Coping responses as predictors of psychosocial functioning amongst individuals suffering from chronic pain

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Background: Research on coping with chronic pain has focused on exploring the impact of different coping responses on various aspects of living with chronic pain. The aim of this study is to determine whether certain coping responses can be identified as predictors of the level of pain intensity reported by the chronic pain patient, as well as predictors of these individuals' psychosocial functioning.

Methods: One hundred and seventy-two individuals suffering from chronic pain completed both the West Haven-Yale

Multidimensional Pain Inventory and the Coping Responses Inventory - Adult Form. The prevalence of the use of Avoidance and Approach Coping, and the relationship between these responses and psychosocial functioning (Pain Severity, Interference, Support, Life Control, and Affective Distress) were explored. Hierarchical regression analyses were performed in order to determine the amount of variance explained by the specific predictor variables.

Results: The findings of this research suggest that coping responses do impact upon the psychosocial functioning of individuals with chronic pain, and more specifically, on the level of interference, severity of pain, perceived amount of control over life and the amount of emotional distress experienced by these patients.

Conclusion: The outcomes of this study appear to contradict the general consensus in literature that regards Approach Coping responses as being associated with decreased pain severity and improved psychosocial functioning. The manner in which specific components of each type of coping response relates to specific aspects of psychosocial functioning was investigated; an aspect that was found to be lacking in most research regarding coping and chronic pain.

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Introduction

The experience of chronic pain can be viewed from a biopsychosocial perspective, where chronic pain is regarded as emanating from multidirectional interactions between biological, psychological and social factors, with the contribution of each domain regarded as equally important. An individual's emotional status, the particular nature of their attention to nociceptive stimuli, their beliefs and expectations with regard to pain, the degree of control they perceive to have over their pain, their individual background and past experiences with pain, as well as their general physical and psychological health, may affect their perception of pain.2 Furthermore, the value of psychosocial functioning as a prognostic indicator in chronic pain should not be underestimated. In one study 59% of the variance in the disability experienced by the participating chronic pain patients could be attributed to their psychosocial functioning.3

The physiological experience of pain is associated with many comorbid stressors such as interpersonal, emotional and other psychosocial problems. 4 Thirty per cent to 54% of individuals treated for chronic pain in the USA are diagnosed with comorbid depression, while anxiety and anger are also commonly reported by these patients.⁵ Not only has the experience of chronic pain been found to influence patients' emotional wellbeing, but the process and outcome of their pain treatment also influences their emotional state. Consequently, chronic pain could be regarded as a psycho-physiological disorder most often presenting primarily as psychosocial impairment. Deficient

social support is associated with both the incidence and severity of depression among chronic pain patients.⁵ This may be indicative of the possible predisposing role that low levels of social support (including marital conflict and lack of family support) play in the development of depression in patients with chronic pain. However, the relationship between social support and depression may best be conceptualised as interactive, rather than causal, in nature.5

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Coping refers to the cognitive and behavioural attempts at dealing with internal or external demands perceived as threatening to overwhelm the individual's resources and entails adapting cognitive and behavioural attempts to deal with these internal or external demands.7 Coping is a dynamic process and the type of coping response used depends upon the changing psychosocial environment and context. Higher levels of perceived social support have been associated with the use of approach coping responses.⁸ Hence the conclusion can generally be drawn that active or approach coping responses, where the stressor is acted upon or action is taken to improve resistance to stress, are associated with reduced pain severity and improved psychosocial functioning.9 Patients who present with elevated levels of pain severity, life interference and affective distress, while displaying low levels of life control and activity, tend to present with less adaptive psychosocial functioning. 10 These patients are also more prone to using avoidance coping responses. In contrast, individuals who utilise adaptive coping strategies tend to display lower levels of pain severity, life interference and affective distress, and higher levels of life control and activity.10

