The Role of Optimism and Pessimism in Chronic Pain Patients Adjustment

Carmen Ramírez-Maestre, Rosa Esteve, and Alicia E. López

Universidad de Málaga (Spain)

This study analyses the relationships between patients' dispositional optimism and pessimism and the coping strategies they use. In addition, the coping strategies repercussions on adjustment to chronic pain were studied. Ninety-eight patients with heterogeneous chronic pain participated. The assessment tools were as follows: Life Orientation Test (LOT), the Vanderbilt Pain Management Inventory (VPMI), the McGill Pain Questionnaire (MPQ), Hospital Anxiety and Depression Scale (HADS), and the Impairment and Functioning Inventory for Chronic Pain Patients (IFI). The hypothetical model establishes positive relationships between optimism and the use of active coping strategies, whereas pessimism is related to the use of passive coping. Active coping is associated with low levels of pain, anxiety, depression and impairment and high levels of functioning. However, passive coping is related to high levels of pain, anxiety, depression and impairment and low levels of functioning. The hypothetical model was empirically tested using the LISREL 8.20 software package and the unweighted least squares method. The results support the hypotheses formulated regarding the relations among optimism, pessimism, coping and adjust of chronic pain patients. By analysing optimism among chronic pain patients, clinicians could make better predictions regarding coping and adjustment.
Keywords: chronic pain, optimism, pessimism, coping, adjustment.

Este trabajo analiza la relación entre el optimismo y pesimismo disposicional del paciente con dolor crónico y las estrategias de afrontamiento que utiliza. De igual forma, se estudia el efecto del tipo de afrontamiento sobre la adaptación del paciente a su dolor. Participaron 98 pacientes con dolor crónico heterogéneo. Los instrumentos de medida utilizados han sido: Test de Orientación Vital (LOT), Inventario Vanderbilt de afrontamiento al Dolor (VPMI), Cuestionario McGill de Dolor (MPQ), Escala Hospitalaria de Ansiedad y Depresión (HADS), y el Inventario de Deterioro y Funcionamiento para pacientes con dolor crónico (IDF). En el modelo hipotético se establecen relaciones entre el optimismo y el uso de estrategias activas de afrontamiento, mientras que el pesimismo se relaciona con las estrategias pasivas. A su vez, se establecen relaciones entre las estrategias activas y menores niveles de dolor percibido, baja depresión, ansiedad y deterioro y mayor nivel de funcionamiento, relacionándose las estrategias pasivas con altos niveles de dolor, ansiedad, depresión y deterioro y con bajos de funcionamiento diario. Este modelo hipotético fue contrastado empíricamente a través del programa LISREL 8.20. y el método de mínimos cuadrados no ponderados. Los resultados apoyan las hipótesis formuladas.
Palabras clave: dolor crónico, optimismo, pesimismo, afrontamiento.

The Hewitt and Flett model (1996) argues that personality is a determinant in the coping strategies people use in stressful situations and that these strategies are responsible for good or poor adjustment. It should be noted that several previous empirical studies, carried out by the present authors, show that personal characteristics (sex, age and personality) act as differential variables which determine how pain is experienced and the way chronic pain patients cope (Affleck *et al*., 1999; Asghari and Nicholas, 1999; Esteve, Ramírez-Maestre, & López, 2005; Esteve, Ramírez-Maestre, & López, 2007; Gagliese & Melzack, 1997; Phillips and Gatchel (2000), Ramírez-Maestre, Esteve, & López, 2001; Ramírez-Maestre, Esteve, & López, 2008; Ramírez-Maestre, López, & Esteve, 2004).

Dispositional optimism is considered a personal trait defined as the tendency to believe that one will generally experience good versus bad outcomes in life (Scheier & Carver, 1992; Scheier, Carver, & Bridge, 1994). Although some research has indicated that people with high optimism respond poorly to chronic distress (Segerstrom, 2005), generally, optimism is considered a coping resource that buffers the impact of negative events and is associated with less depression, greater well-being, and health benefits in numerous populations (Carver, Scheier, & Segerstrom, 2010; Ferreira & Sherman, 2007; Goodin, Bier, & McGuire, 2009; Hanssen, Vancleef, & Peters, 2009; Kurtz, Kurtz, Given, & Given, 2008; Peters, 2009; Peters et al., 2007; Rasmussen, Scheier, & Greenhouse, 2009). In an experimental pain context, dispositional optimism is associated with lower pain sensitivity, less distress and decreased cardiovascular reactivity (Geers, Wellman, Helfer, Fowlers, & France, 2008). Recent evidence suggests that positive resources, such as positive affect and optimism, aid adaptation to chronic illness (Fredrickson, 1998; Finan, Zautra, & Tennen, 2008; Zautra, Johnson, & Davis, 2005). However, there is little research on the effects of optimism on adjustment among chronic pain patients (Cannella, Lobel, Glass, Lokshina, & Graham, 2007; Furlong, Zautra, Puente, López, & Valero, 2010; Huber, Suman, Biasi, & Carli, 2008; Worsham, 2005)

