A Patient Specific Approach to Chronic Pain: Development of the Pain-Filter Extension Model and the SH-9TF-P Questionnaire

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Abstract

The complex effects of chronic pain on well-being and quality of cognition were investigated in a clinical setting with a patient-centered value-based insight approach. Preliminary results were presented for development of a self-report instrument, the Subjective Happiness - 9 True/False - Pain (SH-9TF-P) questionnaire for patient specific analyses of chronic pain and structured treatment in a time-limited setting. A review of the literature indicates that thoughts provoked by long standing pain are negatively affected by cognitive processing that operates outside of full conscious awareness, and therefore have influences on an overall level of functioning. This article reports the assessment and treatment developed from the Pain Filter Extension Model. A conceptualization is offered for ways of interpreting a Pain-Role Identity. Outcomes for value added processing are not directly or consciously available to the individual, but are indicated by greater levels of subjective well-being and improved functional levels of cognitive distortion.

Chronic pain is estimated to affect up to 40% of people, and for approximately half of those individuals there are no definite organic causes (Kraaimaat & Evers, 2003). Pain is a dynamic, conflicting, and complex physiological and psychological experience, ranging from acute episodes to chronic disease (Bertakis, Azari, & Callahan, 2004; Cano & Leonard, 2006; Cooper, 2008; Smith & Osborn, 2007). Pain is fundamentally threatening, interruptive, and aversive, and interferes with everyday tasks of life. Furthermore, it provokes an important concept of interest; identity confusion (Van Dammea, Crombez, & Eccleston, 2008). Chronic pain also creates difficulty for understanding how people struggle to make sense of unwanted, stressful experiences, and how they avoid, adapt, or alter the perceived causes of those experiences (Van Damme, Crombez, & Eccleston, 2008).

Since approximately twenty percent of our population is under medical care for pain conditions without an acknowledged cause or origin, decisions of treatment course and medication choice are difficult. Research indicates a need for clearer diagnoses of pain conditions where there is a lack of objective medical criteria. Of the complex determining factors involved in treatment outcomes, catastrophizing appears to be the strongest psychological predictor (Sullivan, Lynch, Clark, Mankovsky, & Sawynok, 2008).

In deciding what represents clinically important improvement, the patient’s experience of pain for understanding the indications is necessary in conjunction with the medical interpretations. In a dynamic manner, pain and its consequences are intrinsically subjective and influenced greatly by a person’s mood, previous pain experience, and coping resources. Our understanding of pain is still deficient in understanding why the extraordinary complexity associated with long-standing pain presents limitations for satisfactory treatment. Success depends on both clinicians’ and patients’ interpretive criteria (Smith & Osborn, 2007; Robinson et al 2005), where the patient’s interpretation is of primary importance. In this research, the goal was to investigate coping with chronic pain by recasting it within the frameworks of cognition, life goals, and self-concept, in relation to a subjective sense of well-being.

Specifically this research compares three distinct patient groups with normal control subjects on standardized measures of subjective happiness, cognitive distortion and pain level rating using a questionnaire and interviews. The SH-9TF-P questionnaire was developed for pain patients referred by medical doctors, with specific attention to the time limited nature of psychological interventions. The questionnaire is an easily administered one page assessment tool that indicates relationships between measures of subjective happiness ratings and cognitive distortions with relevant correlation regarding levels of pain. Assessment supports an effective approach that is more process oriented and based on functional and contextual frameworks.

Literature Review

Cognitive perspectives generally accept that changing cognitions has a corresponding impact on emotional reaction and symptomatic perception. Research indicates two common misappraisals associated with chronic pain:
overestimating the likelihood of a negative event occurring, and catastrophizing the consequences of a negative event should it occur (Moses & Barlow, 2006). Current pain literature indicates the importance of the connections between alteration of comprehensive and accessible thoughts, but how such alterations affect functional behaviour are unclear. A point of importance is that in a cognitive model for emotional disorders, the skills learned by the patient are used prior to emotional provocation whereas chronic pain is both prominent and continuous.

The task of clearly perceiving pain depends on both selecting and enriching sensory information. Accurate identification of the quality of somatic sensation is fundamentally difficult due to primacy of subjective interpretation. As such, it is a focus of disinterest to the biomedical approach, where at a basic level of current standards for pain assessment, inquiry elicits a response on a numerical scale indicating the extent to which pain is experienced and allows for an adjective description of the quality and location (i.e. burning, pressure, etc.). Whereby, the biomedical model facilitates differentiation of pain pathologies. Qualities and levels are subsequently monitored and diagnoses made accordingly; however, it does not address the thought processes associated with the pain experience or functional behaviour associated with cognitive distortion.

