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**Follow-Up Study of a Chronic  
Pain Patients: A Clinical and  
Health Psychology Approach**

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## An Introduction to ATINER's Conference Paper Series

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Dr. Gregory T. Papanikos  
President  
Athens Institute for Education and Research

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**Abstract**

Our research was focused on effect of resilience on quality of life and mood outcomes in chronic pain patients using longitudinal data. We also wanted to compare effect of resilience to other illness and demographic variables as well as other adjustment factors (e.g. life events).

The sample consisted of 300 patients with chronic pain. At entry into the cohort, patients had been diagnosed with chronic pain within the last 5 years. Baseline measures were administered between 1996 and 2000.

Methods: A psychosocial test battery was administered to all patients treated at National Center for Spinal Disorders. Psychosocial parameters such as demographic (objective) variables of adjustment (work and family status), quality of life, depression, anxiety, resilience, spiritual orientation were measured.

Results: No significant differences were found between either depression or anxiety scores at baseline and follow-up. Trait anxiety, depression and quality of life scores differed significantly from standard data available for the general population, deteriorated with time but were unrelated to age or gender. Resilience scores of the patients did not differ significantly from the Hungarian preliminary standards. Four variables explained 57,1% of variance in quality of life outcomes, resilience being the most powerful predictor of all. Anxiety and depression were also strongly predicted by resilience ( $r^2 = 0,59$  for anxiety and  $r^2 = 64\%$  for depression). Further predictors were pain symptoms and some spirituality variables. No life event or other health/illness variable effects emerged.

Conclusions: Illness and life event effects are buffered by resilience, a very powerful predictor of adaptive outcomes. Though there is deterioration in quality of life and mood through the course of illness, outcomes are remarkably better in resilient patients. The impact of this variable may result from through successful emotional regulation and more effective recovery from stress events.

Keywords: chronic pain, resilience, depression, spirituality

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Chronic pain is characterised by one or more of the following: it lasts more than six months, originates from a non-life-threatening cause; and/or is not responsive to available treatment. It is multimodal and as such includes sensory, affective and cognitive experiences, creating a negative effect on health and wellbeing (Sturgeon & Zautra, 2010). Experience of chronic pain is destructive to individual roles — physically, emotionally, and psychologically — often resulting in poor self worth (Finer, 2006). Individuals can become focused on their physical state, experiencing role limitations and decreased activity. Of the forty-three considerable life stressors identified in the Holmes—Rahe scale, 34 can be linked to patients with chronic pain (Silver, 2004).

The concept of resilience refers to the person's ability to recover from negative emotional experiences and show a flexible adaptation to stress (Block & Kremen, 1996). Resilience not only denotes potentially protective factors such as self-conscious mastery efforts, but also encompasses genetic, neurological, developmental, interpersonal, contextual, spiritual, affective, and non-stress-related cognitive attributes (e.g. intelligence and values) as well as individual difference dimensions that determine relatively stable levels of stress resistance to at-risk populations (Freitas & Downey, 1998; Curtis & Cicchetti, 2003). Although “resilience” resembles the more familiar concept of “coping”, it is, in fact, considerably broader in scope. Resilience has considerable importance for sustaining health and well-being (Jacelon, 1997).

After three decades of longitudinal research, resilience is now a well-established construct for describing and explaining unexpected positive outcomes despite a high risk for maladjustment (Rutter, 1990; Luthar et al, 2000). Three broad categories stand out as sub-components: (a) positive characteristics and resources of the individual; (b) a coherent, stable, and supportive family environment; and (c) a social network that supports and reinforces adaptive coping. Some spirituality aspects are also factors of resilience, associated with meaning in life, wider social support, greater access to resources through regular attendance at church/services, and having positive influence on diet, exercise, alcohol and tobacco use (Fredrickson, 2002). Individuals high in spirituality were reported to have better mental health (Haynes & Watt, 2008) and adjustment (Constanzo, Ryff & Singer, 2009). Having faith helps make sense of the illness, and maintain a source of strength (Wenzel et al, 2002; Becker & Newsom, 2005; Chan, Lai & Wong, 2006).

