's personality (i.e., family bonds), suggesting that alexithymia might be negatively associated only to relationships that require interpersonal skill and emotional awareness to develop and maintain. Moreover, alexithymia has been associated with reduced empathy and impairments in the recognition of others' facial emotions both in FM patients and in other clinical or healthy populations (Di Tella et al., 2015; Grynberg et al., 2012). In addition to the difficulties in accurately describing their own feelings, such impairments may lead FM patients to substantial difficulties in interpersonal

contacts (e.g., interaction problems with family and friends, or social isolation). Furthermore, poor psychosocial functioning and unsatisfactory relationships might contribute to the genesis and continuation of chronic pain.

Taken together, as far as the first aim of this study is concerned, the results, apart from showing high levels of both psychological distress and alexithymia, highlight a great use of problem-focused coping strategies in our sample of FM patients. As for the second aim, i.e., to explore the relationship between alexithymia and coping strategies, and alexithymia and perceived social support, we found that the externally-oriented thinking factor plays a key role in explaining both problem-focused coping and emotion-focused coping, while the difficulty describing feelings factor proves to be a significant predictor of perceived social support, beyond the effect of psychological distress. Whereas with the introduction of anxiety to the model, the difficulty identifying feelings factor ceases to uniquely explain the variance of dysfunctional coping. In our sample of FM patients, alexithymia thus seems to be negatively related to both the use of effective coping strategies and the levels of perceived social support. The present study has some limitations that should be considered. First, cross-sectional designs do not allow certain conclusions about causal direction to be drawn. Longitudinal studies are needed to better clarify the mutual influence of alexithymia and psychological distress on both coping strategies and perceived social support. Second, the use of explicit self-reported instruments paradoxically requires the respondents to be aware of their reduced ability to identify and describe feelings (Parling et al., 2010). Performance-based instruments or structured interviews, less dependent on the patient's awareness, should be employed in addition to traditional self-reported measures. Finally, no control

group was enrolled, so future studies should compare FM patients with other clinical or healthy samples, in order to determine whether the observed associations between alexithymia, coping strategies and perceived social support are specific to FM syndrome.

In spite of these limitations, the findings reported in the present study represent, to the best of our knowledge, the first contribution towards understanding the relationship between alexithymia and both coping strategies and perceived social support in a sample of FM patients.

Globally considered, these results highlight a negative relationship between alexithymia, psychological distress, and both the use of effective coping strategies and seeking social support.

An adequate assessment of both alexithymic traits and psychological distress in FM patients is thus needed in order to allow clinicians to plan better-tailored treatments aimed at improving coping strategies and social bonds, both of which are essential to adequately deal with FM symptomology.

In particular, psychological interventions should take into account the specific dimensions of alexithymia which appear to be more compromised in each FM patient. The results of the present study showed a specific relationship between the different alexithymia factors and the coping strategies or the perceived social support. Therefore, patients with high scores on DIF factor may benefit from treatments aimed at educating the individual about his/her own emotional dimension (e.g., learning to distinguish a feeling from a somatic sensation and labelling the emotions), in order to reduce negative affects (in particular anxiety levels) and consequently the use of dysfunctional coping strategies. On the other side, interventions which attempt to improve communication skills through assertion training, and seek the support of

476 others in stressful situations, may be appropriate for FM patients with high scores on
477 DDF dimension.
478 Finally, for patients with high scores on EOT factor, useful therapeutic approaches
479 may include techniques that support the understanding that physical symptoms can be
480 associated to a stressful situation, and aid in identifying the source of the problem, in
481 order to improve coping strategies (Tominaga et al., 2014).
482 A psychological intervention focusing on the specific alexithymic features should
483 thus be considered a key clinical aspect in the treatment of FM, in order to
484 improve both their coping strategies and the levels of social support.