Regardless of pain types, McCracken and Gross (1998) reported more chronic pain patients in psychologically based multidisciplinary rehabilitation programs returned to work and saw doctors less frequently than patients in programs which focused primarily on physical strengthening and capacity. The understanding is that patients having participated in psychologically based programs progressed better; however the question remains as to what component of these effective treatments was responsible for the improvement. Research suggests that the primary factor is not a reduction or change in pain level, nor a change in physical capacity due to strengthening. Rather, it is psychological processes such as fear, anxiety, or depression, in relation to the patient’s current overall state of being. For example, McCracken et al (2007) reported that when pain patients’ fear of their situation is effectively reduced, their quality of life increases.

Other factors that have been correlated with positive treatment outcomes are patients’ satisfaction with the treatment, their understanding of it, and seeing positive outcome measures (McCracken et al, 2002). The finding that patient satisfaction with overall care received is a strong predictor of treatment outcome measures indicates that at some level of processing, appraisal dictates the level of success of patient outcomes. However, this processing seems initially to occur at a non-conscious level, affecting core beliefs, as well as at the conscious level of cognitive evaluation where core beliefs are accessible (See Figures 1 and 2). Since the experience of pain is to some degree a psychological representation, it will be modified by cognitive appraisal.
The foundations guiding the current research are in the processes whereby experiential factors mediate the physical symptoms of pain over extended periods. This is the process that formulates individuals’ conscious definitions, which are not easily placed on a continuum of physical to experiential. A state of abnormality exists when patients do not recognise accurate meaning for themselves, and therefore are not able to communicate potentially important understandings with whom they interact. The result is often a state characterized by catastrophic thinking where a sense of helplessness and distortions-amplifying thoughts prevail.

This pattern, a response to the somatic component of chronic pain, contributes greatly to behavioural deficit. Catastrophic thought affects patient functioning not only passively through content and frequency (Vowles, McCracken, & Eccleston, 2008), but more importantly by a context that has a potential of increasing the amount of pain one may be experiencing. Patients experiencing longstanding pain reported increases and decreases in pain, based on the extent of activity limitations that were initially dictated by pain levels. In some cases, this occurs even when association with a specific activity creates anticipation of a pain level. People in a dysfunctional pain state can become depressed, inactive, and preoccupied with physical symptoms (Compas, Haaga, Keefe, Leitenberg, & Williams, 1998). When a patient’s incorrect interpretation of physical sensation is that it is presently, or will be harmful if the current activity level is maintained, a dysfunctional chronic pain state exists. Vowles et al. (2008) indicated such a disruption in behaviour and thought is likely to interfere with other potential influences on behaviour and thus limit response choices.

As it is not apparent to what extent and respect fear of pain causes deviation from a psychological norm, a framework encompassing severe health anxiety has been useful in directing this research. The emphasis is on fear being activated and maintained by misinterpretations of somatic symptoms. In fact, earlier data indicates that there are no unique differences in the physiological responses of pain and anxiety (Keefe & Gil, 1986). As psychological factors play a prominent role in the transition from acute pain to disabling chronic pain conditions (Laekeman, Sitter, & Basler, 2008; Turk & Burwinkle, 2005), differences in how people adjust cognitively to continuous and noxious sensation are of importance.

Stewart, Sherry, Watt, Grant, & Hadjistavropoulos, (2008) conclude that regardless of theoretical perspective, four essential components for understanding anxiety as related to health, and therefore pain, may be considered. First is the affective component, consisting of fear over the somatic sensation of pain. The second and third respectively are the cognitive component that realizes a pain condition with a lack of objective criteria, and a preoccupation with bodily sensations. Lastly is the behavioural component that involves bodily checking and reassurance seeking. Accordingly, fear of pain develops that is context dependent in the early phase, and serves to direct attentional focus (Stewart et al, 2008) leading to a generalized sense when the pain experience is chronic.

Stewart et al (2008) indicate that anxiety sensitivity would be the most appropriate cognitive behavioural approach to the treatment of conditions involving elevated health anxiety. Studies among adult pain patients suggest that coping styles like withdrawal, fear, worrying, and catastrophizing are associated with poorer outcomes such as increased psychological distress and decreased physical functioning (Kraaimaat & Evers, 2003). When pain is interpreted as threatening, pain related fear will likely develop (Roelofs et al, 2004), and be more disabling than the pain itself (Laekeman et al, 2008). This pattern supports a negative view of self and maintains chronic disability, disuse, and depression. Both depression and disuse are associated with decreasing pain tolerance and therefore promote the painful experience, increasing the cycle of fear and avoidance (Cooper, 2008).