As Carver and colleagues suggest (Carver et al., 2010), absence of pessimism is not the same as presence of optimism. The possibility that optimists and pessimists cope differently with problems has been explored in several studies (Carver et al., 2010; Cannella et al., 2007; Matusiewicz & Krzyszkowska, 2009; SoldbergNess & Segerstrom, 2006). The results of these studies show that pessimism leads patients to use avoidant and passive coping more often regarding the problems of daily life which, in turn, leads to decreased daily activity levels, possibly resulting in functional incapacity. In contrast, optimism leads patients to use approach and active coping thereby achieving better adjustment to chronic pain.

The aim of the present study was to analyze the relationships between dispositional optimism, pessimism and coping and adjustment to chronic pain. The pathways through which optimism has a beneficial influence on pain-related outcomes remain unclear and research almost always focuses on samples drawn from healthy populations (Hanssen, Vancleef, & Peters, 2009; Peters et al., 2009). (Hanssen, et al., 2009; Peters, Meevissen, Flink, Boersma, & Linton, 2009). Thus, it is relevant to assess the role optimism plays in the well-being of chronic pain patients.

Methods

Participants

In this research the participants were 98 patients with chronic pain who attended the Clinical Pain Unit at the Carlos Haya Hospital in Málaga (Spain). Individuals were considered eligible for the study if they had experienced pain for at least 6 months, were not being treated for a terminal illness and do not suffer from any psychiatric disorder.

There were more women than men in our sample (37.4% male, 62.6% female). As previous studies have shown**,** this distribution of sexes is typical of all patients who attend this clinic and other Spanish Pain Units (Casals & Samper, 2004). The average age of the participants was 55.4 years (*SD* =12.8). A total of 34.7% of the sample reported primary school education only, 25.5% had secondary school education, and 25% were university graduates. At the time of the study, 71% were married.

Etiology and the pain site were heterogeneous. The most frequently diagnoses were Arthritis, Arthrosis, Fibromyalgia, Lumbago, Disc Hernia and Osteoporosis. This way, the most frequently reported primary pain site was the joints (30%); 20% reported bone pain; and 21% reported muscle pain. The mean pain duration was 9 years (from 10 to 468 months; *SD* = 100.9). Pain medication use was reported by 100% of the subjects (4 drugs on average) and 41% reported at least one surgical intervention to relieve pain.

Procedure

The subjects were interviewed the first time they attended the Pain Unit of Carlos Haya Hospital in Málaga, Spain. Interviews were conducted in this centre and the patients were sent to us by the doctors after their first visit. The research project — of which this study is a part — was approved by the Carlos Haya Hospital Ethics Committee. Informed consent was obtained prior to data collection. Participants were aware that the information collected was confidential. They were interviewed in the department ward by a psychologist who was a member of the research team with no other person present.

Table 1
Descriptive characteristics of the sample (N = 98)

Variables	Mean	*SD*
Age	55.38	12.88
Pain Time	108 months	100.9

Variables		%
Sex	Men	37.4%
	Female	62.6%
Marital Status	Single	10.1%
	Married	71.7%
	Divorced	5.1%
	Widow	12.1%
Children	0-3children	79.6%
	4-6	20.4%
Studies	Reading and Writing	14.3%
	Primary	34.7%
	Secondary	25.5%
	University	25.5%
Pain	Joint pain	30%
	Bone	20%
	Muscle	21%
	Widespread pain	14.6%
	Low back pain	12.2%
	Neuralgia	2.2%

Measures

Dispositional Optimism.

The Spanish version (Fernández & Bermúdez, 1999) of the Life Orientation Test (LOT); (Scheier & Carver, 1985) was applied. The scale comprises 13 items. Four items evaluate pessimism (α = .76), five assess dispositional optimism—defined as generalized outcome expectancies for success (α = .85)—and 4 are control items. The response format for each item is *Yes/No*.

