Development of a Pain Attitudes Questionnaire to Assess Stoicism and Cautiousness for Possible Age Differences

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This study aimed to develop a pain attitudes questionnaire (PAQ) and examine its reliability and validity for use in assessing the constructs of stoicism and cautiousness relevant to pain perception. The questionnaire was administered to 373 healthy community-dwelling individuals who were subsequently divided into four age groups to test for differences in stoicism and cautiousness, two attitudes that have previously been claimed to influence pain perception and report among older adults. Factor analysis revealed that two dimensions of stoicism and two dimensions of cautiousness are measured by the scale, with reticence and superiority characterizing the first construct and self-doubt and reluctance characterizing the second. There was support for the scale’s reliability and validity. Age-related increase in degree of reticence to pain, self-doubt, and reluctance to label a sensation as painful was found, emphasizing the need for careful consideration of pain attitudes in older patients who may underreport their pain symptoms.

The importance of beliefs and attitudes in shaping how people respond to pain has been acknowledged for some time (Parmelee, 1997; Rybstein-Blinchik, 1979; Strong, Ashton, & Chant, 1992; Turk & Rudy, 1986, 1992). This concurs well with the view that pain is a multidimensional experience involving sensory, emotional, and cognitive components (Melzack & Casey, 1968). To date, the investigation of the role of cognitive factors in pain perception has been mainly limited to young adult populations. Recent evidence has suggested that the experience of pain in older adults might differ from that of younger adults (Helme & Gibson, 1997), but the importance of cognitive factors in accounting for such age-related change has been somewhat neglected.

A growing body of literature is, however, beginning to explore the mediating role of attributions, beliefs, and attitudes in pain perception relevant to older people. A study by Stoller (1993) examined causal attributions of health-related symptoms in a sample of 667 community-dwelling adults age 65 and older and found that about 43% of the sample attributed joint or muscle pain to the normal aging process. In contrast, in another study Leventhal and Prohaska (1986) found that only 21% of elderly participants age 60 and older, compared with 36% of young adults age 20–39, attributed aches and pains to a specific disease. Given similar pathology, Mechanic and Angel (1987) noted that elderly people did not complain of as much back pain as might be expected when compared with those in other, younger age groups. Using a focus-group approach, Yates, Dewar, and Fentiman (1995) reported that elderly people often showed a general resignation to the presence of pain, an ambivalence about the benefit of any treatment for pain, and a reluctance to express pain. These attitudes may help to explain why pain in older persons is often underreported and left untreated. On the basis of these findings, it appears that with advancing age, people tend to be reluctant to express their pain, show greater acceptance of pain, and perceive pain as due to normal aging. In fact, based on these observations, many clinicians and pain researchers have suggested that older adults are perhaps more stoic to pain (Foley, 1994; Helme & Gibson, 1997; Hillier, 1990; Portenoy, 1987; Portenoy & Farkash, 1988). Hofland (1992) argued that people who are brought up in a culture that stresses stoicism would rarely complain of pain as it would be a sign of weakness. It is possible that, compared with young people, older generations were generally brought up in a culture where stoicism was emphasized, thus making them more willing to tolerate mild aches and pains. This is consistent with the findings of Kunkel and Williams (1991) that elderly people are generally less expressive of emotion and discomfort, which led Kunkel and Williams to conclude that self-reliance and stoicism may be abiding themes for many elderly people. Recent evidence of the tendency of older adults to portray themselves in a positive light in relation to attitude scales appears to suggest that one reason for stoicism might be social desirability. Gibson (1997) found evidence of an age-associated response bias when using a self-report measure to examine age-related changes in mood states in older adults. Interestingly, despite the prevalence of the view that older adults are more stoic than young adults, to date no one has attempted to provide direct empirical evidence in support of this view.

Laboratory-based evidence using signal detection techniques has shown that psychological response bias or willingness to label a sensation as painful may be another important attitudinal/cognitive factor that characterizes an
older person’s response to pain. Using noxious radiant heat stimuli, Clark and Mehl (1971) found that middle-aged adults (age 30–63 years) used a more stringent response criterion for reporting pain when compared with young adults (age 18–28 years). Such response bias has also been found by Harkins and Chapman (1976, 1977) when using noxious electrical stimulation. They also found an interaction effect between level of stimulus intensity and response bias, with age differences being most pronounced at low-intensity stimulation. In contrast, at high stimulus intensity, elderly participants were just as willing or even more willing than young participants to label a sensation as painful. This finding is consistent with the work of Botwinick (1978), which demonstrated that older adults tend toward conservatism and cautiousness in response patterns. In other words, with advancing age, people need a higher level of stimulation before committing to a response, possibly reflecting a lack of confidence in their own sensory efficiency. Such response bias is manifested in perceptual tasks as an increase in the threshold for report of a sensation, including pain. To date, evidence for the role of cautiousness (psychological response bias or willingness to label a sensation as being painful) in pain perception of older persons is still very limited, and this issue deserves further examination.