Other research has highlighted additional cognitive factors that are central for understanding the process of pain such as rumination (Lyubomirsky, Sousa, & Dickerhoof, 2006), magnification and helplessness (D’Eon et al., 2004), catastrophic thinking, depression, anxiety (McCracken et al, 2008; Soares & Grossi, 2000) meaning and chaos (Bullington et al, 2003). From these, one can derive that what is needed is a way to investigate how patients with chronic pain concretely live and understand their specific life-world situations (Bullington et al, 2003).

Research in the area of pain catastrophizing has focused specifically upon the three principle factors of rumination, magnification, and helplessness (D’Eon, Harris, & Ellis, 2004). Pain, like other areas where mood-states can be affected by environmental and situational criteria, appears to be an area in which people have strong mood-related beliefs that are not entirely accurate. Therefore, the extent to which people have insight into what makes their moods fluctuate is of great importance (Smith & Osborn, 2007; Watson, 2000). This would require ones’ questioning the validity of held beliefs in order to be more accurate of their reality. From a clinical sense, this addresses the question of how fear of pain develops for the individual.
Behavioural deficit is a key factor associated with pain conditions, which are often interpreted as symptoms of emotional difficulty, especially when they create hardship for close others (Cooper, 2008). Whether or not behaviour is considered normal or symptomatic of disorder depends on the theoretical perspective from which it is considered. Categorizing behaviour as symptomatic of a disorder involves a complex set of criteria. Presently, there are no known studies that look at patients’ flexibility in formulating pain problems. Remarkable examples are illustrated by reports of patients with cancer that initially present with only psychological symptoms. The symptom-disease model is useful here because organic pathologies can exist, and may eventually be verified independently of psychological symptoms.

In contrast, psychological pathologies simply represent hypothetical abstraction from behavioural phenomena. For example, a model of misdirected problem solving positions pain behaviour as part of a class of phobic behaviours (Eccleston & Crombez, 2007). Of interest to pain research is the higher apparent incidence of pain symptoms in a psychopathological population, as compared to pain in general populations (Birket-Smith & Mortensen, 2002; Block, personal communications, 2009). Other research has indicated that the number of pain conditions or pain sites was a risk factor for psychiatric disturbance in pain patients (Linder, Poston II, Haddock, Foreyt, & Ericsson, 2000). Consistent with the Stress-Pain hypothesis presented by Keefe and Gil (1986), here it is possible to hypothesize that a clear understanding of
an individual’s principles of learning will account for interpretation of their physical state; an explanation in terms of physical symptoms would be complimentary. As with any illness or disorder, informing a patient that they have symptoms not fully accountable by physical aetiology is not likely to alleviate the symptoms, however, may be a necessary component in the process of healing. Bullington et al (2003) refer to this as the first step in moving from chaos to meaning. A self-relevant understanding of pain is important for the patient’s successful integration of body and self (Affrell et al, 2007).

Several articles have suggested the importance of considering the concept of self and identity in relation to pain (Leeuw, Goossens, Linton, Crombez, Boersma, & Vlaeyen, 2007) and identify this as a needed focus of study (Smith & Osborn, 2007). Conceptualization of a pain-role identity helps determine the degree to which behavioural deficits interfere with a person’s normal behaviour. Chronic pain has the potential to change an individual’s concept of self and their experience (Affrell et al., 2007). Jackson (2005) noted that certain features of chronic pain result in the sufferer being seen to breach the categorical division between mind and body and confound the codes of morality surrounding sickness and health. As chronic pain is not a typical developmental component, people are not likely to have the appropriate behavioural skills to deal effectively with their physical state. Pain results in learned deficiencies in many aspects, resulting in a performance deficit due to reciprocal aversive conditioning and improper self-guided learning.

Cause becomes elusive as symptomatic behaviour can be explained in terms of social learning and value-based theory equally, as by medical analogy. Any focus toward hypothetical internal forces allows for theories of psychopathology to influence the way we understand the pain experience when viewed from the individual history of maladaptive behaviour. Such theory is called upon when there is clear evidence that psychosocial risk factors play a role in pain symptoms, when emotional changes accompany severe chronic pain, and when the goal for therapy is long-term adaptation to pain as well as symptom relief (Compas, Haaga, Keefe, Leitenberg, & Williams, 1998).