There are four categories of coping responses, namely the cognitive approach, cognitive avoidance, the behavioural approach and behavioural avoidance.11 The aforementioned types of coping responses are the consequence of combining both the focus of coping, as well as the specific methods of coping employed by the individual. Coping orientations may focus on approach or avoidance of the stressor, while responses may be primarily cognitive or behavioural in nature. It is evident that the nature and severity of the stressor, as well as the individual's cognitive appraisal of it and of the psychosocial resources available, affects the type of coping response chosen by the individual.¹² Clinicians generally regard certain coping responses such as being passive or using illness or emotion-focused coping responses as maladaptive, whereas certain coping responses are generally regarded as beneficial, such as active, problem-focused coping responses. 13 However, data points to significant associations between specific aspects of coping composites, rather than division into either approach or avoidance coping in general.¹³

Few studies have explored which specific dimensions of coping predict significant functional outcomes within certain patient groups.²⁻¹³ The utility of such studies lies in their ability to guide clinicians on which specific responses have been proven to elicit positive outcomes, thus enabling them to counsel patients on, and to discourage the use of, specific coping responses associated with less adaptive outcomes. 13 Patients who use avoidant coping strategies have been reported to present with more negative emotions, lower self-esteem and less adaptive functioning than patients who employ more active problemsolving approaches.⁶ Approach coping is generally envisaged to be associated with lower pain severity, less perceived interference, lower levels of affective distress, and higher daily activity and life control levels. However, stressors that pose an excessive threat to an individual's ability to cope, may interfere with problem-focused coping responses.7 In such situations avoidance or defensive reappraisal of the stressor may result. Chronic pain, if regarded as unchangeable, generally stimulates individuals to rely more heavily upon avoidance coping responses, rather than approach responses. 14 The manner in which individuals cope with chronic pain consistently predicts outcomes such as level of disability and their ability to adapt psychologically to their chronic pain situation.¹⁵

The type of coping response used by patients with chronic pain may determine the course and nature of their discomfort. Research into which (if any) coping responses are associated

with the most favourable adjustment to chronic pain, is regarded as essential due to the important relationship between coping and psychosocial functioning in the chronic pain patient population.¹³ The importance of using findings on factors proven to increase the psychosocial functioning of chronic pain patients to prevent acute pain patients from developing chronic disability, is generally emphasised.6 Addressing the patients' specific psychological needs, rather than approaching the patient with generic intervention strategies, is envisaged to be more costand clinically effective.³ The role of coping in the psychosocial experience of chronic pain sufferers requires better understanding as this could, in turn, inform intervention strategies aimed at targeting specific coping responses in an attempt to improve the quality of life of individuals living with chronic pain. 10 Consequently the aim of this study is to determine whether certain coping responses can be identified as predictors of the level of pain intensity reported by chronic pain patients, as well as predictors of these individuals' psychosocial functioning.

Method

A convenience sample of 190 participants was drawn from patients visiting the Pain Control Unit at the Universitas Hospital in Bloemfontein. All patients above the age of 18 years who visited the unit between May 2006 and July 2007 were invited to participate in the study. Written informed consent was obtained from all participants and permission to conduct the study was obtained from 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 as their home language, with a further 3.2% claiming to be English-speaking and the remainder (6.3%) being neither English nor Afrikaans first language speakers. Given the preponderance of Afrikaans-speakers in the sample, it was decided to exclude all non-Afrikaans speaking individuals from further analysis in order to ensure homogeneity of the sample. Consequently a final sample of 172 Afrikaansspeaking chronic pain sufferers was obtained. In excess of two thirds (73.3%) of the eventual sample was female. The mean age of the sample was 56.05 years with a standard deviation of 12.851 years, and a range of 28 years to 90 years. The most common origin of pain within the sample appeared to be injury (35.4%), followed by spontaneous onset (32.7%), pain of non-specific origin (19.2%) and post-operative pain (12.8%). Reported levels of pain chronicity within the sample appeared skewed toward a more long-term experience of pain, with 57% of the participants claiming to have lived with their current pain state for a period exceeding five years.