To date current treatment of chronic pain relies more on symptomatic treatment using a deficit approach. This perspective gives little credit to the individual for being able to cope with their pain or the problems associated with a chronic condition (Feeley & Gottlieb, 2000). The resilience construct provides a very useful framework of reference. The adoption of a strengths based approach may offer an opportunity to enhance the current understanding of how people can successfully adapt to chronic pain and also provide helpful suggestions for future pain management programs. Karoly and Ruehlman (2006) have defined resilience as a way of self-regulation, a set of higher-order selfregulatory (executive) skills that allow persons with moderately high levels of pain



severity to strive for their goals in a hopeful, positive, and efficacious manner. From a resilience perspective, maladaptive consequences of pain may only arise in absence of resilience, either when general resilience level is low, or if the pain experience permanently disrupts personal goals or it undermines resources.

Our research was focused on the effect of resilience on quality of life outcomes in chronic pain patients. We also wanted to compare effect of resilience of other illness and life factors of the patient (e.g. illness, life event, etc. factors).

## **Method**

### *Subjects*

The sample consisted of 300 patients with chronic pain. At entry into the cohort, patients had been diagnosed with chronic pain within the last 5 years. Baseline measures were administered between 1996 and 2000. At study onset, a psychosocial test battery was filled in personal contact by all patients treated at National Center for Spinal Disorders, after medical examinations with the physician. Follow-up was performed between 2009 and 2012. Subjects were contacted by telephone, and were asked to participate. In case of agreement, questionnaires were mailed. Fourteen patients rejected, and 20 subjects have died during the follow-up period, the rest of the patients agreed to participate. To date, 177 patients completed and returned the test battery. Thus, 59% of the baseline group participated in follow-up.

In the final sample, there were 57 men (32%) and 120 (68%) women. Mean age at follow-up was 60,15 (SD=8,54). 117 patients (66,9%) were married or living with a partner, 160 (92,5%) had one or more children. Only 18 patients were employed (10,2%), the rest of the subjects (89,8%) were on age or disability pension. The sample is a heterogeneous group with different etiology of pain, the majority having failed back syndrom (49,2%) or pain resulting from degenerative illness (44,6%), and the minority having traumatic or orthopedical etiology. At follow-up, 45,7% of patients received conservative treatment. In addition to analgesics, 29% of patients had discectomia/decompression, and 18,6% had fusion operation.

### *Measures*

The administered test battery consisted of two parts. The first (Questionnaire on Health Status) asked for demographic data and information about cause, localisation and experience of pain. The second part comprised standard quality of life, resilience, mood, spirituality and life event measures, as follows. Spielberger's State-Trait Anxiety Inventory. The STAI is a self-administered questionnaire of state/trait anxiety. The trait anxiety part has 20 items, possible answers vary on a Likert scale with four points, from 0 = "not at all", to 3 = "very much so". Final scores are between 0 and 60 points.

Zung Depression Scale. The Zung Self-Rating Depression Scale is a short self-administered survey to quantify the depressed status of adult patients. Twenty

items on the scale rate the four common characteristics of depression on four subscales: core depressive factor; cognitive factor; anxiety factor; and somatic factor. In scoring the SDS, values 1, 2, 3 and 4 are assigned to responses and a depression index is calculated. Total scores range from 20 through 80. Holmes-Rahe Life Event Scale. The SRRS (Holmes & Rahe, 1967) originally contains 43 events, together with their life-changing values, ranging from 100 (death of spouse) to 11 (minor violations of the law). Participants responding to the SRRS check the items they have experienced in the past, for example within the last year. The present rmodified Hungarian version of the scale (Kopp et al., 2006) contains 27 items experienced during the past 5 years, scored from 1 to 10 on basis of severity.

The WHO Well-Being Index informs about quality of life, using a six-point Likert Scale (from „all of the time” to „at no time”). It includes five mood- and activity related items addressing general quality of life, e.g. „I have felt cheerful and in good spirits”, „I have felt active and vigorous” etc. We have used this brief measure because, in contrast to other quality of life measures, it is free and has a standard in our country.

The Connor-Davidson Resilience Scale was developed for clinical practice as a measure of stress coping ability. The authors take the perspective that resilience is a personal quality. It contains 25 items, all of which carry a 5-point range of responses, from „not true at all” to „true nearly all of the time”. It is rated based on how the subject has felt over the past month. The total score ranges from 0–100, with higher scores reflecting greater resilience. Connor and Davidson (2003) conducted an exploratory factor analysis which yielded a 5-factor solution with systems “personal competence, high standards, and tenacity,” “trust in one’s instincts, tolerance of negative affect, and strengthening effects of stress,” “positive acceptance of change and secure relationships,” “control,” and “spiritual influences”.

