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Experiential avoidance and self-compassion in chronic pain

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Abstract

The present study investigates the role of coping, experiential avoidance, and self-compassion on psychological distress prediction (i.e., depression, anxiety, and stress symptoms). A battery of self-report questionnaires was used to assess coping, experiential avoidance, self-compassion, and psychological distress in 103 adults with chronic pain from Portuguese primary health care units. Hierarchical regression analyses were performed and showed that experiential avoidance and self-compassion are the factors that mostly explain psychological distress. Our results suggest that when people with chronic pain are willing to remain in contact with particular private experiences without attempting to control them, they reported less depression, anxiety, and stress. Implications for clinical practice were discussed, suggesting the importance of helping people with chronic pain to increase their willingness to pain rather than avoiding it.

Chronic pain is a common problem within the community and has a multitude of causes, many of which not well understood or effectively treated (Elliot, Smith, Penny, Smith, & Chambers, 1999). Chronic pain is also a prominent and disabling symptom that indicates individual suffering (Ektor-Andersen, Ørbæk, & Isacsson, 2002). Chronic pain patients encounter many obstacles and in the first years of care seeking, beliefs about pain control strategies may be strengthened by the interaction with medical providers and by the short-term relief (Robinson, Wicksell, & Olsson, 2004). Individuals with chronic pain often report that pain interferes with their ability to engage in everyday activities and may contribute to increased isolation and negative mood.

The most common pain treatments seek the reduction of the symptom as a method of reducing pain problems. While some treatments for chronic pain had showed effectiveness in group comparisons, the complete and lasting elimination of pain is rarely achieved, and some patients related no improvements (Block-Lerner, Salters-Pedneault, & Tull, 2005; Dahl, 2009; Ektor-Andersen et al., 2002; Evers, Kraaimaat, van Riel & Jong, 2002). Not surprisingly, emotional disturbances are prevalent among pain sufferers (Elliot et al., 1999; Turk & Okifuji, 2002).

During the last 20 years, a general focus on coping has come to dominate research and clinical practice in the area of chronic pain. Within this approach, the patient is seen as an active self-manager of pain and its effects on life functioning. The goals of intervention have been to support the patients with more effective methods of self-control particularly over maladaptive thoughts, feelings, and behaviors (McCracken & Eccleston, 2006). Coping is commonly defined in the literature as a process of adaptation to perceived threat, typically classified as having either rational or emotional connotations, but within this broad classification, a variety of different strategies have been identified (Roger, Jarvis, & Najarian, 1993). Earlier studies had suggested that there were some primary coping components related to problem solving (i.e., rational coping), emotion (i.e., emotional coping), avoidance (i.e., avoidance coping), and the feeling of being independent of the event and the emotion associated with it (i.e., detachment coping). Literature suggested a grouping of two adaptive (i.e., rational coping and detachment coping) and two maladaptive coping styles (i.e., emotional coping and avoidance coping; Roger et al., 1993).

Self-regulation of pain and its effects depends on the individual's specific ways of dealing with pain and the associated distress. Although the scientific literature has shown an increasing number of methods individuals use both to cope with stressful events and to regulate emotional experiences, other factors seems to be implied in the development and maintenance of pathological conditions.

Recent developments within cognitive–behavior therapies promote a shift away from coping methods that emphasize

control or change in the content of psychological experiences, toward more contextual methods that include processes of acceptance and mindfulness (Block-Lerner et al., 2005; McCracken & Vowles, 2008). Furthermore, coping may be adaptive and useful because it is applied flexibly depending on contextual demands and circumstances. This means that it is the rigid and inflexible use of some coping styles that yield to functional impairment, not the strategies themselves (Kashdan, Barrios, Forsyth, & Steger, 2006). This new generation of therapies focuses on the difference between form and function of private events (e.g., thoughts, emotions, memories, bodily sensations). This means that rather than targeting and attempting to alter the content, frequency and/or form of private events, acceptance-based therapies like acceptance and commitment therapy (ACT), seek to alter the context and the function of the internal phenomena (Dahl, Wilson, Luciano, & Hayes, 2005; Greco, Lambert, & Baer, 2008; Hayes & Duckworth, 2006).

Previous research has shown that patients may achieve better overall adjustment to chronic pain if they reduce their avoidance and other attempts to control pain, accept it, and direct their efforts toward goals they can achieve (Crombez, Eccleston, De Vlieger, Van Damme & De Clercq, 2008; Kollman, Brown, & Barlow, 2009; McCracken, 1998; McCracken & Eccleston, 2005; McCracken, Vowles, & Eccleston, 2004; McCracken & Yang, 2006; Viane et al., 2003). Although coping strategies can be helpful in chronic pain, research findings suggest that in some cases patient's lives become dominated by unsuccessful efforts to cope with and control pain. The struggle to control chronic pain can become so all encompassing, that patients neglect other valued aspects of their life and may be compelled to engage in emotion regulatory strategies that serve an experientially avoidant function (Dodge & Garber, 1991; Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Garnefski, Kraaij & Spinhoven, 2001; Gratz & Roemer, 2004; Keef, Rumble, Scipio, Giordano & Perri, 2004; Tull & Gratz, 2008; Tull & Roemer, 2007).

Experiential avoidance occurs when a person is unwilling to remain in contact with particular private experiences and takes steps to alter the form or frequency of both events and contexts in which they occur, even when the attempt to do so causes psychological harm (Bach, Moran, & Hayes, 2008; Hayes, Strosahl, & Wilson, 1999; Kashdan et al., 2006; Plumb, Orsillo, & Luterek, 2004). In some contexts, experiential avoidance can be viewed as a self-protective strategy, but becomes a disordered process when it is applied rigidly and inflexibly so that time, effort, and energy is dedicated to managing, controlling, or struggling with the unwanted private experience.