Together, the findings cited above point to the possible role of cognitive factors, including beliefs and attitudes, that may act either independently or in combination with physiological factors to account for altered pain perception and report among older adults. If attitudes such as stoicism and cautiousness were more common in adults of advanced age, then older adults would be more likely to underreport pain, particularly mild pain. Although a number of studies have alluded to the contribution of attitudes like stoicism and cautiousness in explaining age differences in pain response, to date no direct attempt has been made to formally assess such attitudes.

The aims of the present study were (a) to develop a scale to assess pain attitudes such as stoicism and cautiousness; (b) to determine the underlying dimensions of the scale, using a factor analytic approach; (c) to examine the internal consistency and retest reliability of the pain attitudes questionnaire (PAQ); (d) to examine the discriminative validity of the scale by looking at the association between age, PAQ scores, and social desirability scores; and (e) to test for age differences in stoicism and cautiousness.

**METHODS**

**Participants**

The sample consisted of 373 relatively healthy community-dwelling adults (age 17–91 years, $M = 49.25$ years), of which 220 (59%) were women and 153 (41%) were men. The participants were recruited from a number of sources, which included two senior citizens clubs ($n = 57$), two local Baptist churches ($n = 92$), and two university campuses ($n = 167$); the rest were recruited from the volunteers register of the National Ageing Research Institute ($n = 57$). All participants were Australian by birth or long-term Australian residents from an English-speaking background. Participation in the study was entirely voluntary. Of those who were eligible, approximately 88% agreed to complete the questionnaire. For purposes of analysis, the sample was divided into four age groups with 154 (41.3%) being younger than 41 years old, 55 (14.7%) being between 41 and 60 years old, 136 (36.5%) being between 61 and 80 years old, and 24 (6.4%) being older than 80.

**Scale Development**

Items were generated on the basis of a review of past literature of the constructs on stoicism and cautiousness. A subset of the items were incorporated from an un validated pain beliefs questionnaire, developed in this laboratory using a focus group approach. The pooled items were then reviewed by an expert panel for content validity (Lynn, 1986), and items with high interrater reliability were retained to form a 27-item questionnaire, which was rated on a 5-point Likert scale with 1 as strongly disagree and 5 as strongly agree (see the Appendix). The questionnaire consisted of 14 stoicism items (Items 2, 4, 6, 10, 12, 16, 17, 18, 19, 21, 22, 23, 24, 25) and 13 cautiousness items.

**Procedure**

All participants were given the self-administered questionnaire to complete individually or in small groups, and completion took less than 15 min. The older adults were given a large-print version for ease of reading. A sample of 79 participants ($M = 68.2$ years, $SD = 15.7$, range = 24–91 years) were retested 2 to 4 weeks later to ascertain reliability. Another subsample of 82 persons ($M = 68.4$ years, $SD = 15.0$, range = 25–91 years) completed the short version of the Marlowe-Crowne Social Desirability questionnaire (Reynolds, 1982) to measure participants’ tendency to portray themselves in a socially desirable manner.

**RESULTS**

**Factor Analysis of the PAQ**

An iterative principal-components factor analysis with oblique rotation was carried out to examine the factor structure of the scale. Six factors were identified with eigenvalues exceeding 1, based on Kaiser’s criterion, and these factors explained 57.1% of the total variance. However, an examination of the scree plot and percentage of variance accounted for by lower order factors suggested that a four-factor solution may be more interpretable. A four-factor solution was attempted, and Cronbach’s alpha reliabilities were computed for the subscales based on item clusters for each of the four factors. The alpha reliabilities revealed that Items 7, 12, 20, 21, 24, and 26 reduced the scale’s internal consistency and hence were excluded from further analysis. The final items remaining were subjected to another principal-components analysis, and the subsequent solution yielded four factors that accounted for 56.3% of the variance.