Spiritual Orientation Inventory (SOI) is an 85-item measure developed by Elkins et al. (1988) including nine subscales of spirituality: (a) Transcendent Dimension, 13 items (e.g., “I have had transcendent, spiritual experiences which seem almost impossible to put into words”); (b) Meaning and Purpose in Life, 10 items (e.g., “Even though I may not always understand it, I do believe that life is deeply meaningful”); (c) Mission in Life, 9 items (e.g., “I believe life presents one with a mission to fulfill”); (d) Sacredness of Life, 15 items (e.g., “Even such activities as eating, work, and sex have a sacred dimension to them”); (e) Material Values, 6 items, (e.g., “It is much more important to pursue spiritual goals than to pursue money and possessions”); (f) Altruism, 7 items (e.g., “I am often overcome with feelings of compassion for human beings”); (g) Idealism, 10 items (e.g., “I believe the human spirit is powerful and will win in the end”); (h) Awareness of the Tragic, 5 items, (e.g., “It seems pain and suffering are often necessary to make us examine and re-orient our lives”); (i) Fruits of Spirituality, 10 items (e.g., “Contact with the transcendent, spiritual dimension has helped reduce my personal stress level”). The 85-item version of the SOI utilizes a seven-point scale ranging from 1 = strongly disagree to 7 = strongly agree. Respondents rate the extent to which

they agree with the content of each of the items. The shortened Hungarian version contains 56 items with the same subscales, with high reliability and good validity indices (Mirnics, unpublished).

## Results

Descriptive statistics for quality of life and mood are summarized in Table 1. No significant differences were found between either depression nor anxiety scores when comparing baseline and follow-up. Trait anxiety was higher in the patient group in comparison to the Hungarian standards ( $t=2,630$ ,  $p<0,01$ ). Also, patients have significantly higher depression scores compared to the general population ( $t=15,454$ ,  $p<0,001$ ). Resilience scores of the patients did not differ significantly from the Hungarian preliminary standards ( $t=0,389$ ,  $p<0,38$ , Kiss, in press). However, quality of life in the patients was significantly worse in comparison to results of former national representative studies ( $t=-3,38$ ,  $p<0,01$ , Susánszky et al, 2006).

**Table 1.** *Descriptive statistics for quality of life, resilience and mood*

	Quality of life (WHO-5)	Depression (SDS)	Anxiety (STAI)	Resilience
Study onset	6,47±5,06	42,40 ± 7,46	48,32± 10,08	27,04 ± 7,35
Follow-up	not measured	43,98±10,55	47,77 ± 11,90	not measured
Significance of difference		n.s.	n.s.	

Some differences emerged for spirituality dimensions as well, in comparison to preliminary Hungarian standards (Table 2.). Patients scored lower for the following aspects: Transcendent Dimension, Meaning and Purpose in Life, Mission in Life, Material Values, Awareness of the Tragic, and Fruits of Spirituality. They scored however higher compared to standards in Altruism and Idealism. There were no differences for Sacredness of Life.

**Table 2.** *Spirituality dimensions (means, SD-s, significance levels)*

Transcendent Dimension	Meaning and Purpose in Life	Mission in Life	Sacredness of Life	Material Values	Altruism	Idealism	Awareness of the Tragic	Fruits of Spirituality
14,84 ±7,472	31,11 ± 8,56	30,89 ±8,646	40,28 ±10,31	19,52 ±6,083	30,17 ±6,893	34,55 ±6,074	22,24± 5,311	15,98 ±8,323
$t=-4,704$ , $p<0,05$	$t=-3,47$ , $p<0,01$	$t=-4,15$ , $p<0,01$	n.s.	$t=-4,13$ , $p<0,01$	$t=7,52$ , $p<0,01$	$t=4,23$ , $p<0,01$	$t=-7,00$ , $p<0,01$	$t=-4,57$ , $p<0,01$

Despite treatment, the majority of patients were seriously affected by pain symptoms. (Table 3.) which even increased with follow-up time, producing significant differences. Despite therapy and operations, a significantly higher

proportion of patients began to suffer from physical role limitations as well as sleep disorders.