This struggle gets in the way of movement toward valued goals, diminishes contact with present experiences, and overall well-being (Blackledge & Hayes, 2001; Hayes et al., 2004; Kashdan et al., 2006).

Previous research on chronic pain did not focus the relation between coping and experiential avoidance, besides studies concerning the toxic influences of experiential avoidance in nonclinical samples have showed that experiential avoidance was related to less adaptive coping (Kashdan et al., 2006). As the experience of chronic pain can be overwhelming, many patients may struggle for years to find relief without success. It seems that despite the problems linked to experiential avoidance, people with chronic pain focus on the short-term effectiveness of alleviating discomfort without considering the long-term consequences (Kashdan, Morina, & Priebe, 2009). In this struggle, pain and other unwanted private experiences may become the focus of daily efforts. People can spend their lives trying to find a way to get rid of it, but in so doing pain becomes more central, dominant, and disruptive.

This unfounded search for cure often results in a complete abandonment of other meaningful life pursuits (Hayes & Duckworth, 2006; McCracken & Yang, 2006). The contradiction inherent to this situation has led to an interest in a more balanced approach, including attempts to control the aspects of pain experience that are usually controllable such as behavioral responses to pain, and the acceptance of those that are not (McCracken & Yang, 2006). There are many physical and psychological experiences that may be evaluated as unwanted or uncomfortable. In certain circumstances, and in part based upon our individual histories, we may experience feelings, memories or bodily sensations as threatening or harmful to us. As a result, we may learn to cope with these private experiences by trying to avoid them. From an ACT perspective, we would say that behavior has the function of experiential avoidance if the avoidance and escape behaviors occur when the threat is only verbally derived as opposed to actually being present in the nonverbal environment, demonstrating that direct experience of aversive consequences is not necessary (Dahl, Plumb, Stewart, & Lundgren, 2009).

Several studies in both clinical and nonclinical samples have shown that experiential avoidance is related to general measures of psychopathology and specific measures of anxiety and depression. Experiential avoidance is also etiologically central to the development and maintenance of psychopathology, across a wide range of clinical syndromes (Hayes, Wilson, Strosahl, Gifford, & Follette, 1996; Kashdan et al., 2006; Marx & Sloan, 2005). Previous research has also shown that experiential avoidance is a significant predictor of psychological functioning (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). In a recent article, McCracken and Zhao-O'Brien (2010) showed that experiential avoidance is a significant predictor of patient functioning, regardless of the patient's background characteristics, pain, acceptance, and mindfulness. So, according to these authors, the willingness to experience undesirable psychological experiences is likely to enhance the overall functioning and well-being. An

interesting finding was that patients with chronic pain reported higher experiential avoidance than other clinical and nonclinical samples. These findings support that there may be no simple linear relation between pain history and experiential avoidance. It is possible that higher experiential avoidance could be either a result of chronic pain, or a vulnerability factor of chronic pain and disability.

Our bodies are constantly trying to self-regulate, but it is when we try to control their responses that regulation may become problematic. It seems that an emphasis on the control of emotional responses, rather than on acceptance, may confound processes that undermine healthier patterns of regulation (Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, 2003a, 2003b, 2009; Neff, Kirkpatrick, & Rude, 2007).

The construct of self-compassion is also relevant to recent work in the field of emotional regulation. Self-compassion can be viewed as a useful emotional regulation strategy, in which painful feelings are not avoided but are instead held in awareness with kindness, understanding, and a sense of shared humanity. Thus, negative emotions are transformed into a more positive feeling, allowing a clearer apprehension of one's immediate situation and the adherence of actions that change oneself and/or the environment in effective ways (Neff, 2003a).

There are several conceptualizations of self-compassion that are focused on literature (Gilbert & Procter, 2006; Neff, 2003a, 2009). Gilbert's evolutionary model of social mentality theory suggests that the potential for compassion evolves the caring giving side of the attachment system, and arises from specific motivational, emotional, and cognitive competencies (Gilbert & Tirch, 2009). From the social psychology and Buddhist tradition, Neff views self-compassion as involving three main components, concerning kindness versus self-judgment, common humanity versus isolation, and mindfulness versus overidentification. Self-kindness refers to the tendency to be caring and understanding with oneself rather than being harshly critical or judgmental. The sense of common humanity involves recognizing that all humans are imperfect, that all people fail, make mistakes, and engage in unhealthy behaviors. Finally, mindfulness involves being aware of present moment experience in a clear and balanced manner so that one neither ignores nor ruminates on disliked aspects of oneself or one's life (Neff, 2003a, 2003b, 2008, 2009). While research on self-compassion is in its early stages, there are good reasons to believe that having compassion for oneself may be related to psychological functioning (Neff, 2003b).

Much of the research on self-compassion has been conducted in nonclinical samples. However, one of the most robust and consistent findings in research literature is that greater self-compassion is linked to less depression and anxiety (Neff, 2003a; Neff, Hsieh, & Dejitterat, 2005). In fact, research has shown that individuals with higher levels of self-compassion had more perspective of their problems and were less likely to feel isolated by them (Leary et al., 2007). Previous studies have also shown that self-compassionate individuals can face up to personal weaknesses and life challenges with fewer emotion overreactions, report greater emotional coping skills, clarity of feelings, and ability to repair emotional states (Neff, 2003a).

