

Acceptance of Pain, Self-Compassion and Psychopathology: Using the Chronic Pain Acceptance Questionnaire to Identify Patients' Subgroups

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The present study explores whether specific subgroups of patients could be identified based on Chronic Pain Acceptance Questionnaire scores. A battery of self-report questionnaire was used to assess acceptance of pain, self-compassion and psychopathology in 103 participants with chronic pain, from Portuguese health care units.

K-Means cluster were performed and the results supported three subgroups of patients (low acceptance subgroup; high acceptance subgroup; intermediate subgroup with activity engagement near to the mean and low willingness to pain).

One-way ANOVA's showed that the three subgroups identified differed significantly from each other on psychopathology and self-compassion. Results indicated that the intermediate subgroup presented less depression and stress, compared with the low acceptance subgroup. In what concerns self-compassion, the low acceptance subgroup reported higher self-judgment, isolation and over identification, compared with the intermediate subgroup. These subgroups also differed from each other in common humanity and mindfulness. Implications and clinical utility of the results were discussed, suggesting the increase of willingness to pain as an important key in chronic pain interventions. Copyright © 2010 John Wiley & Sons, Ltd.

Key Practitioner Message:

- Findings suggest the buffer effect of activity engagement in chronic pain on psychopathology;
- The expressive relation between activity engagement and self-compassion in chronic pain;
- The presence of an intermediate subgroup of patients suggests that the increase of willingness to pain may add unique benefits in the treatment of chronic pain.

Keywords: Acceptance of Pain, Self-Compassion, Psychopathology

INTRODUCTION

The experience of chronic pain includes significant suffering and life disruption for many people (McCracken, 1999).

Generally, people with chronic pain confront severe challenges in attempts to manage unpleasant emotions, thoughts and sensations. Patients with chronic pain may fear and avoid unwanted private events such as unpleasant emotions, bodily sensations and spend their lives trying to find a way to get rid of it, but in so doing pain becomes more central, dominant and disruptive (McCracken & Yang, 2006). However, many patients maintain their attempts to avoid or control pain despite

the fact that this strategy has not produced significant, lasting pain reduction when used in the past (McCracken, 1998). This unfounded search for the cure often results in a complete abandonment of meaningful life pursuits (Hayes & Duckworth, 2006; Hayes, Strosahl, & Wilson, 1999; Kollman, Brown, & Barlow, 2008; McCracken, 1998; McCracken & Eccleston, 2005; Viane et al., 2003; Vowles, McCracken, McLeod, & Eccleston, 2008).

Recent developments within cognitive behaviour therapies promote a shift away from coping methods that emphasize control or change in the content, frequency and/ or form of psychological experiences, towards more contextual methods that include processes of acceptance and mindfulness (Block-Lerner, Salters-Pedneault, & Tull, 2005; McCracken & Vowles, 2008). These new third wave therapies seek to alter the context and function of internal phenomena so as to diminish their behavioural impact (Greco, Lambert, & Baer, 2008; Hayes & Duckworth, 2006).

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In this line, acceptance is emerging as a potentially valuable concept of how patients react and adapt to chronic pain (McCracken, 1998; McCracken, Carson, Eccleston, & Keef, 2004; McCracken & Eccleston, 2003; McCracken, Vowles, & Eccleston, 2004; Viane et al., 2003). Acceptance of chronic pain can be usefully considered as a behavioural domain with two components. The first component concerns the pursuit of life activities in a normal manner even while pain is being experienced. This focus is more than a mental process because it requires that the individual engage in positive and functional activities under the influence of circumstances separate from pain. The second component requires the recognition that avoiding and controlling pain are ineffective strategies (Kashdan, Morina, & Priebe, 2008; Kollman et al., 2008; McCracken & Eccleston, 2003; McCracken & Vowles, 2008; McCracken, Vowles, & Eccleston, 2004).