Coping Strategies.

The Vanderbilt Pain Management Inventory (Brown & Nicassio, 1987), adapted into Spanish (Esteve et al., 2005) was used to assess coping strategies. The scale has 18 items divided into two subscales designed to assess how often chronic pain sufferers use active and passive strategies when their pain reaches moderate or high intensities:

Active strategies: Handling the pain or carry on functioning despite the pain.

Passive strategies: Strategies giving control over pain to another person or allowing pain to adversely affect other areas of the subject's life.

This adaptation demonstrates appropriate psychometric properties, with an internal consistency of Cronbach's alpha = .64 for active strategies and Cronbach's alpha = .70 for passive strategies.

Pain.

One of the Spanish versions of the *McGill Pain Questionnaire* (Melzack, 1975) was used, specifically, the adaptation by Lázaro, Bosch, Torrubia, and Baños (1994). This instrument consists of a list of 67 adjectives or descriptors classified into 19 subcategories. This scale yields an overall score of perceived pain which was used in this research. The internal consistency for the total score in this Spanish adaptation is Cronbach's alpha = .74.

Anxiety and Depression.

The *Hospital Anxiety and Depression Scale* (HADS) was created by Zigmond and Snaith (1983) and adapted to Spanish by Quintana et al. (2003). Zigmond and Snaith (1983) designed a scale that substitutes the symptoms of physical pain with others more specific to psychological disorders. The goal was to design an instrument that evaluated depression and anxiety states in non-psychiatric patients in hospital. It is a self-applied questionnaire of 14 items and has two subscales: anxiety and depression. HADS provides a measurement of 'psychological discomfort' as a dimension, and it has good correlation with the severity of the physical illness and other quality of life measurements. It can be used to detect changes during the illness or during the treatment process. The Spanish version of the scale shows appropriate reliability and validity. The internal consistency of both scales is high (α = 0.86 for anxiety; α = 0.86 for depression); (Tejero, Guimera, & Farré, 1996; Quintana et al., 2003). Pincus, Fraser, and Pearce (1998) strongly recommend the use of this instrument to assess anxiety and depression in chronic pain populations.

Impairment and Daily Functioning.

Activity was assessed by the *Impairment and Functioning Inventory* (IFI) for chronic pain patients (Ramírez–Maestre & Valdivia, 2003). This instrument is used to assess not only the daily activities of patients suffering chronic pain but also their impairment, defined as decreased activity levels because of pain. Thus, this scale includes questions about the patients' current activities and their activities before suffering pain. This offers clinicians more precise knowledge concerning the impact that pain has on their patients' functioning. The inventory is composed of 19 items distributed in 4 scales:

• *Household activity:* Activities aimed at taking care of the house (e.g. *During the last week...have you cooked a meal?* if the answer was Yes*: How many times? /* if the answer was No*: Before the beginning of pain, did you use to do that?*). The internal consistency for this scale was .90.

• *Independent functioning:* Behaviours aimed at self-care and being independent (e.g. *During the last week...did you dress by yourself?* if the answer was Yes: *How many times? /* if the answer was No: *Before the beginning of pain, did you use to do that?*). The internal consistency for this scale was .60.

• *Social activities.* Leisure behaviours that patients engage in with other people, friends, and family (e.g. *During the last week...have you visited any friend?* if the answer was Yes: *How many times? /* if the answer was No: *Before the beginning of pain, did you use to do that?*). Cronbach's alpha for this scale was .65.

• *Leisure activities.* Activities which do not require the patients to have social contact with others (e.g. *During the last week... have you been for a walk?* if the answer was Yes: *How many times? /* if the answer was No: *Before the beginning of pain, did you use to do that?*). The internal consistency for this scale was .65.

Finally, this instrument has two general indicators used as variables in this study: level of daily functioning (internal consistency in this study: $\alpha = .80$) and level of impairment (internal consistency in this study: $\alpha = 0.75$), and showing good levels of validity (Ramírez–Maestre & Valdivia, 2003).