Aims

The study sets out to investigate the role of coping, experiential avoidance, and self-compassion on psychological distress. Specially, we proposed (1) to explore the associations between coping, experiential avoidance, self-compassion, and psychological distress (e.g., depression, anxiety, and stress symptoms) in the presence of chronic pain; (2) to examine the role of coping, self-compassion, and experiential avoidance in psychological distress prediction. It should be noted that the study involved data collected at one point in time, and therefore, we did not examined the change of the variables over time. It should be also noticed that we are interested in analyzing the relationship between the constructs in a quasi-naturalistic context; this means that the constructs were studied without any kind of multidisciplinary intervention. For this reason, the patients selected in our study were not included in any intervention besides pharmacotherapy for dealing with chronic pain.

As in prior research, coping was expected to directly correlate with psychological distress such that chronic pain individuals with more adaptive coping (rational and detached coping) would report less psychological distress (e.g., depression, anxiety, and stress symptoms); It was also expected that individuals with more maladaptive coping (avoidant coping) would report more psychological distress.

In regard to the relationship between experiential avoidance and psychological distress, it was expected that experiential avoidance directly correlate with psychological distress, such that chronic pain patients with high scores of experiential avoidance would report more depression, anxiety, and stress symptoms.

Finally, in regard to the associations between self-compassion and psychological distress, it was expected that self-compassion directly correlate with psychological distress such that chronic pain patients with high scores of self-compassion would report less psychological distress.

In addition, we sought to explore the contribution of coping, experiential avoidance, and self-compassion in the prediction of psychological distress. We should expect that self-compassion and experiential avoidance are important predictors of depression, anxiety, and stress symptoms.

Method

Participants

Participants of the current study were purposively sampled from two health units (primary care setting), between November 2007 and April 2008. Inclusion criteria included (1) age of 18 years, or older; (2) the presence of nonmalignant pain for 6 months or longer. Exclusion criteria included (1) an identified terminal illness; (2) the presence of severe psychopathology; (3) included in any interdisciplinary treatment. The first contact with participants was established by their general practitioners or rheumatologist, on the day of their appointment, and the diagnosis was based on their medical record. Participants were selected based on the convenience of the researcher. We attempt to select a larger sample with multiple pathologies that occurs with chronic pain and with different time durations to consider it a representative sample. Truly, representative sampling is extremely hard to accomplish, besides, it is valuable. This means that the researcher needs to know how the data was collected, who it was collected from, and what sort of controls were placed to ensure that the sampling was representative.

From the 120 chronic pain patients recruited from the specialist, 15 declined to take part. Regarding the demographic and clinical data, these individuals did not differ from the participants in our study. As such, 105 participants gave informal consent. From these, two patients were excluded because of the comorbidity of severe psychopathology (psychosis and mood disturbance) and 103 complete the study.

Measures

All measures used in the current study were translated into Portuguese by a bilingual translator. Conceptual and lexical similarities of both original and Portuguese versions were verified through back translation procedures.

Demographic variables were assessed with a general checklist including patient gender, age, marital status, profession, and years of education.

Each participant completed an assessment battery that included several self-report questionnaires. Those examined in this study included the Acceptance and Action Questionnaire-II (AAQ-II; Hayes et al., 2004; Pinto-Gouveia & Gregório, unpublished data), the Self-Compassion Scale (SELFCS: Neff, 2003a; Pinto-Gouveia & Castilho, unpublished data), the Coping Styles Questionnaire (CSQ; Roger et al. 1993; Pinto-Gouveia & Dinis, unpublished data), and the Depression, Anxiety and Stress Scales (Lovibond & Lovibond, 1995; EADS-42; Pais-Ribeiro, Honrado, & Leal, 2004a).

Demographic and Clinical Data

Information included gender, marital status, age, professional and educational status, and clinical diagnosis.

The AAQ-II (Bond, Hayes, Baer, Carpenter, Orcutt, Waltz & Zettle, submitted; Pinto-Gouveia & Gregório, unpublished data) is a 10-item self-report questionnaire that assesses experiential avoidance, as efforts to not come into contact with unpleasant private events such as thoughts, emotions, sensations, by trying to change their occurrence, form or frequency especially when doing so leads to undesirable outcomes. Items are rated on a 1 (*never true*) to 7 (*always true*) scale. The measure gives a total score; higher results mean greater experiential avoidance. AAQ-I has a Cronbach's alpha of .70 and a test-retest reliability of .64 (over a 4-month period) (Block-Lerner et al., 2005; Hayes et al., 2004). Convergent and discriminant validity were demonstrated by the relations between AAQ and both general and specific measures of psychopathology. Based on Hayes et al. (2004), the AAQ was moderately correlated with the Global Severity Index of the Symptom Checklist-90-Revised (Derogatis, 1994) and also with the General Health Questionnaire-12 (Golberg, 1978), Perceived Physical Health (Cooper, Sloan, & Williams, 1988), Affective Well-Being at Work (Warr, 1990), Job Induced Tension Scale (House & Rizzo, 1972), and with Quality Life Inventory (Frisch, 1992). The AAQ was also highly associated with the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). In the present study, the internal consistency, Cronbach's alpha, was .92.