Acceptance also involves being experientially open to the reality of the present moment. For the chronic pain sufferer, this likely includes recognizing that pain may be a continuing reality, avoiding fruitless wrestling with pain, seeing that a quality of life is possible, and focusing efforts on life improvements (McCracken, 1999). Being present in the moment creates a choice to consistently move away from struggling for control over pain towards living the kind of life they want to live and accomplishing valued goals (Hayes et al., 1999; McCracken, 2005; Vowles, McCracken, & Eccleston, 2008). This means they acknowledge that one has pain, giving up unproductive attempts to control pain, acting as if pain does not necessarily imply disability, and being able to commit one's efforts towards living a satisfying life despite pain (McCracken, 1998).

Previous research has suggested that acceptance may be a key process involved in behaviour change in individuals with chronic pain (Vowles, McNeil, Gross, McDaniel, & Mouse, 2007). From an acceptance-based therapy perspective, what is needed to free the individual to pursue life directions is not the removal of pain but the abandonment of the struggle to avoid/to reduce pain and the construction of patterns of effective action linked to chosen values (Hayes & Duckworth, 2006).

Several studies have shown that acceptance may lead to better adjustment to chronic pain. In fact, acceptance of pain predicts lower pain intensity, less anxiety and avoidance, less depression, less physical and psychological disability, more daily uptime and better work status (McCracken, 1998; McCracken, 1999; McCracken & Eccleston, 2005). Research has also shown that acceptance is associated with higher quality of life in patients with low back pain, decreased the impact of pain flares in patients with rheumatoid arthritis, and promoted adaptive functioning in patients with mixed pain conditions (Dahl, 2009; Esteve, Ramírez-Maestro, & López-Martínez, 2007; McCracken, 2007; McCracken et al., 2004; McCracken & Yang, 2006; Viane et al., 2003; Vowles et al., 2008).

Previous studies with both clinical (McCracken, 1998; McCracken, 1999; McCracken & Eccleston, 2003; McCracken & Eccleston, 2006; McCracken & Yang, 2006; Vowles et al., 2008) and non-clinical populations (Risdon, Eccleston, Crombez, & McCracken, 2003) have supported the utility of both components of acceptance. In a recent article, Vowles et al. (2008) suggest some degree of independence between the factors and the possible identification of a particular subgroup with discordant scores on the two components of the acceptance of pain. That is to say, pain sufferers may score high on one component and low on the other component. This particular subgroup may provide additional information and clinical utility.

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; Neff, 2003b; Neff, 2009; Neff, Kirkpatrick, & Rude, 2007).

In this line, 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, 2003; Neff, 2009a). 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 & Tirsch, 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 over-identification. 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 behaviours. 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; Neff, 2003b; Neff, 2008; Neff, 2009). It is important to notice that the positively and negatively worded items of self-compassion score intended to tap into the main components described above. It makes

sense that positive and negative aspects of the three components of self-compassion should form six separate but correlate factors. Self-compassion appears to be an overarching factor emerging out of the combination of the sub-scale components rather than an underlying factor. For instance, a person may tend to judge himself but that doesn't necessarily mean that he typically takes proactive steps to be kind to himself either (Neff, 2003a).

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 non-clinical 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, Hseih, & Dejittherat, 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 has 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).

The specific aims of this study were: (a) to explore the associations between acceptance of chronic pain, self-compassion and psychopathology (depression, anxiety and stress) in the presence of chronic pain; (b) to explore whether specific subgroups of patients could be identified based on CPAQ responses; (c) to explore subgroup differences on psychopathology (depression, anxiety and stress) and self-compassion.

Based on prior research, acceptance of pain was expected to directly correlate with psychopathology such that participants with more activity engagement and more willingness to pain would report less depression, anxiety and stress.

In regard to the relationship between acceptance of chronic pain and self-compassion, we would expect that both components of acceptance of chronic pain directly correlate with self-compassion. This means that chronic pain participants with more activity engagement and willingness to pain would score higher on kindness, common humanity and mindfulness, and lower on self-judgment, isolation and over-identification.