Analyses

In order to simultaneously consider the influence of all the exogenous variables on all the endogenous variables, the analysis was performed using Structural Equations Modelling with LISREL 8.30 software (Jöreskog and Sorbom, 1999). The basic elements of the model are the *exogenous* and *endogenous* variables, and the *parameters*. Following the hypothetical model shown in Figure 1, the *exogenous* variable in this case is optimism and pessimism, whereas coping strategies (passive and active), pain, depression, anxiety, impairment, and functioning are *endogenous* variables. On the other hand, the *parameters* of this model are the coefficients or "loads" that the values of the variable will be multiplied by. The beta (β) and gamma (γ) coefficients can be interpreted as direct effects on the endogenous variables. *Beta* indicates that a change unit in an endogenous variable modifies beta change units in another endogenous variable, while the rest of the variables remain constant. *Gamma* indicates that a change unit in an exogenous variable modifies gamma change units in an endogenous variable. The hypotheses are depicted in Figure 1, where the expected relationship between the
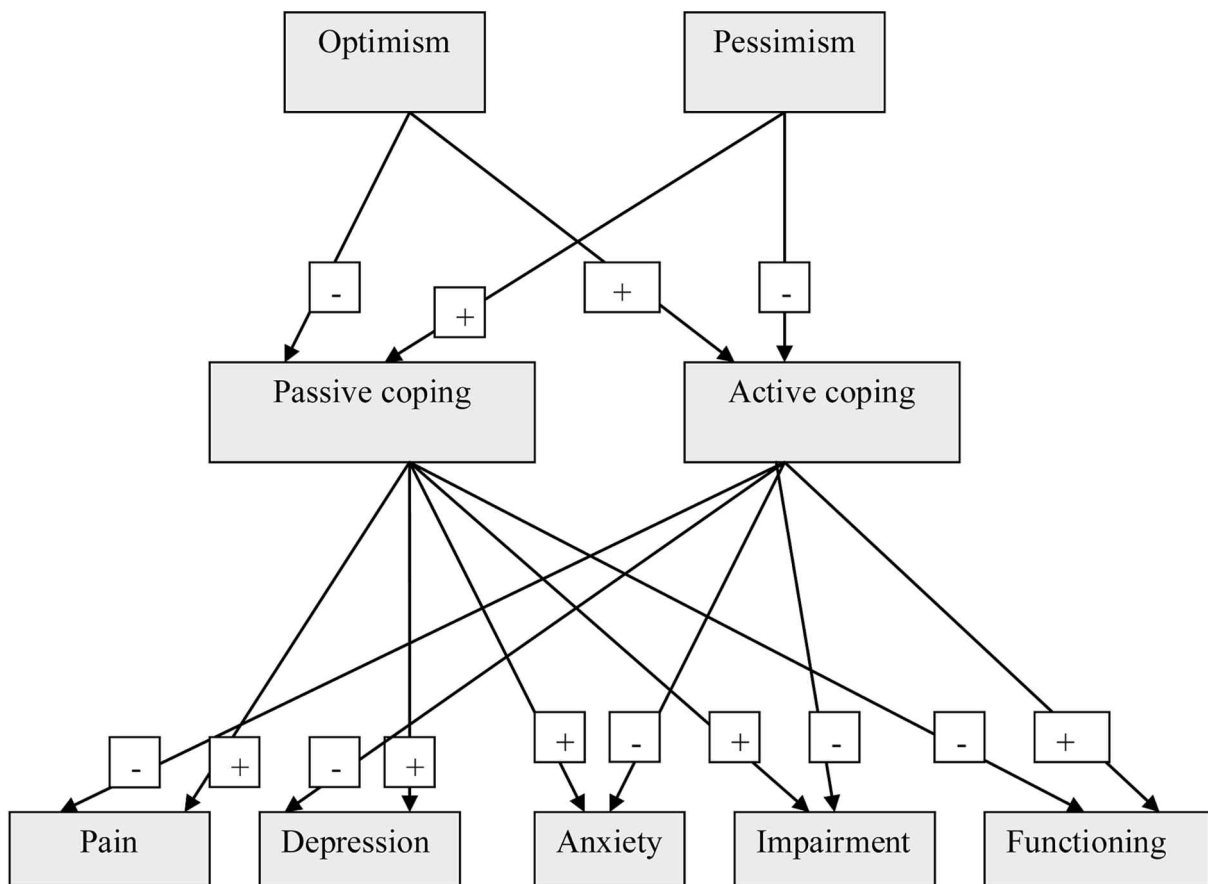

Figure 1. Hypothetical model.