**Pain-Role Identity**

Stable complex patterns of behaviour are in part transmitted through observation of role models. As pain behaviour is often reproached, good role models may not communicate their pain behaviours as such. Pain is the condition that elicits the pain-role, not alleviating pain directly; however, the role is the means for having pain responses validated by important others. With constant high pain, it is common that awareness be directed by the pain sensation rather than non-pain standards. A self-aware person may vary the extent to which they respond or act according to their socially sanctioned personal standards and beliefs or to their pain affect. Constant pain is an experience in which the sufferer increasingly recognizes their previously accepted self; whereby thoughts, memories, and emotions express the perception of pain. Consequently, inadequate modeling and insufficient and poorly managed reinforcements are likely to produce a pattern of behavioural deficits. Kut et al. (2007) reported that modulation of self-perceived role identity in emotionally meaningful settings may greatly contribute to a beneficial influence on pain management.

An individual pain-role is based in cultural standards, or accepted characteristics of being in a pain state. It is then a result of the complex interlocking set of beliefs which make up a person’s self-concept or personal identity. The degree of matching between the pain-role standard of the culture and the individual’s assessment of his or her own pain-role identity attends to the question of how much pain they are experiencing.

The strength of the pain-role identity is considered a function of the discrepancy between the personal inventories made of their own pain-typed attributes in relation to the ideal attributes prescribed by society. A positive self-identity is maintained by having more culturally approved attributes; the discrepancy is smaller, and conversely a negative image results from a wider gap between ideal and actual attributes possessed. This author’s research supports this, as indicated by greater variation between subjective well-being and errors in thought, or cognitive distortion. Research (i.e., Rusu & Hasenburg, 2008; Vowles, McCracken, and O’Brien, 2011) indicates significant differences between pain groups in variables such as positive mood and thought suppression. Here, the understanding is that while thought suppression is at work disabling one from activity, thoughts that are active have more to do with locus of control and errors in thought that are not related to pain, but show to be correlated with and influence pain experience. A greater discrepancy between personal and ideal attributes makes the pain-role identity more vulnerable as self-concept shapes itself accordingly. Positive reinforcement leads to a functional/adaptive self-concept with less variability in the self-ideal discrepancy.

This understanding of the self-ideal discrepancy has been used as a theoretical framework for gaining better understanding for the roles of cognitive and motivational processes in well-being. For example, Conway and Giannopoulos’ (1992) replication of earlier research reported that people less aware of their own thoughts and feelings have lower self-esteem but are more self-reflective in general. Here, it is suggested that greater self-reflectiveness is due to unrealistic self-understanding. Their research indicated that lower self-esteem is associated with greater self-reflectiveness.
and that self-reflectiveness and internal-state awareness are correlated. Furthermore, both self-esteem and self-reflectiveness have significant correlational values with depression (Conway and Giannopoulos, 1992).

Muraven (2005) reported that for depressed individuals there is a relative inflexibility of attentional resources that seems to explain their poorer cognitive performance. Accordingly, people who are depressed use less information and ineffectively integrate what information they have when making decisions. This is thought to result from a reduced ability to shift focus of attention to external matters as easily as when not depressed (Knapp & Deluty, 1987; Conway & Giannopoulos, 1992). This model applied to chronic pain patients suggests that they would have the same attentional resources as normals; however, due to their pain more attention is spent thinking about self-related criteria. In addition, difficulty re-focusing attentional resources to other relevant information consequently reinforces their maladaptive pattern of thought. Furthermore, individuals who cannot stop thinking about themselves are more likely to engage in catastrophic thinking and behaviour as self-awareness is likely to be more avoidance based or aversive when individuals cannot stop being self-aware (Muraven, 2005), thereby adversely effecting self-concept and role identity.

Soares and Grossi (2000) reported that the relationship between pain intensity and self-esteem is to some extent importantly mediated by levels of emotional distress as measured by The General Health Questionnaire (GHQ-12), where self-esteem alone had little to do with pain intensity. A recent cross ethnic study reported findings consistent with the biopsychosocial model in that both distress and pain are positively interrelated, and are both positive independent indicators of disability (Edwards, Moric, Husfeldt, Buvanendran, and Ivanovich, 2005). As chronic pain disability has high correlation with reduced self-esteem, this understanding has important implication for the present research as both self-esteem and pain have strong mediating effects on a person’s sense of well-being. Lyubomirsky, Tkach, and DiMatteo (2006) reported that a sense of satisfaction in life and not suffering from pain were strong predictors of self-esteem among populations who felt optimistic, sociable, being in a good mood, and feeling satisfied with life, which were also predictors of happiness. They indicate further that research has shown high correlations for happiness and self-esteem, however, they point out that their findings support the understanding that happiness and high self-esteem can exist independently.

