

The role of coping responses in the relationship between perceived stress and satisfaction with life amongst chronic pain patients

^a Walker SP

^b Esterhuyse KGF

^b Van Lill L

^a Unit for Professional Training and Service in the Behavioural Sciences, University of the Free State, Bloemfontein, South Africa

^b Department of Psychology, University of the Free State, Bloemfontein, South Africa

Correspondence to: Dr SP Walker, e-mail: walkersp@ufs.ac.za

Keywords: coping; perceived stress; satisfaction with life; chronic pain

Abstract

Background: This study aimed to determine the effect of coping responses on the relationship between perceived stress and satisfaction with life in a sample of chronic pain patients.

Methods: One hundred and seventy-two adult outpatients at the Pain Control Unit at Universitas Hospital in Bloemfontein completed measures of perceived stress (Perceived Stress Scale), satisfaction with life (Satisfaction with Life Scale) and coping responses (Coping Responses Inventory – Adult Version). Descriptive statistics were calculated for the sample. Correlation coefficients were calculated between perceived stress and satisfaction with life. Regression analyses were employed to determine the effect of coping responses on the relationship between perceived stress and satisfaction with life.

Results: A statistically significant negative correlation was found between perceived stress and satisfaction with life. *Approach coping* moderates the relationship between perceived stress and satisfaction with life, while *avoidance coping* has no effect on the relationship. The relationship between perceived stress and life satisfaction therefore appears to change as a function of the level of approach coping that patients with chronic pain exhibit.

Conclusion: Approach coping moderates the relationship between perceived stress and satisfaction with life amongst chronic pain patients.

© Peer reviewed. (Submitted: 2010-04-19, Accepted: 2010-06-02)

S Afr J Anaesthesiol Analg 2010;16(5):13-17

Introduction

Chronic pain is generally regarded as a major global public health problem that significantly impacts upon not only individuals, but also families, communities and the wider economy.¹⁻² Despite limited epidemiological research conducted in South Africa, the burden of disease and functional impairment reported locally for chronic pain appears comparable to international data.³⁻⁴ Chronic pain would thus appear to notably impact the lives of a significant number of individuals in South Africa. Individuals living with chronic pain are often faced with significant lifestyle challenges resulting from limited mobility, regular medical consultations, changes to their occupational functioning and reduced earning capacity. Chronic pain sufferers typically also report elevated levels of psychiatric

comorbidity and reduced quality of life.³ It would, thus, seem appropriate to conceptualise chronic pain as a significant stressor for which individuals need to find effective means of coping if they are to limit the impact that their condition has on their emotional, social and occupational functioning, as well as upon their quality of life.⁵

According to Lazarus and Folkman, coping can be defined as cognitive and behavioural attempts to manage internal or external demands that are perceived as threatening to overwhelm an individual's resources.⁶ Coping may be viewed as a dynamic process involving behavioural and cognitive responses that are influenced by the individual's psychosocial context. Individuals are able to adapt effectively to their changing environment primarily through the mechanism of

cognitive appraisal.⁶ Cognitive appraisal is viewed as a complex process involving the evaluation of a particular situation as either benign, threatening or challenging; the evaluation of available cognitive and behavioural responses; and consideration of outcome expectancies based on the anticipated efficacy of each of the available cognitive and behavioural responses. The individual's emotional response to a stressor is, thus, largely influenced by the nature and outcome of the cognitive appraisal process he or she engages in with regard to that specific stressor. However, interaction between the individual and his or her specific environment is believed to affect the appraisal of the stressors with which the person may be confronted. Consequently, changes in the individual, the stressor or the environment may result in an adjusted appraisal of the situation.