The SELFCS (Neff, 2003a; Pinto-Gouveia, & Castilho, unpublished data) is a 26-item self-report inventory that assesses three bidirectional components of self-compassion including self-kindness versus self-judgment (being kind and understanding toward oneself rather than harshly self-critical), common humanity versus isolation (viewing one's negative experiences as a normal part of the human condition), and mindfulness versus overidentification (holding painful thoughts and feelings in mindfulness awareness). Neff define these components as independent factors because a high score on kindness do not imply a low score on self-judgment. Items are rated on a 1 (*almost never*) to 5 (*almost always*). The measure gives a total score and partial scores. Items 1, 2, 4, 6, 8, 11, 13, 16, 18, 20, 21, 24, and 25 are reverse to perform the total score, so that higher results mean more self-compassion. The SELFCS has a Cronbach's alpha of .92, for total scale (Neff, 2003a). Construct validity was demonstrated by Pearson's correlation coefficients between the SELFCS and other scales measuring similar constructs. Based on Neff (2003a), the SELFCS had a high significant negative correlation with the Self-Criticism subscale of the Depressive Experiences Questionnaire (DEQ: Blatt, D'Afflitti, & Quinlan, 1976), and moderately significant positive correlations with the Trait-Meta Mood Scale

(Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). Also, the SELFCS predict mental outcomes, being negatively associated with the Beck Depression Inventory (Beck, Steer, & Garbin, 1988; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Spielberger Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), and Almost Perfect Scale-revised (Discrepancy subscale; Slaney, Mobley, Trippi, Asby, & Johnson, 1996). In the present study, the Cronbach's alpha was .95 for the total scale.

The CSQ (Roger et al., 1993; Pinto-Gouveia & Dinis, unpublished data) is a 60-item self-report questionnaire that assesses the way people react to different stressful situations. The questionnaire is comprised of four subscales including rational coping (16 items, e.g., "Work out a plan for dealing with what has happened"), avoidance coping (13 items, e.g., "Keep things to myself and not let others know how bad things are for me"), detached coping (15 items, e.g., "See the situation for what it actually is and nothing more"), and emotional coping (16 items, e.g., "Becomes miserable and depressed"). Items are rated on a 1 (*never*) to 4 (*always*) scale. The measure gives partial scores for each subscale; higher results mean a greater use of some coping style. Cronbach's alpha range from .69 to .90, and inter-item correlations range from .23 to .39 (Roger et al., 1993). For the validation, CSQ scores were correlated with scores on the Emotion Control Questionnaire (ECQ; Roger & Najarian, 1989). These analyses showed the tendency to ruminate on emotionally upsetting events positively correlated with maladaptive coping styles (avoidance and emotional coping styles), and also negatively correlated with both adaptive coping styles (rational and detached coping styles; Roger et al., 1993). In the present study, the subscales show high internal consistency, ranging from. 47 (avoidance coping) to .92 (rational coping).

The Depression, Anxiety and Stress Scales (DASS: Lovibond & Lovibond, 1995; DASS: Pais-Ribeiro et al., 2004a) is a 42-item self-report measure, and comprised of three subscales: depression, anxiety, and stress. A 4-point (0 = *it was not at all applied to me*; 3 = *most of the times were applied to me*) rating scale is used in each of the 42 items. The measure gives partial scores; higher results mean greater negative emotional states. The Portuguese adaptation has a Cronbach's alpha ranging from .83 to .93 (Pais-Ribeiro et al., 2004a). Validity of the Portuguese adaptation was demonstrated by the associations between items and the scales to which they belong and by the lack of association between items and scales to which they do not belong (Pais-Ribeiro et al., 2004a). In the present study, the subscales show high internal consistency with the exception of anxiety (depression subscale Cronbach's alpha = .95; stress subscale Cronbach's alpha = .91; anxiety subscale Cronbach's alpha = .59).

Procedure

Authorization from the institutions was obtained and the participants were contacted by the general practitioner on the day of their appointment. Participants gave informed consent before completing the questionnaire package with the measures described above, and the session took place in a general practitioner's office available in the presence of the researcher. In line with ethical requirements, it was emphasized that participant's cooperation was voluntary and that their answers were confidential.

Analytic strategy

To investigate the relationships between coping, experiential avoidance, self-compassion, and distress, a Pearson correlation coefficients were performed.

To examine the role of coping, self-compassion, and experiential avoidance on the prediction of distress (e.g., depression, anxiety and stress symptoms), we conducted three separate hierarchical regressions with depression, anxiety, and stress as the criterion variables. The regression analyses were performed with coping entered first, followed by self-compassion and experiential avoidance in separate blocks.

The three coping styles analyzed included rational coping, detached coping, and avoidance coping. The apparent overlap between the items of the emotional coping style of CSQ (e.g. "Feel miserable and depressed") and some aspects implicit in the depression scale of DASS (e.g., "Feel sad and depressed") allowed us to exclude emotional coping from our analyses.

For self-compassion, we entered with the total score because we were interested in understand the role of this variable and not the all subscales.

Results

Participants descriptives

The sample included 103 adults (21 male; 82 female participants), 40 with diagnosis of rheumatoid arthritis and 63 with diagnosis of chronic pain, with a mean age of 60.81 years old ($SD = 13.24$) for males and 59.53 years old ($SD = 14.61$) for females. Descriptives of the sample were presented in Table 1. Concerning marital status, 85.4% of the participants were married or in a relationship, 4.9% were single, 2.4% were divorced, and 11% were widows. Just over half of the patients were retired (52.4%), 2.4% unemployed, and 45.6% were employed. The mean of educational background was 4 years of education (25 missing data in this question). The educational background demonstrates no associations with AAQ-II, SELFCS, CSQ, and DASS.