This suggests that low self-esteem by itself is not a strong predictor of chronic pain. Rather, the physical state of chronic pain produces the reduced self-esteem, independent of personality characteristics, that is contributory to a disabling chronic pain state. Bullington et al. (2003) concluded that chronic pain patients suffer from an experience of chaotic disintegration; a disorientation that leads to a problematic sense of self. A person’s developmental history as a characterization of their current self-concept in the context of pain may be a function of their cognitive distortions and catastrophizing behaviour as related to pain and the values associated with these processes.

In summary, cognitive change has a corresponding impact on both emotional and physiological presentation. Misappraisal, catastrophizing, and then rumination appear to be important mediating factors related to problematic cognitions. Better outcomes in this regard reduce the negative impact of pain when there are no physical changes that can account for such improvement.

The Current Research

This research compares patients with normal control subjects on standardized measures of subjective happiness, cognitive distortion and pain level rating using a questionnaire and interviews. The questionnaire SH-9TF-P is a short, 14-item measurement consisting of 4 subjective happiness questions scaled for a mean from zero to seven, 9 true/false that indicate types of cognitive distortion, and a 0-10 pain scale. The cognitive distortions component of the questionnaire assesses dichotomized thinking, locus of control, rumination, and helplessness, in a language juxtaposed to a sense of self in the first person. In the current research, pain patients’ subjective happiness ratings and cognitive distortions have high negative correlation. Findings here are supported by other current research, for example Vowles and McCracken (2008) report that therapeutic approaches that are being developed are more process oriented and based on functional and contextual frameworks. In addition, information from pain subjects on their experience of pain was collected using semi structured interviews based on the subject’s responses to the questionnaire.

Hypotheses

Three main hypotheses were examined in the present research to address pain levels, subjective happiness, and cognitive distortion. Firstly, it was hypothesized that for a general population, a normal distribution for both happiness ratings (SHS) and cognitive distortions (CD) would be observed; additionally, a positive correlation was expected between SHS and CD.
Secondly, compared to the young adult normal population, it was hypothesized there would be different levels of subjective happiness and cognitive distortion for the pain group, the senior pain group, and for senior normals. Differences and directions were expected to vary in relation to age, gender, and pain levels. Here, it was hypothesized that for these three groups combined, there may be an inverse curve where the proportion of CD scores would be slightly higher at both ends of the distribution. More specifically, it was hypothesized that the young pain group would score significantly lower on SHS in relation to pain scores and higher on CD than the other groups of subjects. The senior normal group, as compared to the normal population, was hypothesized to have a similar SHS and lower overall CD rating. It was expected that the senior pain group would indicate lower SHS than normals, but not significant differences in CD.

Lastly, influence due to amount of pain was predicted to be small if significant for the entire pain group, but some significant differences between subjects were expected. It was expected that the time related to being in pain would have more of an impact than the actual pain level on both SHS and CD. However, for the senior pain group, it was hypothesized that pain would affect SHS, with less influence on CD than the young pain group.

Methods

Participants

Four different groups were used for a combined sample $N = 500$, 61% female, with a mean age of 34. The first group consisted of normal subjects, $n = 278$, selected through a snowballing procedure by 64 university students taking a 6 credit psychology course in an international setting in Estonia. This was a culturally diverse sample, with most subjects being from Estonia, ethnic Russian Estonia, Latvia, Lithuania, Russia, and Finland, and less frequently from Sweden, France, Germany, Canada, and Great Britain. Ages ranged from 20 to 35 with a mean of 26, and this sample was 51% female.

The second group was senior normals, $n = 63$, 82% female with a mean age of 68. This sample was derived from seniors who were taking continuing education courses in a university setting. Subjects were not told that the questionnaire would be used for pain research until after completing it.

The third and fourth groups were patients presenting with pain at primary medical care facilities who, when asked by a general practitioner if they would like to take part in a chronic pain study, volunteered to be interviewed and fill out the questionnaire. It is only the age that separates this sample into two groups. The third part of this sample, $n = 30$, made up the senior pain group with a mean age of 62 (range from 48 to 77), and this group was 93% female. The fourth group is the young pain group, $n = 130$, with a mean age of 29 (range from 21-39), and were 66% female. All patients in the pain groups either had been diagnosed with depression, or scored 14 or higher on the Beck Depression Inventory II (English, oral administration).