485 **References**

486 Abeles, A. M., Pillinger, M. H., Solitar, B. M., & Abeles, M. (2007). Narrative
487 review: the pathophysiology of fibromyalgia. *Annals of Internal Medicine,*
488 *146,* 726–34. doi: 10.7326/0003-4819-146-10-200705150-00006
489 Alok, R., Das, S. K., Agarwal, G. G., Tiwari, S. C., Salwahan, L., & Srivastava,
490 R. (2014). Problem-focused coping and self-efficacy as correlates of
491 quality of life and severity of fibromyalgia in primary fibromyalgia
492 patients. *JCR: Journal of Clinical Rheumatology, 20,* 314-316. doi:
493 10.1097/RHU.0000000000000130
494 Arnold, L. M., Crofford, L. J., Mease, P. J., Burgess, S. M., Palmer, S. C., Abetz,
495 L., & Martin, S. A. (2008). Patient perspectives on the impact of
496 fibromyalgia. *Patient Education and Counseling, 73,* 114–120. doi:
497 10.1016/j.pec.2008.06.005
498 Assumpção, A., Cavalcante, A. B., Capela, C. E., Sauer, J. F., Chalot, S. D.,
499 Pereira, C. A., & Marques, A. P. (2009). Prevalence of fibromyalgia in a
500 low socioeconomic status population. *BMC Musculoskeletal Disorders,*
501 *10,* 64. doi: 10.1186/1471-2474-10-64
502 Bagby, R. M., & Taylor, G. J. (1997). Affect dysregulation and alexithymia. In G.
503 J. Taylor, R. M. Bagby, & J. D. A. Parker (Eds.), *Disorders of affect*
504 *regulation: alexithymia in medical and psychiatric illness* (pp. 26−45).
505 Cambridge: University Press.
506 Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The Twenty-Item Toronto
507 Alexithymia Scale-I. Item selection and cross-validation of the factor
508 structure. *Journal of Psychosomatic Research, 38,* 23–32.
509 Berjot, S., & Gillet, N. (2011). Stress and coping with discrimination and

stigmatization. *Frontiers in Psychology, 2,* 33. doi: 10.3389/fpsyg.2011.00033

Bernard, A. L., Prince, A., & Edsall, P. (2000). Quality of life issues for fibromyalgia patients. *Arthritis Care & Research, 13,* 42–50. doi: 10.1002/1529-0131(200002)13:1<42::AID-ART7>3.0.CO;2-R

Besharat, M. A. (2010). Relationship of alexithymia with coping styles and interpersonal problems. *Procedia - Social and Behavioral Sciences, 5,* 614–618. doi: 10.1016/j.sbspro.2010.07.152

Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *Journal of Psychosomatic Research, 52,* 69–77. doi: 10.1016/S0022-3999(01)00296-3

Boehm, A., Eisenberg, E., & Lampel, S. (2011). The contribution of social capital and coping strategies to functioning and quality of life of patients with fibromyalgia. *The Clinical Journal of Pain, 27,* 233–239. doi: 10.1097/AJP.0b013e3181fdabcf

Bressi, C., Taylor, G., Parker, J., Bressi, S., Brambilla, V., Aguglia, E., ... & Todarello, O. (1996). Cross validation of the factor structure of the 20-item Toronto Alexithymia Scale: an Italian multicenter study. *Journal of psychosomatic research, 41,* 551-559. doi: 10.1016/S0022-3999(96)00228-0

Carver, C. S. (1997). You want to measure coping but your protocol's too long: consider the brief COPE. International *Journal of Behavioral Medicine, 4,* 92–100. doi: 10.1207/s15327558ijbm0401_6

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989) Assessing coping

strategies: a theoretically based approach. *Journal of Personality and Social Psychology, 56,* 267–283. doi: 10.1037/0022-3514.56.2.267

Castelli, L., Tesio, V., Colonna, F., Molinaro, S., Leombruni, P., Bruzzone, M., … & Torta, R. (2012). Alexithymia and psychological distress in fibromyalgia: prevalence and relation with quality of life. *Clinical and Experimental Rheumatology, 30,* 70-77.

Castelnuovo, G., Giusti, E. M., Manzoni, G. M., Saviola, D., Gatti, A., Gabrielli, S., Lacerenza, M., … & Tamburin, S. (2016). Psychological Treatments and Psychotherapies in the Neurorehabilitation of Pain: Evidences and Recommendations from the Italian Consensus Conference on Pain in Neurorehabilitation. *Frontiers in Psychology, 7,* 115. doi: 10.3389/fpsyg.2016.00115

Conti, L. (2000). *Repertorio delle scale di valutazione in psichiatria* (pp. 1581-1590). Firenze, Italy: SEE.