Results

Table I: Results of the multiple regression analysis for the combined coping subscales with regard to all five criterion variables

Criterion	R	R^2	ss	F	p
Interference	0.350	0.123	207.4	2.850*	0.005
Support	0.255	0.065	462.1	1.414	0.194
Pain Severity	0.349	0.122	163.3	2.826*	0.006
Life Control	0.353	0.125	308.9	2.908*	0.005
Affective Distress	0.503	0.253	286.4	6.914*	0.000

^{*} p ≤ 0.01

Original Research

Table II: Contributions of the various predictor variables to the R2 interference subscale scores

Variables included in analysis	R ²	Contribution to R ² : complete model less reduced model	F	f^2
1. [approach]+[avoidance]	0.123	1-6 = 0.080	3.70*	0.10
2. [approach]+cognitive avoidance	0.078	2-6 = 0.035	6.25	
3. [approach]+acceptance or resignation	0.096	3-6 = 0.053	9.46*	0.06
4. [approach]+seeking alternative rewards	0.072	4-6 = 0.029	5.18	
5. [approach]+emotional discharge	0.072	5-6 = 0.029	5.18	
6. [approach]	0.043			
7. [avoidance]+[approach]	0.123	7-12 = 0.012	0.56	
8. [avoidance]+logical analysis	0.117	8-12 = 0.006	1.11	
9. [avoidance]+positive reappraisal	0.111	9-12 = 0.000	0.00	
10. [avoidance]+seeking guidance	0.113	10-12 = 0.002	0.37	
11. [avoidance]+problem solving	0.112	11-12 = 0.001	0.19	
12. [avoidance]	0.111			

Key: [approach=approach coping]; [avoidance=avoidance coping] * $p \le 0.01$

Participants completed both the Coping Responses Inventory - Adult Form (CRI-A) and the West Haven-Yale Multidimensional Pain Inventory (WHYMPI). 12-17 Written permission to translate the above-mentioned measures into Afrikaans and to use them in this study was obtained from the relevant authors and/or publishers and the questionnaires were translated into Afrikaans using the Brislin back-translation method. 18 All Afrikaans translations of the measuring instruments displayed acceptable internal consistency according to the guidelines established by Foster and Parker (1999) [WHYMPI subscales: Interference (α = 0.865); Support (α = 0.858); Pain Severity (α = 0.827);

Life Control (α = 0.613); Affective Distress (α = 0.771); CRI-A composite scales: Approach Coping ($\alpha = 0.871$); Avoidance Coping (α = 0.746)]. Initially a multiple regression analysis was conducted with the five WHYMPI subscales (Interference, Support, Pain Severity, Life Control and Affective Distress) as criterion variables and the combined coping subscales from the CRI-A (Approach Coping and Avoidance Coping) as predictors. In instances where the combined predictor variables were found to account for a significant amount of the variance with regard to a particular criterion, these results were followed up with subsequent hierarchical regression analyses in order to determine

Table III: Contributions of the various predictor variables to the R² pain severity subscale scores

Variables included in analysis	R ²	Contribution to R ² : complete model less reduced model	F	f^2
1. [approach]+[avoidance]	0.122	1-6 = 0.110	5.09*	0.13
2. [approach]+cognitive avoidance	0.042	2-6 = 0.030	5.17	
3. [approach]+acceptance or resignation	0.090	3-6 = 0.078	14.18*	0.09
4. [approach]+seeking alternative rewards	0.019	4-6 = 0.007	1.19	
5. [approach]+emotional discharge	0.079	5-6 = 0.067	11.96*	0.07
6. [approach]	0.012			
7. [avoidance]+[approach]	0.122	7-12 = 0.031	1.44	
8. [avoidance]+logical analysis	0.115	8-12 = 0.024	4.44	
9. [avoidance]+positive reappraisal	0.102	9-12 = 0.011	2.03	
10. [avoidance]+seeking guidance	0.096	10-12 = 0.005	0.93	
11. [avoidance]+problem solving	0.093	11-12 = 0.002	0.37	
12. [avoidance]	0.091			

Key: [approach=approach coping]; [avoidance=avoidance coping] * $p \le 0.01$

Table IV: Contributions of the various predictor variables to the R² life control subscale scores