Table 2
Means and standard deviations of the variables

	Mean	*SD*	Minimum	Maximum	Possible score ranges
Optimism	3.85	1.3	0	5	0-5
Pessimism	1.86	1.4	0	4	0-4
Passive coping	24.8	5.43	13	37	10-40
Active coping	21.79	4.83	9	30	8-32
Pain	34	8.54	7	50	0-66
Depression	14.8	6.4	13	22	13-22
Anxiety[*]	19.0	5.7	10	25	10-25
Functional status	55	17.9	13	99	0-150
Functional impairment	2.8	3.2	0	14	0-19

[*] The higher punctuations, the lower level of anxiety

Table 3
Correlation matrix

Variable	Optimism	Pessimism	Passive coping	Active coping	Pain	Depression	Anxiety	Functional status	Functional Impairment
Optimism	1								
Pessimism	−.272[**]	1							
Passive coping	−.162	.331[**]	1						
Active coping	.348[**]	−.203[*]	−.344[**]	1					
Pain	−.196	.063	.182	−.215[*]	1				
Depression	−.435[**]	.344[**]	.446[**]	−.350[**]	.370[**]	1			
Anxiety	−.160	.065	.114	−.244[*]	.208[*]	−.155	1		
Functional status	.232[*]	−.155	−.476[**]	.285[**]	−.231[*]	−.325[**]	.081	1	
Functional impairment	−.176	.094	.252[*]	−.229[*]	.138	.320[*]	−.172	−.432[**]	1

Note. $p < .05$[*]; $p < .01$[**]

variables under analysis is shown. Thus, it was hypothesized that optimism has a negative association with the use of passive coping strategies and a positive one on the use of active coping strategies. On the other hand, pessimism is positively related to the use of passive coping strategies and a negatively to the use of active coping strategies. Regarding coping strategies and patients' adaptation, it is assumed that there is an inverse relationship between passive coping and the level of functioning. This way, the use of passive coping strategies would have a positive effect on perceived intensity of pain, depression, anxiety and impairment. Finally, it was assumed that the use of active strategies for coping with pain has a positive effect on daily functioning and a negative one on intensity of pain, depression, anxiety and impairment. The estimation method was Unweighted Least Squares since the assumption of multivariate normality was not fulfilled, and several goodness-of-fit indexes were used to test the suitability of the model:

Goodness-of-Fit Index (GFI) — referring to how much of the correlation matrix is observed and explained by the model;

The GFI adjusted to the degrees of freedom of the model (AGFI) (the difference between the number of equations and unknown factors);

The Comparative Fit Index (CFI), which compares the fit between the proposed model and other possible models, whether specific or randomly generated by the system/software package.

All these indexes fluctuate between 0 and 1, 1 being a perfect fit.

The *Root mean square error of approximation (RMSEA)*.

Results

Table 2 shows the descriptive statistics of the main study variables.

Analyses were performed on the correlation matrix (Table 3). Table 3 shows that there is no significant correlation between optimism and passive coping; passive coping and pain, anxiety and impairment; and pain and functional impairment.

The only path of the initial model that was not statistically significant was deleted to obtain a parsimonious model. For this reason, the initial paths from active coping to anxiety were eliminated. Figure 2 represents the final model.

The various goodness-of-fit indexes calculated indicated that the estimated model provides a good fit to the data: The three indexes are highly satisfactory (GFI = 0.97; AGFI = 0.95; CFI = 0.99). For the final model RMSEA = 0.00.

As can be observed (Figure 2), optimism had statistically significant effects on passive and active coping because individuals with higher levels of optimism report higher levels of active coping and lower levels of passive coping (although the size of the changed parameter is small). On the other hand, pessimism yielded two statistically significant path coefficients to passive and active coping, with individuals characterized by higher levels of pessimism reporting lower levels of active strategies (again the parameter size is quite small) and higher levels of passive ones.

Passive coping had five statistically significant path coefficients: higher levels of passive coping were associated with lower levels of functioning and higher levels of pain intensity, depression, anxiety and impairment. Active coping showed just four statistically significant path coefficients: individuals with higher levels of active coping reported lower levels of pain intensity, depression, and impairment and higher levels of functioning.