Moreover, we sought to explore the identification of patients subgroups based on CPAQ responses and explores the clinical utility of the identified clusters. Consistent with Vowles et al. (2008), three subgroups of participants were expected. We also could expect that these subgroups of participants significantly differed from each other on psychopathology and self-compassion. Based on Vowles et al. (2008), we would expect a discordant subgroup with high activity engagement and

low willingness to pain. It is this discordant subgroup that is of greatest interest theoretically and clinically and we would interest to know in what ways this subgroup specifically differed from the other two subgroups.

METHOD

Participants

Participants of the current study were purposively sampled from two health units (primary care setting) and from Portuguese Rheumatology Institute (tertiary care setting), between November 2007 and April 2008. Inclusion criteria included: (1) age of 18 years, or older; (2) the presence of non-malignant 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. From the 120 chronic pain patients recruited from the specialist for the cross-sectional, 15 declined to take part. 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.

Chronic Pain Acceptance Questionnaire (CPAQ; McCracken, Vowles, & Eccleston, 2004; translation and adaptation: Costa & Pinto-Gouveia, 2008)

CPAQ is a 20-item self-report questionnaire that assesses the acceptance to chronic pain. The questionnaire is comprised of two subscales, the pain willingness subscale and activity engagement subscale. A seven-point (from 0 = Never to 6 = Always) rating scale is used in each of the 20 items. The measure gives both total score (range from 0 to 156) and partial scores (range from 0 to 54, for the pain willingness subscale; 0 and 66, for the activity engagement subscale); higher results mean high pain acceptance. Cronbach's alpha was 0.82 and 0.78, for pain willingness and activity engagement, and correlations between scales of 0.36 (McCracken et al., 2004). Validity has demonstrated by the correlations between pain acceptance, pain intensity, medical care, medication, physical

functioning, psychological and social questions. The Portuguese adaptation has a Cronbach's alpha of 0.89 for activity engagement and for 0.83 for willingness for pain (Costa & Pinto-Gouveia, 2008). Validity of the Portuguese adaptation was demonstrated by the associations with psychopathology, self-compassion, experiential avoidance and rumination (Costa & Pinto-Gouveia, 2008).

Self-Compassion Scale (SELFCS: Neff, 2003a; Pinto-Gouveia, & Castilho, 2006)

SELFCS is a 26-item self-report inventory that assesses six factors of self-compassion including self-kindness versus self-judgment (being kind and understanding towards 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 over-identification (holding painful thoughts and feelings in mindfulness awareness). Items are rated on a 1 (Almost Never) to 5 (Almost Always). Its total score and its partial score may range from 1 to 5; higher results mean more self-compassion. The SELFCS has a Cronbach's alpha of 0.92, for total scale (Neff, 2003a). Construct validity were 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 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 (BDI: 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 subscales show (Kindness subscale Cronbach's alpha=0.93; self-judgment subscale Cronbach's alpha = -0.76; Common Humanity subscale Cronbach's alpha = 0.90; Isolation subscale Cronbach's alpha = 0.89; Mindfulness subscale Cronbach's alpha = 0.85; Over-Identification subscale Cronbach's alpha = 0.83; total scale Cronbach's alpha = 0.95).

Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995; DASS: Pais-Ribeiro, Honrado, & Leal, 2004a)

Depression, Anxiety and Stress Scale is a 42-item self-report measure, and comprised three subscales: depression, anxiety and stress. A four-point (1 = It was not at all applied to me; 4 = Most of the times were applied to me) rating scale is used in each of the 42 items. Each subscale score may range from 0 to 42; higher results mean greater negative emotional states. The Portuguese adaptation has

a Cronbach's alpha ranged 0.83 and 0.93 (Pais-Ribeiro, Honrado to, & Leal, 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, Honrado, & Leal, 2004a). In the present study, the subscales show high internal consistency with the exception of anxiety (depression subscale Cronbach's alpha = 0.96; stress subscale Cronbach's alpha = 0.91; anxiety subscale Cronbach's alpha = 0.59).

Procedure

Authorization from the institutions was obtained and the participants were contacted by general practitioner/rheumatologist 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 physician'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 the two components of acceptance of chronic pain, self-compassion and psychopathology (depression, anxiety and stress), Pearson correlation coefficients were calculated.