Variables included in analysis	R ²	Contribution to R ² : complete model less reduced model	F	f^2
1. [approach]+[avoidance]	0.125	1-6 = 0.093	4.39*	0.11
2. [approach]+cognitive avoidance	0.083	2-6 = 0.051	9.27*	0.06
3. [approach]+acceptance or resignation	0.090	3-6 = 0.058	10.36*	0.06
4. [approach]+seeking alternative rewards	0.074	4-6 = 0.042	7.50*	0.05
5. [approach]+emotional discharge	0.042	5-6 = 0.010	1.72	
6. [approach]	0.032			
7. [avoidance]+[approach]	0.125	7-12 = 0.016	0.75	
8. [avoidance]+logical analysis	0.121	8-12 = 0.012	2.26	
9. [avoidance]+positive reappraisal	0.113	9-12 = 0.004	0.75	
10. [avoidance]+seeking guidance	0.109	10-12 = 0.000	0.00	
11. [avoidance]+problem solving	0.118	11-12 = 0.009	1.70	
12. [avoidance]	0.109			

Key: [approach=approach coping]; [avoidance=avoidance coping] * p ≤ 0.01

the amount of variance explained by the specific predictors. Analyses were conducted using SPSS statistical software and statistical significance was set at the 1% level. ¹⁹

It is evident from Table I that, in combination, the eight coping subscales account for a significant amount of the variance (at the 1% level) in the Interference, Pain Severity, Life Control and Affective Distress scores of the sample. Hierarchical regression analyses were conducted in order to determine the unique contribution of each of the coping subscales to explanation of the variance in the relevant criteria (Interference, Life Control and Affective Distress scores).

It is apparent from Table II that all the coping subscales together accounted for 12.3% (R^2 = 0.123) of the variance with regard to the participants' Interference subscale scores. This R^2 -value is significant at the 1% level [$F_{8:163}$ = 2.850]. It is further evident that the set of Avoidance Coping subscales (Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards and Emotional Discharge) jointly accounted for 8.0% of the variance in the Interference subscale scores of the participants. This result is significant at the 1% level [$F_{4:162}$ = 3.70] and is indicative of medium effect size. When the individual contributions of the Avoidance Coping subscales were investigated, Acceptance or Resignation was found to account for 5.3% [$F_{1:165}$ = 9.46] of the variance in Interference subscale scores. This contribution is significant (1% level). However, the corresponding effect size is small.

The combined set of Approach Coping subscales (Logical Analysis, Positive Reappraisal, Seeking Guidance and Problem Solving) jointly explained 1.2% of the variance in the Interference subscale scores of the participants. However, this set of variables was not found to make a significant contribution to R² at the 1% level. It also appears apparent from Table II that none of the Approach Coping subscales were able to account for a significant percentage of the Interference subscale scores.

The results reported in Table III indicate that all the coping subscales jointly accounted for 12.2% ($R^2=0.122$) of the

variance in the Pain Severity subscale scores of the participants. This particular R^2 value was significant at the 1% level [$F_{8;163}$] = 2.826]. It is evident from Table III that the set of Avoidance Coping subscales (Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards and Emotional Discharge) jointly accounted for 11.0% of the variance in the sample's Pain Severity subscale scores. This contribution is significant at the 1% level $[F_{4;162} = 5.09]$ and is indicative of medium effect size. Furthermore, when the contributions of individual Avoidance Coping subscales were taken into account, two subscales appeared to account for significant (1% level) percentages of the variance in the sample's Pain Severity subscale scores. These subscales were Acceptance and Resignation (7.8% [$F_{1;165}$ = 14.18]) and Emotional Discharge $(6.7\% [F_{1;165} = 11.96])$. However, closer examination of these contributions revealed relatively small effect sizes.

The complete set of Approach Coping subscales (Logical Analysis, Positive Reappraisal, Seeking Guidance and Problem Solving) jointly accounted for 3.1% of the variance in the Pain Severity subscale scores of the sample. However, this set of variables failed to make a significant (1% level) contribution to R². It is also apparent from the results reported in Table III that none of the individual Approach Coping subscales accounted for a significant percentage of Pain Severity subscale scores.