**Table 3.** *Most significant health complaints in the patients*

	Role limitations due to physical problems	Pain symptoms	Sleep disorders
Study onset	44 (24,9%)	123 (69,4%)	42 (23,7%)
Follow-up	119 (67,2%)	150 (85,7%)	64 (36,2%)
Significance of difference (chi-square)	p<0,01	p<0,01	p<0,01

The five most significant life events affecting the patients in the past five years were the following: worsening of financial status (94 patients), death of significant others (80 patients), serious medical condition in significant others (80 patients), serious illness of themselves (65 patients), and negative changes in their working conditions (53 subjects).

There were no gender differences for either quality of life, mood or overall spirituality. We have also conducted analyses comparing middle-aged (age 40-60 yrs) and elderly patients (age >60yrs), and no age differences were found (Table 4.)

**Table 4.** *Quality of life, mood and spirituality variables by gender and age*

	Quality of life	Anxiety	Depression	Overall spirituality
Male	10,94 ±5,992	45,55±12,69	42,75±10,76	224,30±68,73
Female	11,58 ±5,644	48,86±11,39	44,56±10,45	220,84±61,53
Significance level	z=-,652 n.s.	1,534 n.s.	z=-1,055 n.s.	z=-1,83 n.s.
40-60 yrs	10,76 ±5,931	48,36± 12,470	45,05± 11,478	215,14 58,67
>60 yrs	11,97± 5,539	47,21 ±11,376	42,94± 9,536	228,75 68,07
Significance level	z= -1,498 n.s.	z= -0,919 n.s.	z= -1,438 for depression n.s.	z=-1,839 n.s.

As expected, depression scores correlated negatively with quality of life and resilience, and they correlated positively with anxiety. Spirituality had no relationship with depression. Quality of life correlated in the expected direction with depression, resilience and anxiety, and had no linear relationship with overall spirituality. Resilience correlated in the expected directions with spirituality and all other variables. (Table 5.)

**Table 5.** *Correlations for quality of life, mood and spirituality variables*

	Depression.	Resilience	Anxiety	Quality of life	Spirituality
Depression	1	-0,693(**)	0,851(**)	-0,797(**)	-0,062
Resilience	-0,693(**)	1	0,700(**)	0,691(**)	0,298(**)
Anxiety	0,851(**)	-0,700(**)	1	-0,815(**)	-0,042
Quality of life	-0,797(**)	0,691(**)	0,815(**)	1	0,091
Spirituality	-0,062	0,298(**)	-,042	0,091	1

Next, we have examined factors influencing psychosocial outcomes using stepwise regression (Table 6.) The focus of this procedure is to find the best combination of predictors. Quality of life and mood were defined as dependent variables, while resilience and spirituality dimensions were used as independent variables. Life events, health complaints and illness-related variables were also added as potential predictors. We wanted to study 1. effect of resilience on quality of life and mood outcomes, 2. effect of illness-related variables and other health complaints on the same, 3. to compare relative effect size of life events, illness variables, resilience and and spirituality, also 4. to explore whether different effects emerge in background of anxiety, depression and quality of life.

Three variables explained 46% of variance in quality of life outcome, resilience being most powerful predictor ( $r^2 = 0,461$ ). Prediction improved by entering level of overall spirituality as well as current level of pain-related complaints. In summary, 57,1% of variance was explained by the three dependent variables. Anxiety level at follow-up was influenced primarily by resilience ( $r^2 = 0,50$ ). Prediction improved by entering spirituality as well as current level of pain-related complaints ( $r^2 = 0,595$ ). Depression level was also strongly and primarily predicted by resilience, spirituality and pain symptoms. These three variables predicted even 64% of variance in depression.

No life events or other health/illness variables remained in the regression equation.