Moos and Holahan, building on the work of Lazarus and Folkman, suggest an integrative framework that conceptualises coping as being influenced by both enduring personal (dispositional) factors and more transitory situational (contextual) factors.⁷ This integrative approach to coping suggests that relatively stable individual characteristics, such as personality, self-efficacy and preferred coping styles, as well as stable environmental factors, such as ongoing stressors and resources, interact with transitory conditions, such as life events, trauma and so forth, and more contextual applications of cognitive appraisals and coping skills to determine a particular individual's level of health and well-being. Furthermore, it is hypothesised that stable personal factors, stable environmental factors and transitory stressors interact in order to shape individuals' appraisals of specific stressors, thus influencing their selection of coping responses. Coping responses can broadly be categorised as either approach or avoidant in nature.⁷⁻⁸ Approach coping consists of cognitive attempts to understand and prepare mentally for a stressor and its consequences, as well as cognitively restructuring the situation or stressor in a positive way, yet still accepting the reality of the situation. Behaviourally, approach coping is characterised by seeking information, guidance and support, as well as attempting to take action aimed at dealing directly with the stressor.⁸ Conversely, avoidance coping is generally understood as referring to cognitive attempts to accept the stressor passively, as well as attempts to avoid thinking realistically about the stressor. Behaviours that are viewed as indicative of avoidance coping include becoming involved in activities in order to avoid dealing with the stressor, seeking alternate sources of satisfaction and attempting to reduce tension by expressing negative emotions.⁸

The manner in which individuals choose to cope with their chronic pain has been hypothesised to significantly influence their experience of pain, as well as their general psychosocial functioning and quality of life.^{5,9-10} Individuals who tend to make use of avoidant coping strategies have been reported to be more inclined to present with negative emotions, lower levels of self-esteem and less adaptive functioning than individuals who employ active coping strategies in dealing with their pain.¹¹ However, other studies suggest that avoidant coping responses may be predictive of improved psychosocial functioning in both acute and chronic pain.¹²⁻¹⁴ It would appear that the role of coping responses in the psychosocial functioning of individuals suffering from chronic pain is unclear. However, a better understanding of this relationship is necessary in order to inform clinical practice.¹⁵

The preceding discussion would tend to suggest that living with chronic pain results in persistently elevated stress. The manner in which individuals eventually deal with the stress they experience is dependent upon their appraisals of the stressors and their subsequent selection of coping responses. The literature on coping and chronic pain is not clear with regard to the efficacy of specific coping responses. Consequently, the current study aims to determine (a) whether a relationship exists between perceived stress and general psychological wellbeing (operationalised through satisfaction with life) amongst chronic pain patients, and (b) the extent to which this relationship is influenced by coping responses.

Method

A convenience sample of 190 participants was drawn from patients visiting the Pain Control Unit at Universitas Hospital in Bloemfontein between May 2006 and July 2007. All chronic pain sufferers older than 18 years of age, irrespective of diagnosis, were invited to participate in the study. Written informed consent was obtained from all participants and permission to conduct the study was granted by the Ethics Committee of the Faculty of Health Sciences at the University of the Free State.

One hundred and seventy-two participants (90.5%) reported Afrikaans to be their home language. Consequently, it was decided that, as Afrikaans speakers constituted the vast majority of the sample, the remaining 9.5% of the participants would be excluded from further analyses. This would ensure greater homogeneity in the sample and prevent a relatively small percentage of participants from having a confounding effect on the study.

The 172 Afrikaans-speaking participants reported an average age of 56 years (SD = 12.8 years) and women comprised 73.3% of the sample. Reported levels of pain chronicity appeared to be skewed toward a more long-term experience of chronic pain, with 57% (98 participants) claiming to have lived with their current pain for a period in excess of five years. A further 38 individuals (22.1%) reported to have experienced pain for a period in excess of two years, while the remaining 20.9% had suffered from chronic pain for a year or less. The most commonly reported genesis of the participants' pain was injury (35.4%), with spontaneous onset and non-specific causes accounting for 32.6% and 19.2% of cases, respectively. Postoperative onset of pain was reported by 12.8% of the participants.