The four-factor solution was an extremely well-defined simple factor structure, with items belonging to the two predetermined dimensions of stoicism and cautiousness being classified correctly under each factor. Interestingly, items of stoicism were loaded on two separate factors instead of one primary factor, and the same was true for cautiousness items. Factors 1 and 4 represented the two Stoicism dimen-
sions and were labeled Stoic–Reticence and Stoic–Superiority. The two Cautiousness dimensions, as represented by Factors 2 and 3, were named Cautious–Self-doubt and Cautious–Reluctance. Table 1 shows the percentage of variance accounted for by each factor, the factor loadings for the items of each factor, and the Cronbach’s alpha reliability of each subscale.

**Internal Consistency and Retest Reliability of the PAQ**

The internal item consistency of the PAQ subscales ranged from good to excellent, with Cronbach’s alpha coefficients of 0.75 for Cautious–Reluctance, 0.78 for Stoic–Superiority, 0.81 for Cautious–Self-doubt, and 0.86 for Stoic–Reticence. Retest reliability of the PAQ subscales was analyzed on the basis of a sample of 79 participants split at age 60 years into two age groups instead of four, given that the youngest group (20–40 years) and the oldest group (above 80 years) had very small cell numbers. Pearson’s coefficients revealed that the retest reliability of the subscales ranged from moderate to high for both age cohorts (for young vs. old adults, respectively: 0.92 and 0.71 for Cautious–Reluctance, 0.91 and 0.80 for Stoic–Self-doubt, 0.86 and 0.84 for Stoic–Reticence, and 0.87 and 0.73 for Stoic–Superiority; all coefficients were significant at \( p < 0.001 \)). Age differences in reliability coefficients were examined using Fisher’s Z-transformation procedure, and the results indicated no significant differences in any of the subscales. A multivariate analysis of variance (MANOVA) conducted separately for each age group also revealed that the mean subscale scores for the second test session were not different from those of the first administration (young, \( p = 0.391 \); old, \( p = 0.559 \)).

**Intersubscale Correlations and Discriminative Validity of the PAQ**

We used Pearson correlation coefficients to examine the relationship between the PAQ subscales, as well as how they relate to age and social desirability. As can be seen from Table 2, there are positive significant correlations between the four subscales, and except for the Stoic–Superiority subscale of the PAQ, they are also significantly related to age. A positive and significant relationship between age and social desirability was also found, although none of the PAQ subscales were correlated with the social desirability score.

**Age Group Differences on Stoicism and Cautiousness Subscales**

MANOVA yielded significant overall age group differences, \( F(12,1017) = 3.94, p < 0.001 \), on Stoicism and Cautiousness subscale scores (see Figure 1). Post hoc univariate tests using Neuman-Keuls pairwise comparisons revealed that for Stoicism subscales, the two older groups (61 years and older) were significantly different from the two younger groups on Stoic–Reluctance scores \( (p < 0.001) \) but not on the Stoic–Superiority scores \( (p = 0.65) \). As for the Cautiousness subscales, the two older groups were significantly different from the youngest group on Cautious–Reluctance scores \( (p < 0.001) \), but only the 61–80-year-old group was significantly different from the youngest group on Cautious–Self-doubt scores \( (p < 0.05) \).

**Discussion**

The findings of the present study provide some support for the reliability and validity of the PAQ as a measure of attitudes, such as stoicism and cautiousness. Factor analyses of responses to the PAQ essentially confirmed the two a priori constructs of stoicism and cautiousness, although, surprisingly, both constructs were shown to contain two subdimensions instead of one. Those who adopted a stoic attitude in relation to pain were characterized as either being reticent in expressing pain or being superior in self-rated tolerance or control over pain, relative to others. This is consistent with the multidimensional definition of stoicism by Wagstaff and Rowledge (1995) in terms of lacking emotional involvement, lacking emotional expressiveness, and exercising emotional control or endurance; the latter two were confirmed in this study. As for those who exhibited a cautious attitude to pain, they were characterized mainly by either a lack of confidence in themselves to make judgments of pain sensations or a reluctance to label a sensation as painful. In combination, these findings lend some support for the construct validity of the PAQ and provide some evidence to show that these two constructs are not unidimensional.

The reliability of the PAQ subscales was shown to be good to excellent with coefficients of 0.75–0.86 for internal item consistency and 0.71–0.92 for retest procedures. Overall, Stoic–Superiority and Cautious–Reluctance were the two subscales that were below the .8 cutoff required for excellent reliability (Williams, 1988) over time and within scale.
One possible explanation might be the small number of items within these two subscales, with Stoic–Superiority having two items and Cautious–Reluctance, four items. With more items, the reliability of both subscales should improve (Kline, 1986).