Table 1 Sample Demographic Characteristics

	Males (n = 21)		Females (n = 82)	
	n	%	*n*	%
Marital state				
Single	0	0	4	4.9
Married	21	100	67	81.7
Separate/divorced	0	0	2	2.4
Widower	0	0	9	11
Profession				
Employed	12	57.1	35	42.7
Unemployed	0	0	2	2.4
Reformed	9	42.9	45	54.9
	Males		Females	
	M	*SD*	*M*	*SD*
Age	60.81	18.81	59.63	14.61
Education	3.60	1.60	5.25	4.22

Table 2 Means and Standard Deviation of Predictors and Outcome Measures Used in Regression Analyses

Predictor variables	*M*	*SD*	Range
Rational coping	37.32	7.73	23–60
Avoidant coping	24.21	3.64	18–39
Detached coping	26.25	5.50	17–39
Experiential avoidance	27.56	14.42	10–62
Self-compassion	101.05	22.99	42–130
Outcome measures			
Depression	4.52	7.37	0–31
Anxiety	2.77	2.85	0–14
Stress	10.55	8.32	0–29

Preliminary data analyses

Preliminary data analyses were performed to examine the violation of test assumptions. Some variables showed significant Kolmogorov–Smirnov test values. Distribution of the variables scores were biased from the normal curve (with values of skewness and kurtosis between –.5 and .5) in some variables. With skewness $\langle |3|$ and kurtosis $\langle |10|$, same authors consider that the variables are near to normal distribution (Kline, 1998). As the standard error for both skewness and kurtosis decrease with larger samples, the significance levels are not as important as its actual size. Also, the visual inspection of the distributions provided support for not considering the issue (Maroco, 2007; Tabachnick & Fidell, 2007). Outlier's analyses by the inspection of box plots indicated five extreme values for anxiety and five for depression. Analyses were performed with and without the outliers. All outliers were maintained in the analyses.

A series of tests were also carried out to examine the suitability of the current data for regression analyses. We performed an analysis of residual scatter plots because it provides a test of assumptions of normality, linearity, and homoscedasticity between dependent variable scores and errors of prediction. Our data showed that the residuals were normally distributed, had linearity, and homoscedasticity. Also, the independence of the errors were analyzed and validated through graphic analysis and the value of Durbin–Watson (1.476 for depression; 1.843 for anxiety; 1.592 for stress). There was no evidence of multicollinearity or singularity among the variables. These aspects were validated by the inflation variance factor (VIF) values that indicated the absence of β estimation problems (VIF < 5). Overall, the results indicate that these data are adequate for regression analysis.

Descriptives

The means and standard deviations of the variables in the study are presented on Table 2.

Coping and distress

Table 3 illustrates the Pearson correlations between rational coping, avoidant coping, and detached coping, and distress (depression, anxiety, and stress symptoms).

The Pearson correlations showed that rational coping was moderately and negatively correlated with depression ($r = -.410$; $p \leq .001$) and stress ($r = -.439$; $p \leq .001$), and significantly correlated with anxiety ($r = -.251$; $p < .05$).

Detached coping was moderately and negatively correlated with depression ($r = -.457$; $p \leq .001$) and stress ($r = -.562$; $p \leq .001$) and significantly and also negatively correlated with anxiety ($r = -.282$; $p < .01$).

Self-compassion and distress

Table 3 illustrates the Pearson correlations between self-compassion (total scale) and distress. The results showed that self-compassion was highly correlated with depression ($r = -.609$; $p \leq .001$) and moderately and also negatively correlate with anxiety ($r = -.373$; $p \leq .001$) and stress ($r = -.588$; $p \leq .001$).

Experiential avoidance and distress

Results from the Pearson correlations showed that experiential avoidance was highly and positively correlated with depression ($r = .688$; $p \leq .001$) and moderately but also positively correlated with stress ($r = .531$; $p \leq .001$; Table 3).

Hierarchical regression analyses

To understand the contribution of coping, self-compassion, and experiential avoidance on distress, we further explored these data with hierarchical regression analyses.

Table 3 Correlations Between Study Variables

	Rational coping	Avoidant coping	Detached coping	Experiential avoidance	Self-compassion	Depression	Anxiety	Stress
Coping								
Rational coping	—	—	—	—	—	—	—	—
Avoidant coping	.213*	—	—	—	—	—	—	—
Detached coping	.767***	.403***	—	—	—	—	—	—
Experiential avoidance	–.470***	–.201	–.645***	—	—	—	—	—
Self-compassion	.494***	.211*	.624***	–.690***	—	—	—	—
Psychopathology								
Depression	–.410***	–.139	–.457***	.688***	–.609***	—	—	—
Anxiety	–.251*	.128	–.282**	.197	–.373***	.425***	—	—
Stress	–.439***	–.153	–.562***	.531***	–.588***	.565***	.325**	—

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

Table 4 Depression Predictor Factors

DV	Bloc	IV	β	*t*	*p*	*F*	*p*	Adjusted R^2
Depression	1	Rational coping	–.054	–.322	.748			
		Avoidance coping	.032	.275	.784			
		Detached coping	–.421	–2.328	.023			
						6.175	.001	17.1%
	2	Rational coping	–.079	–.498	.620			
		Avoidance coping	.022	.200	.842			
		Detached coping	–.134	–.708	.481			
		Self-compassion	–.422	–3.348	.001			
						7.756	.000	26.5%
	3	Rational coping	–.180	–1.263	.211			
		Avoidance coping	–.010	–.097	.923			
		Detached coping	.164	.895	.374			
		Self-compassion	–.184	–1.473	.145			
		Experiential avoidance	.559	4.360	.000			
						11.897	.000	42.1%

DV = dependent variable; IV = independent variable.