Coolidge, F. L., Segal, D. L., Hook, J. N., & Stewart, S. (2000). Personality disorders and coping among anxious older adults. *Journal of Anxiety Disorders, 14,* 157–172. doi: 10.1016/S0887-6185(99)00046-8

Cooper, C., Katona, C., & Livingston, G. (2008). Validity and reliability of the brief COPE in carers of people with dementia: the LASER-AD Study. *The Journal of nervous and mental disease, 196,* 838-843. doi: 10.1097/NMD.0b013e31818b504c

Costantini, M., Musso, M., Viterbori, P., Bonci, F., Del Mastro, L., Garrone, O., … & Morasso, G. (1999). Detecting psychological distress in cancer patients: validity of the Italian version of the Hospital Anxiety and

559 Depression Scale. *Supportive Care in Cancer, 7,* 121–127. doi:
560 10.1007/s005200050241
561 Di Tella, M., & Castelli, L. (2016). Alexithymia in chronic pain disorders.
562 *Current rheumatology reports, 18,* 41. doi: 10.1007/s11926-016-0592-x
563 Di Tella, M., Castelli, L., Colonna, F., Fusaro, E., Torta, R., Ardito, R.B., &
564 Adenzato, M. (2015). Theory of mind and emotional functioning in
565 fibromyalgia syndrome: an investigation of the relationship between social
566 cognition and executive function. *PLoS One, 10,* e0116542. doi:
567 10.1371/journal.pone.0116542
568 Di Tella, M., Ghiggia, A., Tesio, V., Romeo, A., Colonna, F., Fusaro, E., Torta,
569 R., & Castelli, L. (2017). Pain experience in Fibromyalgia Syndrome: The
570 role of alexithymia and psychological distress. *Journal of affective*
571 *disorders, 208,* 87–93. doi: http://dx.doi.org/10.1016/j.jad.2016.08.080
572 Fietta, P., Fietta, P., & Manganelli, P. (2007). Fibromyalgia and psychiatric
573 disorders. *Acta Biomedica, 78,* 88–95.
574 Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle- aged
575 community sample. *Journal of Health and Social Behavior, 21,* 219–239.
576 Fonagy, P., Gergely, G., Jurist, E., & Target, M. (2002). *Affect regulation,*
577 *metallization, and the development of the self.* New York, NY: Other
578 Press.
579 Fukunishi, I., & Rahe, R. H. (1995). Alexithymia and coping with stress in
580 healthy persons: alexithymia as a personality trait is associated with low
581 social support and poor responses to stress. *Psychological Reports, 76,*
582 1299–1304. doi: 10.2466/pr0.1995.76.3c.1299
583 Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton,

584 W., … & Kaplan, K. (2004). Prevalence and co-occurrence of substance
585 use disorders and independent mood and anxiety disorders: results from
586 the National Epidemiologic Survey on Alcohol and Related Conditions.
587 *Archives of General Psychiatry, 61,* 807-816. doi:
588 10.1001/archpsyc.61.8.807
589 Grynberg, D., Chang, B., Corneille, O., Maurage, P., Vermeulen, N., Berthoz, S.,
590 & Luminet, O. (2012). Alexithymia and the processing of emotional facial
591 expressions (EFEs): systematic review, unanswered questions and further
592 perspectives. *PLoS One, 7,* e42429. doi: 10.1371/journal.pone.0042429.
593 Hawker, G. A., Mian, S., Kendzerska, T., & French, M. (2011). Measures of adult
594 pain: Visual analog scale for pain (vas pain), numeric rating scale for pain
595 (nrs pain), mcgill pain questionnaire (mpq), short-form mcgill pain
596 questionnaire (sf-mpq), chronic pain grade scale (cpgs), short form-36
597 bodily pain scale (sf-36 bps), and measure of intermittent and constant
598 osteoarthritis pain (icoap). *Arthritis care & research, 63(S11)*. doi:
599 10.1002/acr.20543
600 Katz, S., Ford, A. B., Moskowitz, R. W., Jackson, B. A., & Jaffe, M. W. (1963).
601 Studies of illness in the aged: the index of ADL: a standardized measure of
602 biological and psychosocial function. *Jama, 185,* 914-919.
603 doi:10.1001/jama.1963.03060120024016
604 Kooiman, C. G., Vellinga, S., Spinhoven, P. H., Draijer, N., Trijsburg, R. W., &
605 Rooijmans, H. G. M. (2004). Childhood adversities as risk factors for
606 alexithymia and other aspects of affect dysregulation in adulthood.
607 *Psychotherapy and Psychosomatics, 73,* 107-116. doi: 10.1159/000075542
608 Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York,