Discussion

Recent research shows that psychological factors predict adjustment to persistent pain. However, attention has been drawn to the need to develop conceptual models that consider how these psychological factors are related (Keefe, Rumble, Scipio, Giordano, & Perri, 2004). The purpose of the present study was to compare dispositional optimism, pessimism and coping in predicting adjustment to chronic pain as measured by anxiety, depression, functional status, functional impairment and reported pain intensity. Briefly, this study found that optimism and pessimism are associated with coping. As others have stated, optimism is related to less pain intensity (Treharne & Kitas, 2005). Also, the
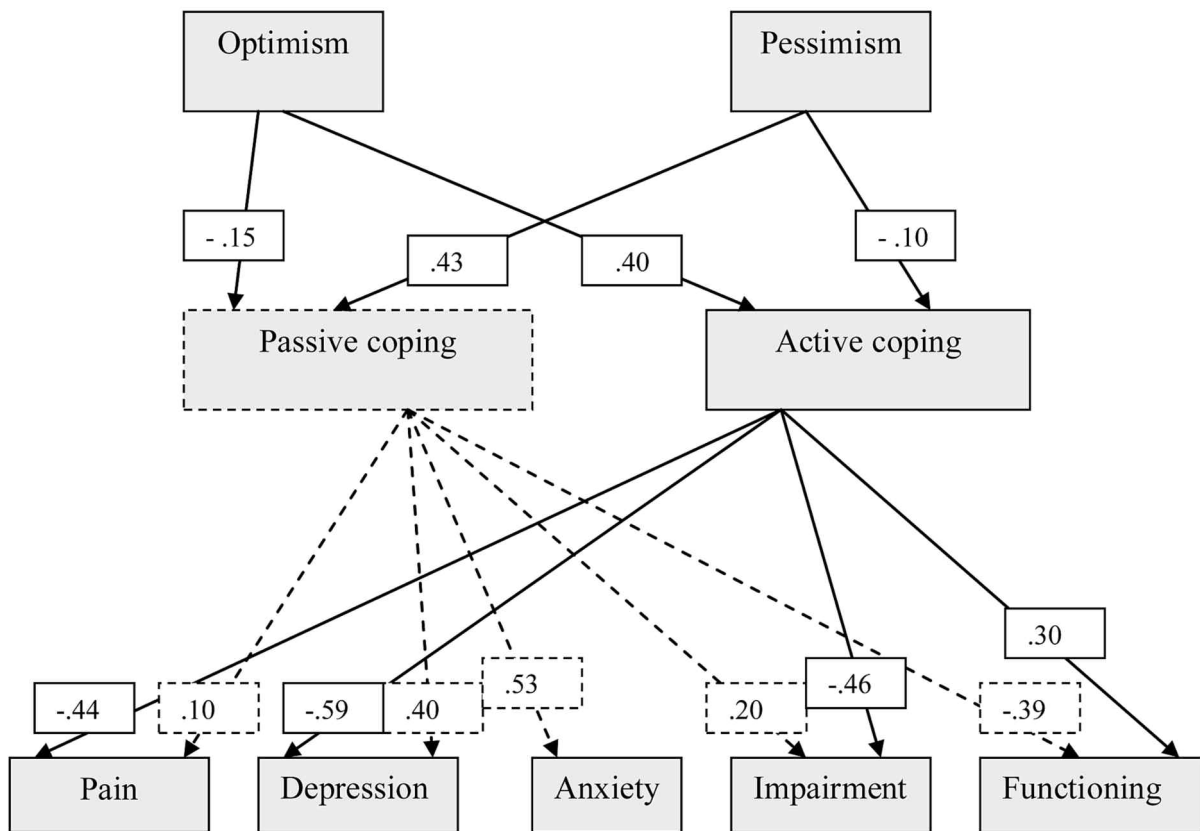

Figure 2. Final Model. Grey rectangles are observed (measured) variables; values in white rectangles are the changed parameters.

results of this study show that this association is mediated by the coping response. On the other hand, the measures of coping had a significant association with measures of emotional distress and the variables related to activity, i.e., functional status and functional impairment.

The cognitive-behavioural theory of pain identifies two categories of variables that are useful in predicting pain and disability: cognitions and coping responses (Jensen, Turner, & Romano, 2001; Turner, Jensen, & Romano, 2000). Active and passive coping responses may be used at different times by the same individuals, depending on the particular situation. As argued by Turner et al. (2000), successful coping may depend on a wide variety of factors, so it is unlikely that any one coping strategy will prove to be consistently successful or unsuccessful. However, there is fairly consistent evidence indicating that passive coping, negative thinking and pain avoidance are associated with poorer adaptation, whereas active coping, pain control and rational thinking are associated with better adaptation, although these coping responses show much weaker predictive capacity (Esteve et al., 2005, 2007).