Based on Vowles, McCracken, McLeod and Eccleston (2008) we performed a k-means cluster analysis to explore whether three subgroups could also be identified using the two subscales of the CPAQ with our sample.

The final analytic stage involved a series of one-way ANOVA's in order to explore the clinical utility of these three clusters. Cluster membership was used as the independent variable and psychopathology as dependent measure.

RESULTS

Participant's 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 patients were retired (52.4%), 2.4% unemployed and 45.6 % were employed. The mean of educational background was four years of education (25 missing data in this question).

Table 1. Sample demographic characteristics

	Males (<i>n</i> = 21)		Females (<i>n</i> = 82)		Total (<i>n</i> = 103)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Marital state						
Single	0	0%	4	4.9%	4	4.9%
Married	21	100%	67	81.7%	88	85.4%
Separate/ divorced	0	0%	2	2.4%	2	2.4%
Widower	0	0%	9	11.0%	9	11%
Profession						
Employed	12	57.1%	35	42.7%	47	45.6%
Unemployed	0	0%	2	2.4%	2	2.4%
Reformed	9	42.9%	45	54.9%	54	52.4%
	Males		Females			
	M	SD	M	SD		
Age	60.81	13.24	59.63	14.61	–	–
Education	3.60	1.60	5.25	4.22	–	–

Table 2. Associations between acceptance of pain, self-compassion, psychopathology and educational background

	Educational background
Acceptance pain	
Acceptance pain (total scale)	0.144
Activity engagement	0.213
Willingness	0.048
Self-compassion	
Self-compassion (total scale)	–0.068
Kindness	–0.085
Self-judgment	0.197
Common humanity	–0.028
Isolation	–0.004
Mindfulness	–0.019
Over-identification	–0.063
Psychopathology	
Depression	–0.036
Anxiety	–0.101
Stress	0.117

The educational background demonstrates no associations with CPAQ, SELFCS and DASS (Table 2).

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 normal curve (with

values of skewness and kurtosis between –0.5 and 0.5) in some variables. 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 analysis 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 deleted, leaving 93 cases for analysis.

Descriptives

The means and standard deviations of acceptance of chronic pain, self-compassion and psychopathology (depression, anxiety and stress) are presented on Table 3. There are some differences in the descriptive statistics for the variables studied in comparison to previous studies. Pain willingness scores low and the activity engagement scores high in comparison to previous research (McCracken & Eccleston, 2005; Nicholas & Asghari, 2006; Vowles, McCracken, McLeod, & Eccleston, 2008; Vowles, McCracken, & Eccleston, 2007). Also, depression means tend to be lower in comparison to previous research with chronic pain patients (Nicholas & Asghari, 2006). In what concerns the mean of self-compassion scores, the previous studies only reported scores on non-clinical samples (e.g., undergraduate students; Neff, 2003a).

Table 4 shows the *Pearson Correlations* between activity engagement, willingness to pain, self-compassion and psychopathology (depression, anxiety and stress).

Table 3. Means and standard deviations of acceptance of chronic pain, self-compassion and psychopathology

Measures	M	SD	Range
Acceptance of chronic pain			
Acceptance of chronic pain (total scale)	52.61	21.74	0–108
Activity engagement	36.43	13.39	0–64
Willingness	15.87	11.07	0–44
Self-compassion			
Self-compassion (total scale)	101.05	22.99	42–130
Kindness	19.37	5.68	5–25
Self-judgment	9.92	4.33	5–21
Common humanity	16.78	4.18	5–20
Isolation	8.47	4.99	4–20
Mindfulness	15.16	4.25	4–20
Over-identification	9.74	4.48	4–20
Psychopathology			
Depression	4.52	7.37	0–31
Anxiety	2.77	8.32	0–14
Stress	10.55	8.32	0–29

Activity Engagement and Self-Compassion

The results showed that activity engagement was moderately and positively correlated with Kindness ($r = 0.443$; $p \leq 0.001$), common humanity ($r = 0.431$; $p \leq 0.001$) and mindfulness ($r = 0.490$; $p \leq 0.001$). Activity engagement was also moderately but negatively correlated with self-judgment ($r = -0.469$; $p \leq 0.001$), isolation ($r = -0.430$; $p \leq 0.001$) and over-identification ($r = -0.447$; $p \leq 0.001$).