The three hierarchical regression analyses were conducted with coping, self-compassion, and experiential avoidance as independent variables, and depression, anxiety, and stress symptoms as criterion variables. Rational coping, detached coping, and avoidance coping were tested for entry as a block at the first step of each regression, using the enter method to control the advancement of the regression process logical and theoretically. The self-compassion and experiential avoidance scores were entered separately at the next two steps.

Depression symptoms

Hierarchical regression analysis results revealed that coping accounted for a significant proportion of 17.1% of the variance in depression scores, $F(3,75) = 6.175$, $p = .001$. Considering the beta values and the semi-partial correlations, detached coping emerged as the best predictor among coping styles. Specifically, higher detached coping was associated with lower depression scores. However, entering self-compassion scores in the model accounted for an additional 9.4% of the variance in depression, $F(4,75) = 7.756$, $p = .000$. Finally, when experiential avoidance scores entering in the model accounted for an additional 15.6% of the variance, $F(5,75) = 11.897$, $p = .000$ (Table 4).

Results from the hierarchical regression analysis for the prediction of anxiety scores are shown in Table 5. The coping accounted for a proportion of 8.1% of the variance in anxiety scores and produced a significant model, $F(3,78) = 3.285$, $p = .025$. Entering self-compassion in the model accounted for an additional significance of 1.4% of the variance in anxiety scores, $F(4,78) = 3.049$, $p = .022$. Adding experiential avoidance did not account for any proportion of variance, $F(5,78) = 2.406$, $p = .045$.

Finally, the results of hierarchical regression analysis predicting stress scores are shown in Table 6. Similar to the analyses on depression scores, coping accounted for a significant proportion of 26.3% of the variance in stress scores, $F(3,74) = 9.782$, $p = .000$. Thus, considering the beta values

Table 5 Anxiety Predictor Factors

DV	Bloc	IV	β	*t*	*p*	*F*	*p*	Adjusted R^2
Anxiety	1	Rational coping	–.040	–.225	.823			
		Avoidance coping	.276	2.276	.026			
		Detached coping	–.305	–1.611	.111			
						3.285	.025	8.1%
	2	Rational coping	–.052	–.297	.767			
		Avoidance coping	.271	2.252	.027			
		Detached coping	–.161	–.757	.451			
		Self-compassion	–.208	–1.478	.144			
						3.049	.022	9.5%
	3	Rational coping	–.052	–.288	.774			
		Avoidance coping	.272	2.231	.029			
		Detached coping	–.162	–.703	.484			
		Self-compassion	–.209	–1.321	.191			
		Experiential avoidance	–.003	–.016	.987			
						2.406	.045	8.3%

DV = dependent variable; IV = independent variable.

Table 6 Stress Predictor Factors

DV	Bloc	IV	β	*t*	*p*	*F*	*p*	Adjusted R^2
Stress	1	Rational coping	–.006	–.038	.970			
		Avoidance coping	.096	.873	.386			
		Detached coping	–.568	–3.443	.001			
						9.782	.000	26.3%
	2	Rational coping	–.017	–.118	.906			
		Avoidance coping	.092	.892	.376			
		Detached coping	–.305	–1.755	.084			
		Self-compassion	–.399	–3.304	.002			
						10.707	.000	34.4%
	3	Rational coping	–.064	–.446	.657			
		Avoidance coping	.078	.769	.444			
		Detached coping	–.164	–.889	.377			
		Self-compassion	–.284	–2.148	.035			
		Experiential avoidance	.267	1.962	.054			
						9.879	.000	37.5%

DV = dependent variable; IV = independent variable.

and the semi-partial correlations, detached coping emerged as the best predictor between the coping styles. Entering self-compassion in the model accounted for an additional 8.1% of the variance, $F(4,74) = 10.707, p = .000$. Entering experiential avoidance last in the model accounted for an additional and significant 3.1% of the variance in stress scores, $F(5,74) = 9.879, p = .000$, mostly attributable to self-compassion.

Discussion

The present study was aimed to understand the importance of coping, experiential avoidance, and self-compassion in the prediction of distress (e.g., depression, anxiety, and stress symptoms), in a sample with chronic pain.

Our first prediction was that coping would directly correlate with distress. In the present study, chronic pain individuals with higher use of adaptive coping (rational coping and detached coping) presented less depression and stress. So, our findings support the hypothesis and were consistent with previous research linking coping and psychopathology (Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2003; Kashdan et al., 2006; McCracken & Eccleston, 2006; Rector & Roger, 1996). In our study, the relationship between maladaptive (avoidant coping) and psychopathology demonstrate no associations. We believe that the extremely low internal consistency of avoidant coping may be responsible for these results.

In regard to the relationship between experiential avoidance and psychopathology, in our study, we found meaningful and positive correlations between experiential avoidance and the symptoms of depression, anxiety, and stress. These data are consistent to our predictions and provide evidence for the theoretical suggestion that attempts at control over

unwanted private events, are not seen as a practical means for improving life functioning (McCracken & Eccleston, 2006; Tull & Gratz, 2008). These findings are also in accordance with previous studies performed in nonclinical population and supports that the struggle to control chronic pain can become so all encompassing, that patients may be compelled to engage in emotion regulatory strategies that serve as an experientially avoidant function (Dodge & Garber, 1991; Fox et al., 2007; Garnefski et al., 2001; Gratz & Roemer, 2004; Kashdan et al., 2006; Keef et al., 2004; Tull & Gratz, 2008; Tull & Roemer, 2007).