Instrumentation: Development of the SH-9TF-P

The Subjective Happiness Scale, 9 True/False, Pain Questionnaire (SH-9TF-P) was initially used as a short form assessment tool for chronic pain patients limited to approximately five days stay in a health clinic/hotel catering to medical tourists. The first section of the questionnaire is a four part subjective happiness scale developed by Lyubomirsky and used with permission. Lyubomirsky (2001) discussed the role of cognitive and motivational processes in well-being and highlighted the implications of a construal approach for its enhancement. Use of this scale in pain research is promising as cognitive and motivational processes are of importance for understanding the experience of chronic pain. Winefield and Chur-Hansen (2004) indicated that this is especially important for people with undiagnosable physical symptoms. However, ways of accessing the cognitive factors that are important have still evaded pain researchers and are not addressed by the subjective happiness scale alone.

This understanding led to the use of short true and false questions thought to identify cognitive distortions; the hypothesis being in an ideal situation, all responses would be false indicating the person has no cognitive distortions or thinking errors. Furthermore, the true/false questions chosen were discussed as being potential core beliefs for rumination, locus of control, and dichotomized thinking, and combinations thereof could be interpreted as indicating helplessness, magnification, depression, and anxiety while allowing a quick insight to and foundation for interview questions of how a person interprets, interacts with, and understands their life-world situation. The last part of the questionnaire is the 0 to 10 pain scale often referred to as the numerical rating scale (NRS).

After the basic concept of the questionnaire was formed, presentation with a thorough theoretical orientation was given to a class of psychology students as a course project. Questions for the cognitive distortion part were discussed in full.
detail for exhaustive possible individual and combined meanings and then either rejected or accepted for use. First drafts of the questionnaire that included the SHS portion were administered twice to n = 50 people within the university setting (assuming normality) and results analyzed; data for CD indicated slightly skewed distributions for CD and an SHS comparable to data provided by Lyubomirsky. Several questions were removed from the CD portion as a result and some changes to wordings of others finalized the version as it was used in this research. The questionnaire was presented to several professional psychologists and a number of psychology faculty members for discussion of content and implication of use. Translations were then made into respective native languages of the students involved in the project and independently reversed translated for accuracy check. Students were then instructed on how to administer the questionnaire to general populations and sent out to collect data from 5 to 8 personal contacts. Data were returned to the author within a two-week period and the results discussed. CD counts indicated a close to standard normal distribution and SHS means were again comparable to what would be expected from previous research of the SHS in English and translated versions for normal populations.

Procedure

Data collection for this research began in the early part of 2004. For the general population, subjects were asked to answer the questions and return it to the person administering it. Pain scores were not taken from this group. Pain samples were collected from patients in primary medical facilities after they were asked if they would take part in chronic pain research. Subjects were asked to answer the questions and instructed to mark the number on the scale that correlated to the level of all pain being experienced at the present time. Collection for the pain sample continued over a three year period. Interviews were conducted in English and if a translated version was available, questionnaires were administered in the patient’s native language by this researcher. Some pain and general population sample data were also collected by correspondence from cooperating faculty and general practitioners using the English and Estonian language versions.

Statistical Analysis: Tests of Hypotheses

A description of participants using a data set cross-tabulation for sex differences indicated males were overrepresented for the general population, underrepresented for the senior normals and senior pain groups, but did not differ significantly from female representation in the young pain group (Adjusted Residual 5.5, -3.7, -3.7, and -1.4 respectively, p < 0.0001). The combined sample means for SHS were not significantly different (female M = 4.5, p < 0.06, male M = 4.9, p < 0.08) nor for CD (female M = 3.74, p < 0.097, male M = 3.9, p < 0.13); however, both were higher for male subjects. One way ANOVA confirmed the first hypothesis, indicating a relatively standard normal distribution for the general population on both SHS and CD scores; SHS M = 5.18 (SD = .91), CD M = 4.04 (SD = 1.65). Furthermore, a Pearson two-tailed test revealed a significant, but small correlation between SHS means and CD means (r = .15, p < 0.05).

The second hypothesis of comparing the general population for significant differences in levels of SHS and CD to the young pain group and the senior pain group was confirmed. For senior normal’s as compared to the general population there was no significant difference in SHS as predicted, however, inconsistent with the hypothesis, the difference between the general population and senior normal’s on CD was not significant at the p < 0.05, although the difference was in the direction predicted (p < 0.31). There was a significant difference in SHS means of .67, (p < 0.05) between the general population and senior pain group.

The general population and the young pain group indicated large significant differences in SHS means of 1.65, (p < 0.0001) and CD means of 1.24, (p < 0.0001). In sum, the young pain group has a significantly lower SHS mean than the general population, senior normals, and senior pain group. However, the young pain group had a significantly greater CD value (lower CD mean) than the general population, senior normals, and senior pain group.

It was also hypothesized with the entire population as SHS increased, so would CD, which was supported by the data. Pearson two-tailed test revealed a significant correlation between SHS means and CD means (r = 0.36, p < 0.01). In addition, there is a positive correlation between CD means and age (r = 0.17, p < 0.01). A positive correlation here indicates that with age, CD value decreases.