In the chronic pain context, the perception of a greater intensity of pain could be considered as clear evidence of the inefficiency of a given coping strategy. One of the results of this study and other research (Ramírez-Maestre et al., 2004, 2008), is the significant and positive relation between the use of passive strategies and pain intensity. However, the association between active strategies and adjustment has sometimes proven to be less clear (Esteve et al., 2007; Ramírez-Maestre et al., 2004, 2008). Thus, it is of interest that the present study shows that active coping has important repercussions on patient adjustment: lower levels of pain, less depression and improved functioning. It is worthy to note that some authors have emphasised that active strategies relate to the amount of effort the patient exerts in order to function, despite his/her pain by using his/her resources. This definition of *acceptance-based responding* has much in common with the definition of active coping (Augustson, 2000). So, it could be said that acceptance and active coping have much in common. Many recent studies on chronic pain have shown that acceptance is a key factor in this context and is of clinical relevance in the management of pain (Keefe et al., 2004).

According to several studies, daily activity and impairment are considered to be indicators of health, adjustment, quality of life, and well-being among chronic pain patients (Brenes, Rapp, Rejeski, & Miller, 2002; Ramírez-Maestre et al., 2004, 2008). Thus, the results of the present study showed that dispositional optimism and pessimism, due to the mediating role of coping, are associated with the level of functioning and impairment. It is important to note that most of the instruments used to assess patient functioning ask patients about the activities they actually engage in. However, it is possible that a current low level of functioning may not be a consequence of suffering pain,

since the level of activity could have been the same before pain onset. For example, if a male patient was asked about household activities, he might say that he does not do anything, but it is possible that he never did anything, even when not suffering pain. Thus, using impairment instead of present functioning may be a better indicator of health, quality of life, and well-being. In the present research, active strategies are highly associated with impairment ($\gamma = -.46$) and functioning ($\gamma = .30$). On the other side, patients with passive responses to pain show lower levels of functioning and higher levels of impairment. It is interesting to note that catastrophizing has been conceptualized as a passive response (Esteve et al., 2005). One of the most consistent findings in the literature has been that catastrophizing is associated with heightened pain experience. The relation between catastrophizing and pain appears to emerge early in life, and has been observed across a wide range of clinical and experimental pain-eliciting situations (Esteve et al., 2005). This way we could think that the association between passive coping and dissability is in part caused by catastrophizing.

Summing up, the hypotheses of the present study are partially supported. The coping strategies used by chronic pain sufferers are highly important to their well-being. In the light of this and other results (Esteve et al, 2005; 2007; Ramírez-Maestre et al., 2004; 2008), the role of both passive and active strategies is clear regarding their effect on chronic pain process. As Turner and colleagues point out (Turner et al., 2000), it is very important to target coping strategies for modification in the treatment of chronic pain patients.

Thus, further research is needed to clarify the nature of the relationship between personality dimensions and coping strategies. Such studies allow us to understand how these dimensions predispose individuals to suffer the adverse consequences of stress to greater or lesser degrees. Concerning chronic pain, the empirical results suggest that some coping strategies have a modulating effect on the relationship between certain personality variables—specifically optimism, neuroticism and extraversion—and the perceived intensity of pain. This finding is in line with that of Affleck et al. (2001), and may be evidence of the capacity of dispositional optimism to interrupt the formation of a self-handicapping chronic pain schema.

Limitations

Finally, we wish to emphasize that this is study is limited by its exclusive reliance on self-report measures. In addition, the research relied on cross-sectional measures of cognitive appraisal and pain coping, therefore the results cannot capture the dynamic process of pain coping, as has been recently pointed out by Keefe et al. (2004). In addition, because of the cross-sectional study design, it is not possible to identify causal relationships. Longitudinal research designed to follow coping variables over time would help to develop causal models showing the influence of those variables on pain

adjustment. Due to the reciprocal nature of the associations between coping and pain adjustment (i.e., psychological and physical functioning), daily diary methods would be useful to better capture the process of coping with pain at different times. As Garofalo (2000) indicates, if the effects of optimism are applicable to pain conditions (as it seems), this information could be useful in developing a provisional model to account for the role of optimism in pain, its mechanisms, any ensuing health benefits pain patients might experience, and to potentially guide treatment strategies.

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