In fact, the unwillingness to remain in contact with unwanted private events and the chronic attempts to alter the form or context in which they arise, seems to be strongly related to distress in both clinical and nonclinical samples (Blackledge & Hayes, 2001; Dahl et al., 2005; Hayes et al., 2004, 2006; Kashdan et al., 2006; Marx & Sloan, 2005; Sloan, 2004; Tull & Gratz, 2008). This result is also in accordance with previous studies in chronic pain (McCracken & Eccleston, 2006; McCracken & Zhao-O'Brien, 2010; Nicholas & Asghari, 2006; Richardson et al., 2009; Wicksell, Olsson, & Melin, 2009).

In regard to the relationship between self-compassion and distress, our results showed meaningful and negative correlations between self-compassion and depression, anxiety, and stress symptoms. These data are consistent to our predictions and are also in accordance to the previous studies performed in nonclinical samples based on Neff's view of self-compassion (Neff, 2003b; Neff, Rude, & Kirkpatrick, 2007). In fact, one of the most robust and consistent findings in the research literature is that greater self-compassion is linked to less depression and anxiety (Neff, 2003a; Neff et al., 2005; Neff, Kirkpatrick, et al., 2007; Neff, Pistsungkagam, & Hseih, 2008; Neff, Rude, et al., 2007; Raes, 2010). A key feature of self-compassion is that individuals do not harshly judge and criticize themselves when they notice something about themselves they do not like. Self-criticism is known to be an important predictor of anxiety and depression however self-compassion is still a robust negative predictor of depression and anxiety even after controlling for self-criticism, suggesting that self-compassion provides unique buffering effects (Neff, 2003a). This study is in line with Neff, Rude, et al. (2007) that have already suggested that self-compassion is still a robust negative predictor of anxiety even after controlling for negative effect. Self-compassionate individuals recognize when they are suffering, but when doing so, they provide themselves feelings of warmth, kindness, and interconnectedness (Neff, 2009).

As far as we know, there are no studies that focus all the investigated relationships in chronic pain. Only a few studies focus some variables, mainly related with depression, acceptance of pain/experiential avoidance in this kind of patients. Based on an emotional regulation perspective, the attempts to escape stressful experiences (avoidant coping), to become independent from aversive events/accompanying emotions (detached coping), or to inhibit the expression of emotions (emotion suppression) can be considered components process of experiential avoidance (Kashdan et al., 2006). Also, it seems that it is the rigid and inflexible nature of some strategies that is responsible from functional impairment.

Regression analyses were conducted to examine the role of coping, self-compassion, and experiential avoidance on distress prediction (i.e., depression, anxiety, and stress symptoms, separately). Results from the first regression analysis allowed us to identify the experiential avoidance as the one that explains most of the variance in depression. In the line of previous research, these results suggest that participants with high experiential avoidance reported more depression (McCracken & Eccleston, 2006; McCracken & Zhao-O'Brien, 2010; Nicholas & Asghari, 2006; Richardson et al., 2009; Wicksell et al., 2009).

People with chronic pain are exposed to severe challenges in attempts to manage unpleasant emotions, thoughts, and bodily sensations. These patients may fear and avoid unwanted private events and spend their lives trying to find a way of getting rid of it, but in so doing, pain becomes more central, dominant, and disruptive. Essentially, a person's life space is constricted by concerns about the possible rise of emotional states that are viewed as unmanageable and a source of suffering (Tull & Gratz, 2008; Wicksell, Renofalt, Olsson, Bond, & Melin, 2008). In avoiding these private experiences, people engage in activities that produce a short-term relief but also produce a narrow and inflexible pattern of action, resulting in increased frequency/severity of these cognitive symptoms and exacerbated depressive symptoms. Despite consistent evidence showing that many chronic pain patients develop depression, not all exhibit symptoms indicative of major depression. Identifying mechanisms through which some patients are able to preserve positive emotional function has clinical value when treating those who exhibit psychological difficulties (Richardson et al., 2009).

Related to anxiety, our hierarchical regression analysis results showed the importance of avoidance coping style. This is consistent with Kashdan et al. (2006) that showed that the avoidant coping styles were related to anxiety pathology. In fact, attempts to escape from stressful experiences can be a component process of experiential avoidance. These findings were also consistent with studies, which demonstrate that experiential avoidance amplifies anxiety symptoms in individuals with no history of anxiety-related disorders. According to these studies, this means that experiential avoidance is not merely a concomitant or consequence of anxiety-related pathology but a psychological vulnerability for this pathology (Hayes et al., 2004; Marx & Sloan, 2005; Plumb et al., 2004). However, care must be taken with this result. Anxiety scale of EADS-42 has showed a small Cronbach's alpha not only

with our sample but also in the original study (Pais-Ribeiro et al., 2004a).

Finally, our hierarchical regression analysis results on stress predictors showed that chronic pain participants with less self-compassion and higher experiential avoidance (tendencial significantly result) reported higher scores of stress. Supporting these results Leary et al. (2007) investigated the way self-compassionate people dealt with negative life events and showed that individuals with higher scores of self-compassion had a higher perspective on their problems and were less likely to feel isolated by them.

It seems that in the context of chronic pain, the distress was better predicted by experiential avoidance and self-compassion particularly in respect to depression, anxiety, and stress. Overall, our results suggest that patients may achieve better overall adjustment to chronic pain if they reduce their avoidance and other attempts to control pain, accept it, and direct their efforts toward valued goals (Esteve, Ramírez-Maestro, & López-Martínez, 2007; McCracken, 1998). In our study, we did not include the severity of pain or the level of disability associated with pain. Although these aspects could be addressed as possible limitations, recent research has showed that experiential avoidance remained a significant predictor of patient functioning even when tested within a model that includes pain background (McCracken & Zhao-O'Brien, 2010).