**Table 6.** *Significant predictors in three stepwise regression models*

Outcome variable	Model summary	Predictors	Significance level
Quality of life	$R^2 = 0,461$ $R^2 = 0,518$ $R^2 = 0,571$	Resilience Transcendent dimension Pain symptoms	$p < 0,01$
Anxiety	$R^2 = 0,508$ $R^2 = 0,569$ $R^2 = 0,595$	Resilience Fruits of spirituality Pain symptoms	$p < 0,01$ $p < 0,01$ $p < 0,05$
Depression	$R^2 = 0,571$ $R^2 = 0,615$ $R^2 = 0,645$	Resilience Pain symptoms Fruits of spirituality	$p < 0,01$ $p < 0,01$ $p < 0,01$

## Discussion

The primary focus of our study was to detect the influence of resilience on adaptive outcomes such as mood (balanced affect vs. anxiety and depression) and quality of life. We have found very strong effects for both aspects. Our findings are in accordance with the literature, as former studies have noted emotional regulation to be strongly related to resilience. Tugade and Fredrickson (2004) for example, found that highly resilient individuals tended to report positive emotions under stress, and this contributed to recovery from stress-related negative effects. Less resilient chronic pain patients in our sample were more likely to be anxious and depressed, and resilience influenced quality of life outcomes more remarkably than illness factors themselves.

Mood of chronic pain patients, despite medical treatment, remained relatively stable during even a 20 year follow-up period. In our study, resilience had a stress-buffering effect, influencing mood indirectly, and resilient patients were likely to be more protected from affective problems. This influence was independent of current life events, and not related to objective adjustment parameters like vocational activity and demographic variables. A limitation here must be mentioned: it was not possible to measure resilience at study onset (no measures were available then). At follow-up however, even despite aging, resilience in our patients was not worse compared to the general Hungarian population. We suggest that without stable resilience factors and trait resilience (suggested by Davidson, 2000, Ong et al., 2009), increase in affective symptoms would occur. Still, would be also challenging in future studies to measure temporal stability of resilience in chronic pain.

In comparison to resilience spirituality had a weaker, but significant influence. Primarily some dimensions related to belief („Transcendent dimension”) and subjective effects of spiritual coping („Fruits of spirituality”) were significant predictors. Positive aspects of religious coping have been formerly linked with lower levels of distress (Tix & Frazier, 1998), less depression and anxiety (Baider, et al., 1999; Lee, 2007). and better quality of life. Our study confirms that in addition to resilience, spirituality is also weak, but significant variable affecting chronic pain outcomes.

Traditionally it is proposed that the pain experience disrupts personal goals, it compromises skills and resources, leading to untoward psychological consequences (Karoly & Ruehlman, 2006). Affective status is suggested to be interdependent with pain symptoms (Okifuji & Turk, 1998). Our study shows that pain symptoms are weak, but significant predictors of quality of life and mood outcomes. According to present data, adjustment to chronic pain depends primarily on resilience as well as other psychological factors and less on illness variables. It must be noted here that our sample was a rather homogenous group of mainly inactive patients with long illness history. The vast majority of them had permanent pain experience which could be controlled only by medication. During follow-up, pain symptoms increased, with no parallel increase in depression. As explanation, we can propose that even long term physical limitation may not inevitably lead to clinical depression. Resilience

might be a mediator between health deterioration and mood problems, so despite more and more distress resulting from uncontrolled pain, natural trait resilience may contribute to positive adaptation by helping adults sustain access to daily positive emotions, which, in turn, may lead to adaptive recovery from daily stress caused by pain (Davydov et al, 2011). As our patients do not have lower resilience level compared to the general population, it is likely that even long illness history may not undermine resilience.

We suggest psychotherapy of chronic pain patients should be focused on aspects relevant to development of resilience resources. In this framework, it may be essential to encourage relationship building, interpersonal skills, problem solving, and strengthen family ties, particularly in inactive patients (Rutter, 1999). Medical staff may play an important role by helping recognise the early signs of affect disruption and encourage use of self-regulatory resources (Karoly & Ruehlman, 2006, Sturgeon & Zautra, 2010). Based on of our findings, we propose, that even at old age, professional support of resilience may actually lead to increase in quality of life.

The complex interrelationships between different resilience factors, possibly specific to particular health states, remain challenging. Individual resilience should primarily be analyzed within the context of artificial (i.e. group-level) protective factors or barriers (Sameroff & Rosenblum, 2006). Our study adds to understanding the specific context of chronic pain in elderly and middle-aged patients. Further studies are needed to clarify effects of illness variables and give detailed account of specific resilience factors relevant to chronic pain during course of illness.

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