NY: Springer.

Lumley, M. A., Neely, L. C., & Burger, A. J. (2007). The assessment of alexithymia in medical settings: implications for understanding and treating health problems. *Journal of Personality Assessment, 89,* 230–246. doi: 10.1080/00223890701629698

Lumley, M. A., Ovies, T., Stettner, L., Wehmer, F., & Lakey, B. (1996). Alexithymia, social support and health problems. Journal of *Psychosomatic Research, 41,* 519-530. doi: http://dx.doi.org/10.1016/S0022-3999(96)00227-9

Lumley, M. A., Stettner, L., & Wehmer, F. (1996). How are alexithymia and physical illness linked? A review and critique of pathways. *Journal of Psychosomatic Research, 41,* 505–518. doi: 10.1016/S0022-3999(96)00222-X

Matos, M., Bernardes, S. F., & Goubert, L. (2016). The relationship between perceived promotion of autonomy/dependence and pain-related disability in older adults with chronic pain: the mediating role of self-reported physical functioning. *Journal of behavioral medicine, 39,* 704-715. doi: 10.1007/s10865-016-9726-x

McCormack, H. M., David, J. D. L., & Sheather, S. (1988). Clinical applications of visual analogue scales: a critical review. *Psychological medicine, 18,* 1007-1019. https://doi.org/10.1017/S0033291700009934

Mease, P. (2005). Fibromyalgia syndrome: review of clinical presentation, pathogenesis, outcome measures, and treatment. *The Journal of Rheumatology, 75,* 6–21.

633 Mease, P., Buskila, D., & Sarzi-Puttini, P. (2009). The fibromyalgia conundrum.
634 *Clinical and Experimental Rheumatology, 27,* S2–S4.
635 Montebarocci, O., Codispoti, M., Baldaro, B., & Rossi, N. (2004). Adult
636 attachment style and alexithymia. *Personality and Individual Differences,*
637 *36,* 499–507. doi: 10.1016/S0191-8869(03)00110-7
638 Montoya, P., Sitges, C., Garcia-Herrera, M., Izquierdo, R., Truyols, M., Blay, N.,
639 & Collado, D. (2005). Abnormal affective modulation of somatosensory
640 brain processing among patients with fibromyalgia. *Psychosomatic*
641 *Medicine, 67,* 957–963. doi: 10.1097/01.psy.0000188401.55394.18
642
643 Osman, A., Lamis, D. A., Freedenthal, S., Gutierrez, P. M., & McNaughton-
644 Cassill, M. (2014). The multidimensional scale of perceived social
645 support: analyses of internal reliability, measurement invariance, and
646 correlates across gender. *Journal of personality assessment, 96,* 103-112.
647 doi: 10.1080/00223891.2013.838170
648 Parker, J. D. A., Austin, E. J., Hogan, M. J., Wood, L. M., & Bond, B. J. (2005).
649 Alexithymia and academic success: examining the transition from high
650 school to university. *Personality and Individual Differences, 38,* 1257–
651 1267. doi: 10.1016/j.paid.2004.08.008
652 Parker, J. D. A., Taylor, G. J., & Bagby, R. M. (1998). Alexithymia: relationship
653 with ego defense and coping styles. *Comprehensive Psychiatry, 39,* 91–98.
654 doi: 10.1016/S0010-440X(98)90084-0
655 Parling, T., Mortazavi, M., & Ghaderi, A. (2010). Alexithymia and emotional
656 awareness in anorexia nervosa: time for a shift in the measurement of the
657 concept? *Eating Behaviors, 11,* 205–210. doi:

10.1016/j.eatbeh.2010.04.001

Pinsonnault, E., Desrosiers, J., Dubuc, N., Kalfat, H., Colvez, A., & Delli-Colli, N. (2003). Functional autonomy measurement system: Development of a social subscale. *Archives of Gerontology and Geriatrics, 37,* 223–233. doi: https://doi.org/10.1016/S0167-4943(03)00049-9

Prezza, M. & Principato, M. C. (2002). La rete sociale e il sostegno sociale. In M. Prezza, & M. Santinello (Eds.), *Conoscere la comunità* (pp. 193–233). Bologna: Il Mulino.

Ransom, S., Jacobsen, P. B., Schmidt, J. E., & Andrykowski, M. A. (2005). Relationship of problem-focused coping strategies to changes in quality of life following treatment for early stage breast cancer. *Journal of Pain and Symptom Management, 30,* 243–253. doi: 10.1016/j.jpainsymman.2005.03.013

Sayar, K., Gulec, H., & Topbas, M. (2004). Alexithymia and anger in patients with fibromyalgia. *Clinical Rheumatology, 23,* 441-448. doi: 10.1007/s10067-004-0918-3

Schmidt-Wilcke, T., & Clauw, D. J. (2011). Fibromyalgia: from pathophysiology to therapy. *Nature Reviews Rheumatology, 7,* 518–527. doi: 10.1038/nrrheum.2011.98

Sifneos, P. E. (1972). *Short-term psychotherapy and emotional crisis.* Cambridge, MA: Harvard University Press.

Sifneos, P. E. (2000). Alexithymia, clinical issues, politics and crime. *Psychotherapy and Psychosomatics, 69,* 113–116. doi: 10.1159/000012377

Smarr, K. L., & Keefer, A. L. (2011). Measures of depression and depressive

683 symptoms: Beck Depression Inventory-II (BDI-II), Center for
684 Epidemiologic Studies Depression Scale (CES-D), Geriatric Depression
685 Scale (GDS), Hospital Anxiety and Depression Scale (HADS), and Patient
686 Health Questionnaire-9 (PHQ-9). *Arthritis care & research, 63(S11)*. doi:
687 10.1002/acr.20556
688 Steinweg, D. L., Dallas, A. P., & Rea, W. S. (2011). Fibromyalgia: unspeakable
689 suffering, a prevalence study of alexithymia. *Psychosomatics, 52,* 255–
690 262. doi: 10.1016/j.psym.2010.12.022
691 Stewart, S. H., Zvolensky, M. J., & Eifert, G. H. (2002). The relations of anxiety
692 sensitivity, experiential avoidance, and alexithymic coping to young
693 adults' motivations for drinking. *Behavior Modification, 26,* 274–296. doi:
694 10.1177/0145445502026002007
695 Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research.
696 *Psychotherapy and Psychosomatics, 73,* 68–77. doi: 10.1159/000075537
697 Taylor, G. J., Bagby, R. M., & Parker, J. D. (2003). The 20-Item Toronto
698 Alexithymia Scale: IV. Reliability and factorial validity in different
699 languages and cultures. *Journal of Psychosomatic Research, 55,* 277–283.
700 doi: 10.1016/S0022-3999(02)00601-3
701 Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (1997). *Disorders of affect*
702 *regulation: Alexithymia in medical and psychiatric illness.* Cambridge:
703 Cambridge University Press.
704 Tómasson, K., & Vaglum, P. (1995). A nationwide representative sample of
705 treatment-seeking alcoholics: a study of psychiatric comorbidity. *Acta*
706 *Psychiatrica Scandinavica, 92,* 378–385. doi: 10.1111/j.1600-
707 0447.1995.tb09600.x

Tominaga, T., Choi, H., Nagoshi, Y., Wada, Y., & Fukui, K. (2014). Relationship between alexithymia and coping strategies in patients with somatoform disorder. *Neuropsychiatric Disease and Treatment, 10,* 55–62. doi: 10.2147/NDT.S55956