It is important to notice that self-compassion has a moderate contribution when we look at the coping variables. Moreover, this is the first study that focused on these constructs in chronic pain and allows us to understand some preliminary relations that will need additional research. It seems interesting that future research will study whether coping is a mediator between self-compassion and psychopathology.

Taking into account the findings presented here, some methodological limitations should be considered. The first limitation concerns analytic strategy. The cross-sectional nature of the study design does not allow us to determine the causal relations between the studied variables. Prospective studies should be conducted in the future to better evaluate the exact nature of the relationships. Besides, the assessment of variables that relied on participant's self-reports may be particularly prone to bias. In this line, there is always the possibility that the reported behavior may differ significantly from actual behavior, and may affect the accuracy of the results. Therefore, future studies may benefit from the use of nonself-report measures.

Another possible limitation to our study may be the fact that we only use a measure to assess emotional distress (DASS—Depression, Anxiety and Stress). Future studies should consider the inclusion of measures that assesses pain severity or perceived disability such as the Short-Form McGill Pain Questionnaire (Melzack, unpublished data) and the Arthritis Impact Measurement Scales-2 (Meenan & Mason, unpublished data). Recent studies have shown that the acceptance of pain predicted mental well-being, but not physical functioning, besides pain severity. The lack of this association and the mechanisms that undermine these relations are still to be explained (Viane et al., 2003). However, recent findings suggest experiential avoidance as a significant predictor of patient function even when tested within a model that includes pain background, acceptance of pain, and mindfulness (McCracken & Zhao-O'Brien, 2010).

We used a clinical sample with chronic pain, which was doing pharmacotherapy for dealing with the symptoms of pain. The patients were collected from the general practitioner's files who agreed to collaborate in this investigation. The participants were selected based on the convenience of the researcher, based on medical records. Some sort of controls were placed and included the age of 18 years or older, the presence of nonmalignant pain for 6 months or longer, and only doing pharmacotherapy treatment to deal with the symptoms. As pain is the most common symptom of medical illness and one of the most frequent reasons why patients seek medical care, medical treatments for pain are among the most commonly prescribed therapies. There has been a growth in access to pain therapies over the past 20 years and pain medicines are now vastly available. During this same time, there have been remarkable advances in our understanding of the pathophysiology of pain but despite this promising development, pain is still undertreated and pain treatments are often inadequate. Although many disease-related, individual, societal, and environmental factors influence pain and its management, a few realities broadly limit the provision of effective treatment for pain.

Because researchers attempts to select individuals that are representative of the larger population of chronic pain individuals, we consider the sample used as a representative sample because a larger number of individuals with multiple pathologies that occurs with chronic pain and different durations of disease, were included. In statistical sampling, people gather data from a small group and try to extrapolate the results to make generalizations about a larger group. But in fact, truly representative sampling is extremely hard to accomplish, besides, it is extremely valuable. Sampling error can yield incorrect results, and therefore, researchers need to know how data was collected, who it was collected from, and what sort of controls were placed to ensure that the sampling was representative.

So, some precautions are needed, as always, in generalizing our research findings to chronic pain population because besides representative, it is not a random sample (by random sample we means a sample by which every element in the population has an equal chance of being selected. Our sample is a convenience sample. This is to say that a statistical method of drawing representative data by selecting people of the ease

of their volunteering or selecting units because of their availability or easy access. An advantages of this type of sample are the availability and quickness. Disadvantages are the risk is the fact that the sample is not representative of the population and could be bias by volunteers). This could be considered as a major limitation of our study because it is an issue of selection bias on our sample. Only with a random sample, where the researcher insures (usually through the use of random numbers applied to a list of the entire population) that each member of that population has an equal probability of being selected is possible to evaluate in what ways our sample and the general chronic pain population differs exactly (this is to say, to evaluate the bias of the sample used in the present study).

The apparent overlap between the items of emotional coping style of CSQ and some aspects implicit in depression scale of DASS is another concerning aspect, and allows us to exclude emotional coping from the analyses. The lack of information concerning the validity of the DASS Portuguese version is also a limitation to our analyses, despite the original study with DASS (Lovibond & Lovibond, 1995) that has well-established psychometric properties in several samples like chronic pain. It is important to note that our sample scored significantly lower than the original study in all depression, anxiety, and stress scales (the sample individuals present higher levels of psychopathology; Pais-Ribeiro, Honrado, & Leal, 2004b). However, more than half of our sample reported the use of antidepressants, anxiety and/or sleep medication (62%).

The results of the present study may have clinical implications. Our findings highlight the importance of experiential avoidance as a toxic factor for distress. The challenge in the context of chronic pain is to examine more fully the functions of pain, how pain is psychologically experienced, its collateral influences on emotional experiences, and on other behaviors. The importance of helping people with chronic pain to change their way of thinking and act in ways that engage with, rather than avoid life difficulties and certain emotions seems to be a workable field (Bach et al., 2008; Dahl et al., 2005; Gilbert & Procter; 2006; Hayes, 2004; Hayes et al., 1999, 2006; Hofmann & Asmundson, 2008; McCracken & Eccleston, 2005; McCracken, Gauntlett-Gilbert, & Vowles, 2007; McCracken et al., 2004; McCracken & Yang, 2006; Morone, Greco, & Weiner, 2008; Öst, 2008; Twohig, Hayes, & Masuda, 2006).

We hope that the current study adds a better knowledge and understanding of the issues involved in adjustment to chronic pain and open up the level of diversity and effort to better support these patients' focus on being present in the moment and the ability to make choices.

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