The results presented in Table IV indicate that the combined coping scales account for 12.5% (R^2 = 0.125) of the variance in Life Control experienced by the sample. This R^2 -value is significant at the 1% level [$F_{8;163}$ = 2.908]. The set of Avoidance Coping subscales (Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards and Emotional Discharge) jointly accounted for 9.3% of the variance in Life Control subscale scores. This result was significant at the 1% level [$F_{4;162}$ = 4.39] and was indicative of medium effect size. When the Avoidance Coping subscales were examined individually it became apparent that Cognitive Avoidance accounted for 5.1% [$F_{1;165}$ = 9.27] of

Table V: Contributions of the various predictor variables to the R² affective distress subscale scores

Variables included in analysis	R ²	Contribution to R ² : complete model less reduced model	F	f^2
1. [approach]+[avoidance]	0.253	1-6 = 0.180	9.78*	0.24
2. [approach]+cognitive avoidance	0.128	2-6 = 0.055	10.38*	0.06
3. [approach]+acceptance or resignation	0.158	3-6 = 0.085	16.67*	0.11
4. [approach]+seeking alternative rewards	0.098	4-6 = 0.025	4.55	
5. [approach]+emotional discharge	0.208	5-6 = 0.135	28.13*	0.17
6. [approach]	0.073			
7. [avoidance]+[approach]	0.253	7-12 = 0.034	1.85	
8. [avoidance]+logical analysis	0.220	8-12 = 0.001	0.21	
9. [avoidance]+positive reappraisal	0.249	9-12 = 0.030	6.52	
10. [avoidance]+seeking guidance	0.223	10-12 = 0.004	0.85	
11. [avoidance]+problem solving	0.222	11-12 = 0.003	0.64	
12. [avoidance]	0.219			

Key: [approach=approach coping]; [avoidance=avoidance coping] * p ≤ 0.01

the variance in Life Control subscale scores, while Acceptance and Resignation explained 5.8% [$F_{1:165}$ = 10.36] of the variance, and Seeking Alternative Rewards accounted for 4.2% [$F_{1:165}$ = 7.50] of the variance in the sample's Life Control. These results were significant at the 1% level. However they were only indicative of small effect size.

The set of Approach Coping subscales (Logical Analysis, Positive Reappraisal, Seeking Guidance and Problem Solving) jointly explained 1.6% of the variance in Life Control subscale scores in this sample. The contribution of this particular set of variables to \mathbb{R}^2 was not statistically significant (1% level). Furthermore, it is also apparent from Table IV that none of the Approach Coping subscales made an individually significant contribution to the explanation of the variance in Life Control subscale scores.

Table V indicates that all the coping subscales accounted for 25.3% ($R^2 = 0.253$) of the variance in the Affective Distress subscale scores of the sample. This particular R2 value was significant at the 1% level [$F_{8;163} = 6.914$]. The complete set of Avoidance Coping subscales (Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards and Emotional Discharge) jointly explained 18.0% of the variance in Affective Distress subscale scores. This result was significant at the 1% level $[F_{4:162} = 9.78]$ and was indicative of medium effect size. When the Avoidance Coping subscales were examined individually, it became apparent that Acceptance or Resignation accounted for 8.5% [$F_{1;165}$ = 16.67] of the variance and Emotional Discharge accounted for 13.5% [$F_{1;165}$ = 28.13] of the variance in Affective Distress subscale scores. These results were indicative of medium effect size and were significant at the 1% level. Cognitive Avoidance accounted for 5.5% [$F_{1;165} = 10.38$] of the variance in Affective Distress subscale scores and was significant at the 1% level. This result, however, was indicative of a small effect size.

The complete set of Approach Coping subscales (Logical Analysis, Positive Reappraisal, Seeking Guidance and Problem Solving)

jointly explained 3.4% of the variance in the sample's Affective Distress subscale scores. The contribution of this particular set of variables to R² was not statistically significant (1% level). Furthermore, it is also apparent from Table V that none of the Approach Coping subscales made an individually significant contribution to the explanation of the variance in Affective Distress subscale scores.