Tuzer, V., Bulut, S. D., Bastug, B., Kayalar, G., Goka, E., & Beştepe, E. (2011). Causal attributions and alexithymia in female patients with fibromyalgia or chronic low back pain. *Nordic Journal of Psychiatry, 65,* 138–144. doi: 10.3109/08039488.2010.522596

Vingerhoets, A. J., Van Heck, G. L., Grim, R., & Bermond, B. (1995). Alexithymia: a further exploration of its nomological network. *Psychotherapy and Psychosomatics, 64,* 32–42. doi: 10.1159/000288988

Waldstein, S. R., Kauhanen, J., Newmann, S. A., & Katzel, L. I. (2002). Alexithymia and cardiovascular risk in older adults: psychological, psychophysiological, and biomedical correlates. *Psychology and Health, 17,* 597–610. doi: 10.1080/08870440290025803

Wartella, J. E., Auerbach, S. M., & Ward, K. R. (2009) Emotional distress, coping and adjustment in family members of neuroscience intensive care unit patients. *Journal of Psychosomatic Research, 66,* 503–509. doi: 10.1111/j.1442-2018.2005.00213.x

Zigmond, A.S., & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica, 67,* 361–370. doi: 10.1111/j.1600-0447.1983.tb09716.x

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52,* 30–41. doi: 10.1207/s15327752jpa5201_2

Table 1. Demographic and clinical characteristics of the FM patients ($N = 153$).

	Mean (SD)	n (%)	Range
Age	52.4 (10.0)		24-74
Years of education	10.5 (3.3)		5-18
Duration of illness (months)	88.2 (65.9)		0-288
VAS	7.1 (2.4)		0-10
Coping types – Brief COPE			
Problem-focused	35.2 (7.2)		6-24
Emotion-focused	30.2 (5.6)		10-40
Dysfunctional	24.8 (4.5)		12-48
Social Support			
MSPSS	5.1 (1.3)		1-7
Psychological Distress			
HADS-A	9.1 (4.5)		0-21
HADS-A score ≥8		87 (56.5)	
HADS-D	9.3 (4.2)		0-21
HADS-D score ≥8		98 (63.6)	
Alexithymia			
TAS-20 Total	51.6 (13.5)		0-100
Non-alexithymic		74 (48.1)	
Borderline		39 (25.3)	
Alexithymic		40 (26.0)	

TAS-20 DIF	20.1 (7.3)	0-35
TAS-20 DDF	13.4 (4.9)	0-25
TAS-20 EOT	18.1 (5.0)	0-40

VAS = visual analogue scale; Brief COPE = short for Coping Orientations to Problems Experienced; MSPSS = Multidimensional Scale of Perceived Social Support; HADS-A and HADS-D = Anxiety and Depression subscales of Hospital Anxiety and Depression Scale; TAS-20 = Twenty-item Toronto Alexithymia Scale; TAS-20 DIF = Difficult Identifying Feelings factor of Toronto Alexithymia Scale; TAS-20 DDF = Difficulty Describing Feelings factor of Toronto Alexithymia Scale; TAS-20 EOT = Externally-Oriented Thinking factor of Toronto Alexithymia Scale.

Table 2. Pearson correlations between demographic/clinical variables, types of coping, perceived social support, alexithymia and psychological distress (N = 153).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	–												
2. Educational level	-.174*												
3. Duration of illness	.182	-.051											
4. VAS	-0.59	0.26	.041										
5. Problem-focused coping	-.108	.108	-.019	-.022									
6. Emotion-focused coping	-.082	.112	-.141	.008	.501**								
7. Dysfunctional coping	-.052	.034	-.117	.050	.321**	.177*							
8. MSPSS	.100	-.062	-.023	.033	.060	.179	-.130						
9. HADS-A	-.066	.017	.093	.424**	-.052	-.211**	.287**	-.383**					
10. HADS-D	-0.24	-.003	.137	.381**	-.098	-.313**	.189*	-.400**	.750**				
11. TAS-20 Total	.039	-.122	.152	.298**	-.245**	-.221**	.192*	-.226*	.602**	.528**			