For pain scores, as expected there was a significant negative correlation between pain scores and age (r = -0.21, p < 0.01), quite a large negative correlation between SHS means and pain score means (r = -0.58, p < 0.01), and a negative correlation (r = -0.28, p < 0.01) for pain and CD means, which indicates cognitive distortion responses increase as pain increases. Note: CD means are scored inversely to CD value. With pain score as the dependent variable for comparisons across groups using a Tukey HSD Multiple Comparisons One-way ANOVA procedure, significant differences were
indicated between all three groups from whom pain data were collected. Age and pain are reliable indicators for higher levels of CD and lower SHS. One-way ANOVA indicated an $F$ ratio of $F = 5.12$ ($p < 0.001$), for the difference between CD means for each group: the young pain group ($M = 7.21$, $SD = 1.55$) is higher than the general population ($M = 5.96$, $SD = 1.65$), senior normals ($M = 5.57$, $SD = 1.75$), and senior pain subjects ($M = 5.3$, $SD = 1.70$) (all $p < 0.001$).

Correlations between groups reveal some predicted information, as well as providing further insight on the complexity of a pain population that warrant additional research with this instrument. More specifically, comparison of the correlations between the general population (gp) and the young pain (yp) groups indicate relevant findings in regard to CD on several specific items on the SH-9TF-P: gp indicated significantly less than yp that ‘other people’s behaviour is wrong’ when related to the concept of slander (gp $r = -0.25$, $p < 0.001$; yp $r = 0.15$, $p < 0.001$). Significant correlations also show far more often that yp indicate ‘other people make them unhappy’ in relation to slander, inconsiderateness, and fault of the other person, and that the yp group is far more unhappy in relation to ‘not getting what they want’. In addition, and as predicted, far more of the yp group also indicate higher CD for both rumination questions: thinking about things they do not have control over and contemplating a lot about the past. Yp indicate significantly more than gp that it is other people’s fault that their feelings are hurt, thus indicating less responsibility for their own emotional states.

**Discussion**

This is the first use known to this author of a first person subjective well-being approach for assessing and treatment planning of chronic pain patients. Findings suggest this instrument offers an alternative way of specificity and depth of psychological assessment emphasizing the complexity of chronic pain problems as related to self for multidimensional assessment and treatment. The SH-9TF-P indicates clear usefulness with chronic pain patients, unlike many personality specific psychological measures that have been used. The question is not about whether chronic pain patients have psychological problems in dealing with their situation, but where and how they affect the individual’s way of reconnecting with self and world in a changed complex physiological and existential experience.

That which is of importance is a clearer view of the foundations for catastrophic thought or depression for example, and how they are maintained, prolonged, and or increased. Results from this research indicate that this questionnaire reveals criteria of interest for dealing with individual patients in a chronic pain setting and is therefore worthy of further development. However, given the subjectivity of pain indicated by combinations of response type, caution should be used in generalizing findings from this research to a larger pain population without further validation.

Within an interdisciplinary biopsychosocial perspective, psychological interventions are directed at the way pain is experienced by the individual (Gonzales, Martelli, & Baker, 2000). This includes the feelings and thoughts associated with it as well as psychophysiological changes that accompany it; for example, muscle tension due to stress and fear reactions relevant to pain. Pain is considered the more pronounced, the more it affects the mental processes and behaviour of the affected person. For this, the following factors are of importance: duration, number of treatments/doctor visits, psychological impairment, family and social problems, and work related problems (Frischenschlager & Pucher, 2002).

In this research, pain is understood as an unconditioned stimulus that leads to a conditioned response. Through value processing (see Figures 1 and 2), any subjective stimulus that would otherwise be neutral may become associated with the complex experience of pain and the consequent reactions are a conditioned pain response. Afrell et al. (2007) reported that the body is our access to the world and every change of the body, such as through illness or injury, changes our experience of the world. Due to the complexity and the associated physiological responses that become connected to the pain role identity, the assessment and treatment of chronic pain are complex and multidimensional. For understanding how meaning controls pain, further understanding of how the body is an aspect of self-identity, affected by the extent to which we can rely on the body, our awareness of body, and the quality of the perceptive flow from it (Afrell et al., 2007). The perception of the information coming from the body is filtered through understandings. Research on the use of analgesics for example, has shown that negative affect such as depressive symptoms and catastrophizing reduce their effectiveness on pain (Sullivan, Lynch, Clark, Mankovsky, & Sawynok, 2008). The findings of a great deal of research indicate that people with chronic pain relate in individual ways to their body.