Willingness to Pain and Self-Compassion

The *Pearson Correlations* between willingness to pain and self-compassion showed that willingness to pain was significantly and positively correlated with kindness ($r = 0.222$; $p < 0.05$) and with mindfulness ($r = 0.202$; $p < 0.05$). The results also showed moderate and negative correlations between willingness to pain and self-judgment ($r = -0.390$; $p \leq 0.001$), over-identification ($r = -0.486$; $p \leq 0.001$) and significantly and also negatively correlations between willingness to pain and isolation ($r = -0.223$; $p < 0.05$).

Activity Engagement and Psychopathology

Results from the *Pearson Correlations* also showed that activity engagement was moderately and negatively correlated with depression ($r = -0.496$; $p \leq 0.001$), anxiety ($r = -0.318$; $p < 0.01$) and stress ($r = -0.435$; $p \leq 0.001$).

Willingness to Pain and Psychopathology

Willingness to pain was also moderately and negatively correlated with depression ($r = -0.423$; $p \leq 0.001$), anxiety ($r = -0.2777$; $p < 0.01$) and stress ($r = -0.450$; $p \leq 0.001$).

Cluster Analysis

A *K-Means* cluster analysis was conducted to explore whether three discrete subgroups could be identified using the two scales of CPAQ.

We performed a *K-means* clustering instead of hierarchical cluster because we already have hypotheses concerning the number of clusters based on Vowles et al. (2008). The results showed three distinct clusters of patients ($n = 24$; $n = 28$; $n = 41$).

Descriptively cluster 1 (Low Acceptance subgroup) had low scores on both activity engagement and willingness to pain; cluster 2 (High Acceptance subgroup) had high scores on both components; and, cluster 3 had discordant scores of activity engagement and willingness to pain (activity engagement scores nearby the mean and low scores willingness to pain). The means and standard deviations of each cluster are presented on Table 5.

In order to explore the clinical utility of these three clusters, a series of one-way ANOVA's was realized using cluster membership as the independent variable and scores of psychopathology (depression, anxiety and stress) as the dependent measures. The *Scheffé* adjustment to correct the error for multiple comparisons was applied.

Means and standard deviations are presented in Table 6.

All one-way ANOVA's revealed significant group differences. *Post-hoc* tests showed that the high scoring CPAQ cluster significantly differed from the low scoring cluster across psychopathology and self-compassion. Low scoring cluster on CPAQ (cluster 1, with low willingness and activity engagement) reported more depression, anxiety and stress, than high scoring cluster (cluster 2, with high willingness and activity engagement) ($F(89,87)$

Table 4. Correlations between acceptance of chronic pain, self-compassion and psychopathology

	1	2	3	4	5	6	7	8	9	10	11	12	13
Acceptance pain	-												
Acceptance pain (total scale)	0.905***												
Activity engagement	0.853***	0.549***											
Willingness													
Self-compassion	0.535***	0.558***	0.367***										
Self-compassion (total scale)	0.381***	0.443***	0.222*	0.816***									
Kindness	-0.498***	-0.469***	-0.390***	-0.822***	-0.650***								
Self-judgment	0.358***	0.431***	0.188	0.814***	0.536***	-0.513***							
Common humanity	-0.384***	-0.430***	-0.223*	-0.851***	-0.595***	-0.805***	-0.575***						
Isolation	0.413***	0.490***	0.202*	0.825***	0.641***	-0.521***	0.685***	-0.635***					
Mindfulness	-0.529***	-0.447***	-0.486***	-0.784***	-0.470***	0.769***	-0.510***	0.569***	-0.564***				
Over-identification													
Psychopathology													
Depression	-0.532***	-0.496***	-0.432***	-0.609***	-0.440***	0.339**	-0.474***	0.602***	-0.621***	0.470***	-		
Anxiety	-0.362***	-0.318**	-0.277**	-0.373***	-0.310**	0.270**	-0.229*	0.342**	-0.349***	0.315***	0.425***	-	
Stress	-0.501***	-0.435***	-0.450***	-0.588***	-0.370***	0.487***	-0.450***	0.521**	-0.552***	0.551***	0.565**	0.325***	-