Participants completed the following questionnaires: (a) the Perceived Stress Scale (PSS), a general measure of the degree to which an individual appraises his or her current life situation as stressful;¹⁶ (b) the Coping Responses Inventory – Adult Version (CRI-A), which samples two broad categories of coping responses, namely approach coping and avoidance coping⁸ (these constructs have been reviewed in detail in the introduction to this article); and (c) the Satisfaction With Life Scale (SWL), a five-item measure of global satisfaction with life.¹⁷ All questionnaires were translated into Afrikaans and then translated back into English in order to ensure accuracy of the translation. Moreover, the Afrikaans versions of these questionnaires all yielded acceptable levels of internal consistency (PSS: $\alpha = 0.795$; CRI-A Approach Coping: $\alpha = 0.871$; CRI-A Avoidance Coping: $\alpha = 0.746$; Pain Severity subscale of the WHYMPI: $\alpha = 0.827$; SWL: $\alpha = 0.826$).

Results

The current study is concerned with the relationship between perceived stress and satisfaction with life amongst chronic pain patients, as well as the effect that coping responses may have upon this relationship. Consequently, correlation coefficients were first calculated for PSS scores and SWL scores (-0.448). This correlation coefficient is significant at the 1% level and indicates an inverse relationship between perceived stress and satisfaction with life. Thus, the higher the level of perceived stress reported by the participants, the lower their level of satisfaction with life. The correlation between perceived stress and satisfaction with life is considered to be indicative of a large effect size. These results are, thus, of practical importance.

Given that a statistically significant relationship was found to exist between perceived stress and

satisfaction with life, it was necessary to investigate the effect of coping (approach or avoidance) on this relationship. The possible effect of avoidance coping on the relationship between perceived stress and satisfaction with life is reflected in Table I.

Table I: Product-term regression analysis with avoidance coping as intermediate variable

Step	Criterion: Satisfaction with life	B	p-value
1	Perceived stress (PS)	-0.388	P < 0.01
Alt. 1	Avoidance coping (AV)	-0.078	-----
2	Perceived stress	-0.405	P < 0.01
	Avoidance coping	0.044	-----
3	Product: AV * PS	0.001	-----

Note: When the product term in step 3 was conducted, deviation scores were used to prevent multicollinearity

It is apparent from Table I that avoidance coping does not exhibit a significant direct relationship to the participants' satisfaction with life. Furthermore, no mediating or moderating effect was found for avoidance coping with regard to the relationship between perceived stress and satisfaction with life. The possible effect of approach coping on the relationship between perceived stress and satisfaction with life is reflected in Table II.

Table II: Product-term regression analysis with approach coping as intermediate variable

Step	Criterion: Satisfaction with life	B	p-value
1	Perceived stress (PS)	-0.388	P < 0.01
Alt. 1	Approach coping (AC)	0.085	-----
2	Perceived stress	-0.383	P < 0.01
	Approach coping	0.072	-----
3	Product: AC * PS	0.010	P < 0.01

Note: When the product term in step 3 was conducted, deviation scores were used to prevent multicollinearity

It is clear from Table II (step 1) that a significant (1% level) relationship exists between perceived stress and satisfaction with life amongst chronic pain patients. It is also apparent that the higher the levels of perceived stress reported by these individuals, the lower their levels of life satisfaction. Moreover, it appears from Table I that approach coping does not exhibit a significant relationship with life satisfaction at step 1. At step 2, perceived stress continues to demonstrate a significant relationship with satisfaction with life, and approach coping continues failing to exhibit an effect on the relationship between the two aforementioned

variables. However, a significant product term is evident in step 3. It can thus be deduced that approach coping exercises a moderating effect on the interaction between perceived stress and satisfaction with life. Consequently, it was decided to investigate the relationship between the adverse condition (perceived stress) and the criterion (satisfaction with life), with specific reference to those participants measuring either high (75th percentile; $n = 45$) or low (25th percentile; $n = 42$) on the moderator variable (approach coping). To this end, two separate regression lines were calculated and are represented in Figure 1.