The present research understands that chronic pain sufferers exhibiting higher levels and complex combinations of psychological distress and maladaptive cognitions must be approached more so from a novel individual perspective. Here, as this research has shown individual differences in pain subjects highlight specific areas of potential intervention. Direction of treatment is dictated by cognitive distortion and, thought content and processes that are related to them. Depth of treatment goals are dictated by SHS and CD values, and higher pain levels. Effective treatments are those that induce a
state of possibility by directing the patient into greater potential for beneficial change from a perspective that is patient specific. This is supported by research, for example Vowles, McCracken, and O’Brien’s (2011) findings that as a patient’s fear of their pain is reduced their life-world situation begins to improve.

As this research was not based on a random clinical trial, it can be largely understood that a level of heterogeneity exists as with patient samples that typically present in clinical practice. Diversity among patients is expected in populations accessed by health care for psychological interventions, as they are not usually identified on the basis of DSM-IV criteria (Compas, Haaga, Keefe, Leitenberg, & Williams, 1998). Data collected from heterogeneous samples as used here also highlights the need to identify subgroups of patients that may differ in their response to specific psychological treatments and suggests an important role of self-perceived role identity, and its associated emotional status, on pain perception. Furthermore, the concept of acceptance is not highlighted in this research directly; rather, with chronic pain it is understood as a consequential desired result based more in re-evaluating (Vowles & McCracken, 2008), for example life goals and creating greater meaning and understanding of a sense of self. Hence the concept of value added processing: greater and more applicable understanding of the complexities of physical limitations in a realistic sense as it pertains to one’s life-world situation. Afrell et al. (2007) clearly iterate how a patient stands in relation to acceptance is reflected in their attitude toward their life situation and the degree to which their pain body is integrated into the self. Therefore, acceptance is a central concept for dealing with pain; however, there is not one straightforward process that people take to achieve it. Accordingly, the integration of the pain body into the self is a necessary component of acceptance (Afrell et al, 2007).

Somewhat interesting were the findings that empirically, there do seem to be clusters of CD responses observed in each of these groups. One of the more interesting findings is that when comparing the overall highest and overall lowest levels of CD, on a number of variables there were no significant between group correlations, but within groups there were ranges in both directions with significant interactions with SHS. From a phenomenological perspective of the individual, different combinations of responses indicate different levels and categories of subjective distress.

Results from this study are consistent with other research that associate avoidance strategies and pain (Gonzales, Martelli, & Baker, 2000) and for avoidance strategies to be associated with greater difficulties in light of internal versus external personal focus (McCracken et al. 2007). Findings also support previous research that chronic pain patients have a lower sense of responsibility for personal change and look outward for that responsibility (Karlin et al, 2005). And finally, they are consistent with other research supporting the need for more flexible cognitive strategies for coping to increase adjustment to chronic pain (e.g., Dahl et al. 2004; De Vlieger et al. 2006; Grossi, Soares, & Lundberg, 2000; McCracken et al. 2004, 2005).

For pain patients, results here show that certain combinations of responses are indicative of more careful clinical scrutiny, especially when controlling for depression. For pain patients, subjective happiness ratings and cognitive distortions have a high negative correlation. Pain data compared respectively to that of known community levels and for pain patient levels, which are clinically useful indicators. These results strongly suggest that there are distinct patterns of responding in each group of subjects, and that an appreciation of these differences can lead to a deeper understanding of pain management for individuals in the clinical setting.

References


### Appendix A

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Score</th>
</tr>
</thead>
</table>

1. In general, I consider myself:

Not a very happy person

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>A very happy person</th>
</tr>
</thead>
</table>

2. Compared to most of my peers, I consider myself:

Less happy

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>More happy</th>
</tr>
</thead>
</table>

www.existentialpsychology.org
3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>A great deal</th>
</tr>
</thead>
</table>

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>A great deal</th>
</tr>
</thead>
</table>

Answer the following questions True or False. Spend little time on each question.

- True  False – I sometimes think other people's behavior is wrong.
- True  False – I have been known to say, “That is the way I am.”
- True  False – Other people often make me unhappy.
- True  False – Often times I find myself thinking about something I do not have control over.
- True  False – I tend to think and contemplate a lot about the past.
- True  False – Often times my feelings are hurt by other people's inconsiderateness.
- True  False – It is a healthy response to feel wounded by slander.
- True  False – It is other people's fault that they hurt my feelings; they should change.
- True  False – When I do not get what I want, I often get unhappy.

If ‘0’ is no pain and ‘10’ is the most pain you’ve ever experienced, rate your pain now

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

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