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

1 = acceptance of pain (total scale); 2 = activity engagement; 3 = willingness; 4 = self-compassion (total scale); 5 = kindness; 6 = self-judgment; 7 = common humanity; 8 = isolation; 9 = mindfulness; 10 = over-identification; 11 = depression; 12 = anxiety; 13 = stress.

= 5.238; $p < 0.01$, for anxiety; $F(86,84) = 11.257$; $p \leq 0.001$, for stress). With concerns self-compassion, there were also significant differences between low scoring cluster and high scoring cluster. Results indicated that low scoring cluster reported more self-judgment, more isolation and more over-identification, compared to high scoring cluster ($F(92,90) = 12.915$; $p \leq 0.001$, for self-judgment; $F(92,90) = 11.237$; $p \leq 0.001$, for isolation; $F(91,89) = 12.003$; $p \leq 0.001$, for over-identification). In the same way, the low scoring cluster showed low scores on kindness, on common humanity and mindfulness than the high scoring cluster ($F(91,89) = 7.087$; $p \leq 0.001$, for kindness; $F(91,89) = 11.441$; $p \leq 0.001$, for common humanity; $F(92,90) = 7.062$; $p \leq 0.001$, for mindfulness).

Post-hoc tests also showed that discordant cluster on CPAQ scored higher on depression ($M = 2.74$; $SD = 5.78$) and stress ($M = 9.54$; $SD = 8.18$) than high acceptance cluster ($M = 1.37$; $SD = 2.96$, for depression / $M = 6.81$; $SD = 6.69$, for stress). Concerning self-compassion, *post-hoc* tests revealed significant differences between the discordant cluster and high acceptance cluster. Results indicated that discordant clusters scored higher on self-judgment ($M = 10.29$; $SD = 3.86$) and on over-identification ($M = 9.98$; $SD = 3.93$) than high acceptance cluster ($M = 7.25$; $SD = 3.43$, for self-judgment / $M = 7.18$; $SD = 3.53$, for over-identification).

DISCUSSION

There is clinical and empirical data suggesting the role of acceptance in adjustment to chronic pain (McCracken, 1998; McCracken, 1999; McCracken, Carson, Eccleston, & Keefe, 2004; McCracken & Eccleston, 2005; Nicholas & Asghari, 2006; Viane et al., 2003; Vowles, McCracken, McLeod, & Eccleston, 2008).

The present study was aimed at investigating the associations between acceptance of pain, self-compassion and psychopathology, and explore whether specific subgroups of patients could be identified based on CPAQ responses.

Our first prediction was that acceptance of pain would directly correlate with psychopathology. In the current study, participants with more activity engagement and more willingness reported less depression, anxiety and stress. Our findings support the hypothesis, and were also consistent with previous studies (McCracken, 1998; McCracken & Eccleston, 2005; Nicholas & Asghari, 2006).

In regard to the relationship between acceptance to pain and self-compassion, our findings are also consistent to our predictions. In the present study, participants with more activity engagement and more willingness to pain presented more kindness, common humanity and mindfulness. These participants also presented less self-judgment, isolation and over-identification. These findings are

Table 5. Means of the subgroups of patients identified based on CPAQ scores

	Cluster 1	Cluster 2	Cluster 3
	LA Group (<i>n</i> = 24)	HA Group(<i>n</i> = 28)	HAE/LW Group (<i>n</i> = 41)
Activity engagement (11 items)	19.29	51.36	36.17
Willingness (9 items)	9.38	28.00	12.20

LA Group = low acceptance group (low activity engagement and low willingness); HA = high acceptance group (high activity engagement and high willingness); HAE/LW Group = HAE/ LW Group (high activity engagement and low willingness).

in accordance to self-compassion conceptualizations that have suggested the importance of helping people to accept and acknowledge their own pain. Self-compassion requires mindful awareness of one's emotions so that unwanted private events, such that thoughts, sensations or emotions, are not avoided but are instead approached with kindness, understanding and a shared humanity (Neff, 2003b).