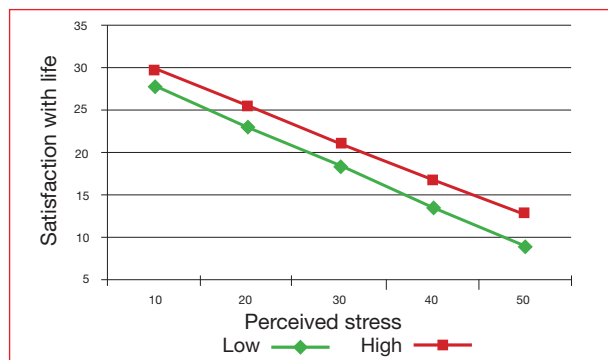


Figure 1: Regression lines of high and low approach coping with perceived stress as predictor variable

Participants reporting high levels of approach coping, as well as those reporting low levels of approach coping, display significant negative relationships (-0.43 and -0.54, respectively) between their levels of perceived stress and their reported satisfaction with life. The regression lines for those individuals reporting high levels of approach coping (-0.43) and those reporting low levels of approach coping (-0.47) exhibit comparable gradients yet differ with regard to their cut-off points (high = 34; low = 32). This suggests that at similar levels of perceived stress, those individuals reporting high levels of approach coping tend to experience higher levels of satisfaction with life than those reporting low levels of approach coping.

Discussion

This study aimed to determine the effect of coping responses on the relationship between perceived stress and satisfaction with life in a sample of chronic pain patients. In order to reach the stated objective, it was first necessary to determine whether a statistically significant relationship exists between perceived stress and satisfaction with life, as well as to determine the exact nature of such a relationship. In this regard, a significant negative correlation was found between perceived stress and satisfaction with life. This finding suggests an

inverse relationship between the two variables. It would, thus, appear that the higher the level of perceived stress reported by the participants, the less satisfying they reported their experience of their lives to be. This is in keeping with established trends in the literature on stress and well-being.¹⁸

Having established that a significant relationship exists between perceived stress and satisfaction with life, it was necessary to determine whether the coping responses employed by the chronic pain sufferers had any effect on this relationship. The primary aim here was to determine whether an individual's choice of coping response (either approach or avoidance) in any way influenced his or her ability to deal effectively with the pain-related stress he or she experienced. Avoidance coping was found to have no significant effect on the relationship between perceived stress and satisfaction with life. However, approach coping was found to have a moderating effect on the interaction between perceived stress and satisfaction with life. It could, thus, be deduced that cognitive coping strategies, such as logically analysing one's situation and possible solutions for one's problems, as well as positively, yet realistically, reframing one's situation, appear to moderate the effect that perceived stress has on one's satisfaction with life. Similarly, engaging in active problem solving and seeking guidance on how to manage one's situation effectively, as well as making effective use of available support seems to moderate the relationship between perceived stress and satisfaction with life. This corresponds to previous research that found that active or approach coping during stressful situations tends to improve health-related outcomes, in general, and pain, more specifically.¹⁹ However, the literature does not reflect total consensus on this point, with some studies finding that approach coping is not necessarily more predictive of positive outcomes in stressful situations than avoidance coping.¹³

It would appear from the results of the current study that approach coping moderates the relationship between perceived stress and satisfaction with life amongst chronic pain patients. However, it may be of clinical utility to determine whether the degree to which individuals suffering from chronic pain engage in approach coping influences their satisfaction with life. To this end, the regression line for those participants in the top quartile with respect to their CRI-A Approach Coping subscale scores was compared to the regression line for those in the bottom quartile. Examination of these regression lines reveals that, given similar levels of perceived stress, individuals in the top quartile report greater satisfaction with life than those

individuals in the bottom quartile. It would seem that, while perceived stress generally appears to have a negative effect on an individual's quality of life, irrespective of his or her coping responses, the more inclined the individual is to engage in active coping, the less severe the decline in the person's satisfaction with life is.

The current study suggests that, while merely engaging in active coping may not necessarily improve the quality of life of chronic pain sufferers experiencing stress, higher levels of approach coping may have the potential to partially negate the impact of life stress on these individuals' satisfaction with life. There may, thus, be some clinical utility in attempting to increase approach coping amongst chronic pain patients, particularly amongst those individuals reporting elevated levels of general life stress. Group counselling, patient education and other relatively low-cost interventions may prove effective in reducing the negative impact of life stress on the general psychological well-being of chronic pain patients. This may, in turn, result in a greater willingness to engage in treatment and rehabilitation activities, as well as lower rates of emotional distress and psychiatric comorbidity. At the least, such interventions may lead to improvements in patients' quality of life. However, the efficacy of such interventions would have to be determined in rigorous, controlled treatment trials.