12. TAS-20 DIF	-.041	.004	.108	.269**	-.142	-.138	.250**	-.231*	.618**	.565**	.835**		
13. TAS-20 DDF	.087	-.063	.210*	.253**	-.120	-.171*	.064	-.276**	.491**	.388**	.816**	.583**	
14. TAS-20 EOT	0.82	-.270**	.040	.160	-.333**	-.227**	.087	-.007	.235**	.215**	.645**	.259**	.366**

VAS = visual analogue scale; MSPSS = Multidimensional Scale of Perceived Social Support; HADS-A and HADS-D = Anxiety and Depression subscales of Hospital Anxiety and Depression Scale; TAS-20 = Twenty-item Toronto Alexithymia Scale; TAS-20 DIF = Difficult Identifying Feelings factor of Toronto Alexithymia Scale; TAS-20 DDF = Difficulty Describing Feelings factor of Toronto Alexithymia Scale; TAS-20 EOT = Externally-Oriented Thinking factor of Toronto Alexithymia Scale.

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

Table 3. Hierarchical multiple regressions predicting types of coping from alexithymia, anxiety and depression ($N = 153$).

Predictor variables	β	t	R^2	Adj R^2	F	ΔR^2	ΔF
Problem-focused coping							
Model			0.113	0.101	9.512**		
TAS-20 Total	-0.052	-0.512					
TAS-20 EOT	-0.300	-2.987**					
Emotion-focused coping							
Model 1			0.051	0.045	8.195**	0.051	8.195**
TAS-20 Total	-0.128	-1.240					
TAS-20 DDF	0.101	1.193					
TAS-20 EOT	-0.227	-2.863**					
Model 2			0.125	0.107	7.089**	0.073	6.252**
TAS-20 Total	0.047	0.368					
TAS-20 DDF	-0.027	-0.296					
TAS-20 EOT	-0.175	-2.217*					
HADS-A	0.084	0.725					
HADS-D	-0.333	-2.887**					
Dysfunctional coping							
Model 1			0.064	0.051	5.115**	0.064	5.115**
TAS-20 Total	-0.076	-0.505					
TAS-20 DIF	0.315	2.081*					
Model 2			0.096	0.072	3.942**	0.032	2.656
TAS-20 Total	-0.136	-0.896					

TAS-20 DIF	0.250	1.607
HADS-A	0.283	2.227*
HADS-D	-0.105	-0.878

TAS-20 = Twenty-item Toronto Alexithymia Scale; TAS-20 DIF = Difficult Identifying Feelings factor of Toronto Alexithymia Scale; TAS-20 DDF = Difficulty Describing Feelings factor of Toronto Alexithymia Scale; TAS-20 EOT = Externally-Oriented Thinking factor of Toronto Alexithymia Scale; HADS-A and HADS-D = Anxiety and Depression subscales of the Hospital Anxiety and Depression Scale. * $p<.05$; ** $p<.01$

Table 4. Hierarchical multiple regression predicting perceived social support (MSPSS) from alexithymia, anxiety and depression ($N = 153$).

Predictor variables	β	t	R^2	Adj R^2	F	ΔR^2	ΔF
Model 1			0.098	0.072	3.787*	0.098	3.787*
TAS-20 Total	0.377	1.316					
TAS-20 DIF	-0.315	-1.573					
TAS-20 DDF	-0.399	-2.200*					
Model 2			0.214	0.176	5.611**	0.116	7.630**
TAS-20 Total	0.498	1.832					
TAS-20 DIF	-0.093	-0.470					
TAS-20 DDF	-0.413	-2.400*					
HADS-A	-0.178	-1.215					
HADS-D	-0.320	-2.224*					

TAS-20 = Twenty-item Toronto Alexithymia Scale; TAS-20 DIF = Difficult Identifying Feelings factor of Toronto Alexithymia Scale; TAS-20 DDF = Difficulty Describing Feelings factor of Toronto Alexithymia Scale; HADS-A and HADS-D = Anxiety and Depression subscales of the Hospital Anxiety and Depression Scale.

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