As far as we know, this is the first study with a Portuguese chronic pain sample concerning the relationships between self-compassion and acceptance to pain. There is some research in non-clinical samples supporting self-compassion as an effective emotional regulation strategy, by neutralizing negative emotional patterns (Neff, Hsieh, & Dejjterat, 2005; Neff, Rude & Kirkpatrick, 2007). Previous research in non-clinical samples also found that self-compassion was related to positive psychological functioning and emotional health (Neff, 2003a).

Moreover, we sought to explore if subgroups of patients could be identified based on CPAQ scores. Based on Vowles et al., (2008), we predicted that three subgroups of participants could be identified. We expected that these subgroups of participants significantly differed from each other on psychopathology (depression, anxiety and stress) and self-compassion. *K-means cluster* indicated three subgroups of patients. The first two subgroups contained individuals who were either low or high on both components of acceptance (activity engagement and willingness to pain). The third subgroup contained individuals with scores of activity engagement near to the mean but low willingness to pain (intermediate subgroup). Also, in line with Vowles et al. (2008), one-way ANOVA's were conducted to explore subgroups' differences on psychopathology and self-compassion, and understand their clinical utility. Our findings showed that the three subgroups significantly differed from each other on depression, anxiety and stress. Results from our analyses indicated that the subgroup with mean scores on activity engagement and low scores on willingness presented less depression and stress, compared with the subgroup with low scores on both activity engagement and willingness to pain. Particularly relevant was the fact that the low acceptance group reported approximately four times

higher symptoms of depression and stress than those reported by the intermediate group (mean engagement activity and low willingness).

Exceptions were observed for anxiety where only the subgroups with low and high acceptance differed significantly from each other. It is important to note that anxiety had a low internal consistency in our sample and we believe this may influence the result.

In what concerns the pattern of differences in self-compassion, we also found interesting results between the intermediate subgroup and the high and low subgroups. Low acceptance subgroup reported higher self-judgment, isolation and over identification, compared with the intermediate subgroup. In addition, we found differences between these subgroups in common humanity and mindfulness, but not for kindness. These results suggest the importance of engaging in activities regardless of pain-related experiences because it helps patients not to amplify pain, perpetuated through harsh self-condemnation or over-identification with thoughts and emotions. In fact, individuals with higher levels of acceptance had more perspective on their problems and were less likely to feel isolated by them. The findings add to previous knowledge concerning the relation between acceptance of pain and self-compassion in chronic pain by suggesting that a lot of people's difficulties occur because they try to avoid painful feelings (Gilbert, 2009; Hayes et al., 1999).

Taken together, these findings suggest the buffer effect of activity engagement in chronic pain. This buffer role of activity engagement influences not only psychopathology (particularly depression and stress) but also has a salient relation with self-compassion, promoting a non-judgmental, receptive mind state in which individuals observe their thoughts, feelings and sensations as they arise without trying to change them or control them.

Our culture does not prepare patients to learn to live with pain. Most people with chronic pain learn that the presence of a symptom indicates the need to consult a physician and that doing so will produce relief. In most of the cases, patients maintain their attempts to avoid pain; however, this strategy has not produced significant pain reduction when used in the past (McCracken, 1998). In fact, efforts to control pain can be problematic when

Table 6. Means, standard deviations, univariate F-tests and Between Group Comparisons for the three groups/ Clusters on Acceptance of Chronic Pain