Some limitations of this study warrant discussion. Participants were drawn from a specific geographical locality and from a specific cultural-linguistic group. Consequently, it may not be possible to generalise these findings outside of this specific group. Furthermore, a fairly small sample was used, once again limiting the extent to which these findings can be generalised. No formal assessment of depression, anxiety or other common psychiatric comorbidities was included in the study. Therefore, it cannot be determined whether or not psychiatric conditions or elevated levels of emotional distress may have an effect on the manner in which approach coping responses moderate the interaction between perceived stress and satisfaction with life. Finally, the exclusive reliance on self-report measures of coping provides no means of verifying whether participants actually do engage in the forms of coping they report to.

Acknowledgements

The authors would like to thank the patients and nursing staff at the Pain Control Unit at Universitas Hospital for kindly contributing their time to this study.

References

1. Smith BH, Elliot AM, Smith WC, Hannaford PC, Penn KI. The impact of chronic pain in the community. *Fam Pract* 2001;18:292–9.
2. Elliot AM, Smith BH, Hannaford PC, Smith WC, Chambers WA. The course of chronic pain in the community: results of a 4-year follow-up study. *Pain* 2002;99:299–307.
3. Walker SP, Odendaal CL, Esterhuysen KGF. Biographical, pain and psychosocial data for a South African sample of chronic pain patients. *The Southern African Journal of Anaesthesia & Analgesia* 2006;2:62–6.
4. Walker SP, Odendaal CL, Esterhuysen KGF. The role of psychosocial variables in the physician judgment of pain-related disability. *The Southern African Journal of Anaesthesia & Analgesia* 2007;13:17–21.
5. Turk DC, Flor H. Chronic pain: a biobehavioral perspective. In: Gatchel RJ, Turk DC, eds. *Psychosocial factors in pain: critical perspectives*. New York: Guilford Press; 1999:18–34.
6. Lazarus R, Folkman S. *Stress, appraisal and coping*. New York: Springer; 1984.
7. Moos RH, Holahan CJ. Dispositional and contextual perspectives on coping: toward an integrative framework. *J Clin Psychol* 2003;59:1387–403.
8. Moos RH. *Coping Responses Inventory*. Lutz: Psychological Assessment Resources Inc; 1993.
9. Boothby JL, Thorn BE, Stroud MW, Jensen MP. Coping with pain. In: Gatchel RJ, Turk DC, eds. *Psychosocial factors in pain: critical perspectives*. New York: Guilford Press; 1999:343–59.
10. Haythornwaite JA, Clark MR, Pappagallo M, Raja SN. Pain coping strategies play a role in the persistence of pain in post-hepatic neuralgia. *Pain* 2003;77:33–9.
11. Denison E, Asenlöf P, Lindberg P. Self-efficacy, fear avoidance and pain intensity as predictors of disability in subacute and chronic musculoskeletal pain in patients in primary health care. *Pain* 2004;111:245–52.
12. Keogh E, Hatton K, Ellery D. Avoidance versus focused attention and the perception of pain: differential effects for men and women. *Pain* 2000;85:225–30.
13. Vorster AC, Walker SP, Esterhuysen KGF. Coping responses as predictors of psychosocial functioning in chronic pain. *The Southern African Journal of Anaesthesia & Analgesia* 2009;15:25–30.
14. Jensen MR, Turner JA, Romano JM. Changes after multidisciplinary pain treatment in patient pain beliefs and coping are associated with concurrent changes in patient functioning. *Pain* 2007;131:138–47.
15. McCracken LM, Eccleston C. Coping or acceptance: what to do about chronic pain? *Pain* 2003;105:197–204.
16. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385–96.
17. Diener E, Emmons RA, Larsen RJ, Griffin S. The satisfaction with life scale. *J Pers Assess* 1985;49:71–5.
18. Lazarus RS. *Stress and emotion, a new synthesis*. London: Springer; 1999.
19. Marlowe N. Stressful events, appraisal, coping and recurrent headache. *J Clin Psychol* 2003;59:1107–16.