Discussion

The findings presented in this article suggest that coping responses (as measured by the CRI-A) impact upon the psychosocial functioning of individuals with chronic pain, and more specifically, on the level of interference, severity of pain, perceived amount of control over life and the amount of emotional distress experienced by these patients. This outcome is congruent with the results of other studies, where coping responses are regarded as significant predictors of chronic pain patients' level of functioning, even when demographic variables, stressor characteristics, threat appraisal and social resources are controlled for.² The consensus within the literature reviewed earlier supports the premise that Avoidance Coping is associated with increased levels of pain-related dysfunction, a reduced sense of control over the pain, increased pain severity and heightened negative affect. Moreover, the literature reviewed concludes that Approach Coping responses are associated with adaptive psychosocial functioning. 6-13 However, certain inconsistencies were identified in this study. Avoidance Coping was identified as being associated with the level of interference, severity of pain, level of perceived control over life and emotional distress experienced by patients with chronic pain, while Approach Coping did not display a statistically significant relationship with any of the subscales measuring psychosocial functioning. The literature reviewed indicated that uncertainty exists as to the true impact of the type of coping response chosen. Pain severity has been found to increase, along with emotional distress and psychosocial dysfunction, as attention to pain increases.20

The findings of our study indicate that certain Avoidance Coping responses may indeed be more appropriate in dealing with chronic pain than Approach Coping. It appears that construct definition may also present with certain limitations as the division of certain subscales as either Approach or Avoidance Coping, may not be exclusive. Logical Analysis is classified as an Approach Coping response. However if one relies heavily on cognitions surrounding chronic pain, instead of taking action regarding the stressor, this subscale may be more appropriately identified as an Avoidance response. 12 Similarly, Seeking Alternative Rewards is classified as an Avoidance response, while the recognition that a stressor exists and the process of actively changing behaviour may be better defined as Approach Coping. 12 This may be regarded as a limitation of this study, as the construct definition of the CRI-A may not accurately distinguish between Approach and Avoidance Coping responses.

The finding that the perceived level of social support is not related to coping responses has been confirmed by the results of this study as literature indicates that social support and coping responses are in fact independent of one another.8 Further investigation into the relationship between Avoidance Coping and each of the specific subscales of the WHYMPI, found to have a statistically significant relationship with such coping responses, offers the following: Literature supports the finding that acceptance of chronic pain is associated with reduced pain severity, a reduction in negative emotions, and better psychosocial functioning amongst chronic pain patients, while the ventilation of emotions such as anger tends to enhance the process of making meaning out of the suffering experienced by chronic pain patients as it facilitates the cognitive processing of these emotions. 16 This process results in improved mood, increased sense of control over the pain and reduced pain severity.21 The avoidance of cognitions surrounding chronic pain may be associated with certain positive psychosocial outcomes in the chronic pain population when this concept is conceptualised as a form of distraction from pain and as a form of acceptance. Patients who present with adaptive functioning due to exploring positive outcomes of their situation, in turn, focus on activities they enjoy, rather than trying to control or avoid their pain, which is also associated with certain adaptive outcomes.²²

This study is not without limitations. The sample used is representative of a specific population in South Africa, namely the Afrikaans community, and consequently the results are expected to possess adequate external validity. However, a more inclusive and larger study would shed valuable light on the different coping styles of various cultures within South Africa, and thus be generalisable to a larger sector of the country's population. The use of one specific coping scale and one measure of psychosocial functioning limits the study to the constructs as defined by the respective developers and this must be taken into account during interpretation of the results. The outcomes of this study appear to contradict the general consensus in literature that Approach Coping responses are associated with decreased pain severity and improved psychosocial functioning. However, this study served to investigate which specific components of each type of coping response relates to specific aspects of psychosocial functioning; an aspect that was found to be lacking in most research regarding coping and chronic

pain.²⁻¹³ Analysis of the findings indicates that the nature of Avoidance Coping must be carefully defined as it may contain adaptive constructs, and possibly even certain aspects of Approach Coping and that it does not necessarily entail the mere avoidance of dealing with chronic pain.

Conclusion

Coping responses (as measured by the CRI-A) affect the psychosocial functioning of individuals with chronic pain, and more specifically, the level of interference, severity of pain, perceived amount of control over life and the amount of emotional distress experienced by these patients. Moreover, avoidance coping in particular exercises a significant impact on the psychosocial functioning of chronic pain patients.

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