	LA (n = 24)		HA (n = 28)		HAE/Group (n = 41)		F	p	Post-hocs
	M	SD	M	SD	M	SD			
Psychopathology									
Depression	9.86	9.44	1.37	2.96	2.74	5.78	12.622	0.000	LA>HAE/LW>HA***
Anxiety	3.58	3.11	1.26	1.81	2.87	2.87	5.238	0.007	LA>HA**
Stress	16.83	7.84	6.81	6.69	9.54	8.18	11.257	0.000	LA>HA***, LA>HAE/LW**
Self-compassion									
Kindness	16.50	6.32	22.07	4.84	19.73	5.00	7.087	0.001	HA>LA***
Self-judgment	12.83	4.71	7.25	3.43	10.29	3.86	12.915	0.000	HAE/LW>HA**, LA>HA***, LA>HAE/LW>HA*
Common humanity	13.67	4.72	18.25	2.81	17.58	3.62	11.441	0.000	HAE/LW>LA***, HA>LA***
Isolation	11.95	5.49	6.39	2.97	7.66	4.55	11.237	0.000	LA>HA***, LA>HAE/LW***
Mindfulness	12.50	4.53	16.64	3.40	15.49	3.89	7.062	0.001	HAE/LW>LA*, HA>LA***
Over-identification	12.79	5.00	7.18	3.53	9.98	3.93	12.003	0.000	LA>HA***, LA>HAE/LW**, HAE/LW>HA*

HA = high acceptance group (high activity engagement and high willingness); LA = low acceptance group (low activity engagement and low willingness); HA/LW = group with high activity engagement and low willingness.

they dominate the patient's life and do not succeed, or when they move pain suffer increasingly away from the things that are important to them (McCracken, Carson, Eccleston, & Keefe, 2004). Acceptance of pain entails an alternative behaviour pattern of engagement in activity with pain present, but without restrictions by pain or attempts to avoid or control pain (McCracken & Eccleston, 2003; McCracken & Vowles, 2008; McCracken, Vowles, & Eccleston, 2004).

Our findings support previous knowledge related to individual contribution of the two components of acceptance to pain. Therapeutically, our results are consistent with previous research and emphasized the need of adequate interventions for those patients with chronic pain who are particularly disengaged from activity for reasons of pain and maintain their attempts to avoid or control pain (McCracken, 1998; McCracken, Carson, Eccleston, & Keefe, 2004; McCracken & Eccleston, 2003; McCracken & Vowles, 2008; McCracken, Vowles, & Eccleston, 2004; Vowles et al., 2008).

The presence of an intermediate subgroup of patients is also in line with previous studies suggesting that the increase of willingness to pain may add unique benefits in the treatment of chronic pain (Risdon, Eccleston, Crombez, & McCracken, 2003; Vowles et al., 2008). In fact, our data show that this particular subgroup with activity engagement near to the mean and low willingness to pain may report that they were functioning well to a degree but report significant emotional disturbances with high scores of psychopathology, comparing with high acceptance subgroup. This intermediate subgroup actually engages in positive and functional activities but at the same time identify a strong need for pain reduction, and it is possible that this particular subgroup benefit with therapeutic tasks to enhance willingness to pain (Vowles et al., 2008).

The findings presented here should be considered taking into account some methodological limitations. First, the cross-sectional nature of these data does not allow us to determine temporal relations between the variables. Longitudinal designs will be useful to empirically test the clinical utility of increase willingness to pain. Also, as suggested by Vowles et al. (2008), longitudinal studies will be important to clarify whether simultaneously having high activity engagement and low willingness to pain has any prognostic value. Besides, our findings cannot be generalized to chronic pain population given that we used a convenience sample from three health units at primary and tertiary health care.

Future studies should consider patient's histories backgrounds (previous treatments, years of pain). At least, there are some reservations regarding the demographic differences among our sample and previous research. Vowles et al. (2008) underline that the differences in age may indicate that acceptance of chronic pain is in some

ways a product of experience. Future research should be carried out to enhance the understanding of this issue.

Also, our study's findings should be considered in the light of the limitations related with the use of self-reports. Future studies should consider the use of non-self-report measures.

Nonetheless, the current study adds some understanding to the issues involved in adjustment to chronic pain and open up the level of diversity and effort to better support these patients.

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