Consistent with previous views (Foley, 1994; Helme & Gibson, 1997; Portenoy, 1987), older adults exhibited different pain attitudes compared with young adults in terms of both stoicism and cautiousness. The present study shows that older adults were more reticent in reporting pain, showed greater self-doubt in their judgment of pain sensations, and were more reluctant to label a sensation as painful when compared with young adults. The most obvious age difference in these pain attitudes was between those younger than and those older than 60 years. However, the older adults did not differ from young adults in terms of how superior they felt in tolerating pain or controlling pain, relative to others. In addition, except for the Stoic–Reticence subscale, the two older, and likewise the two younger, age cohorts did not differ from each other on any of the measures of stoicism and cautiousness. Among the older adults, the old-old group (older than 80) was more reticent than the young-old group (60–80 years old). This has important implications for both pain assessment and management in older persons. On the basis of these findings, it seems that older adults with pain may be less likely to report pain symptoms, and this tendency appears to increase with age. Thus, there is a need for clinicians to carefully assess pain attitudes as well as to ensure that the symptom of pain is not overlooked when dealing with adults of advanced age.

The present study also demonstrates that the increased pain reticence in adults of advanced age is not due to a greater tendency of older adults to portray themselves in a more positive, socially desirable light, although this form of self-report bias was shown to increase with age. Instead, the tendency for increased reticence may reflect a number of reasons outlined by Hofland (1992) and Yates and colleagues (1995), including a fear of consequences of reporting pain, seeing pain as part of normal aging, a greater acceptance of pain given its increased prevalence with age, and ambivalence about the likely benefit of any treatment action. Given that no effort was made to distinguish between mild and severe pain in the present study, caution needs to be exercised when concluding that pain reticence increases with age as it may not apply at all levels of pain. It has been noted in previous studies on age differences in health-seeking behaviors that when symptoms including pain are mild and of short duration, older adults tend to attribute them to normal aging (Ebrahim, Britts, & Wu, 1991; Leventhal & Prohaska, 1986). In contrast, when the symptoms are severe and persistent, older adults are just as likely to interpret them as signs of illness and seek medical attention. In fact, when symptoms are perceived as potentially serious, the response to medical treatment is much quicker in older adults than in young adults (Leventhal, Leventhal, Schaefer, & Easterling, 1993).

Interestingly, the results of the present study reveal that older adults did not appear to be more stoic than young adults in terms of being superior in pain tolerance or control relative to others. This further emphasizes the need to consider the different dimensions of stoicism when evaluating its effect on pain perception in different age groups. Given that this subscale consists of only two items, a firm conclusion cannot be made and further studies with more items are required.

Age differences were found on both dimensions of cautiousness, suggesting that older adults are generally less certain of their own judgments of pain sensations as well as being more reluctant to call a sensation painful compared with the young adults. This age difference could reflect a number of issues. As people grow older, actual or perceived decline in sensory functioning may lead them to become less trusting of, and hence to place less confidence in, their judgment of whether a sensation should be considered painful or not. Alternatively, older persons may value accuracy more and avoid making mistakes by taking extra time to increase certainty before responding (Botwinick, 1978). This is reflected in the Self-Doubt subscale items like “I need time to...
decide . . .” and “I take a long time to decide . . .,” which older adults tended to endorse with higher level of agreement.

The greater reluctance for older adults to label a sensation as painful, on the other hand, may reflect either a shift in response criteria whereby a greater level of stimulus intensity is required before they commit to a response (Clark & Mehl, 1971; Harkins & Chapman, 1977), or a disinclination to act in the face of uncertainty (Botwinick, 1969). The former appears to be consistent with the greater tendency of older adults in the present study to endorse items like “I don’t necessarily think they [odd sensations] are painful,” and the latter is consistent with “I tend to be reluctant to label a sensation as painful unless I am very certain.” It is important to note, however, that response bias and sensory function may not be independent from each other. Gibson and Helme (1995) have argued that it is often difficult to resolve the confounding between age differences in psychological response bias and changes in sensory function. Any sensory deficit is likely to result in an apparent change in the confidence level required before labeling a sensation as painful. Thus, it may be difficult to tease apart effects due to change in sensory function from those due to psychological bias.

The relative contribution of age and cohort effects to account for the age difference in pain attitudes like stoicism and cautiousness cannot be clarified from the present study but might be expected to be somewhat different for the two constructs. Age differences in stoicism in terms of reticence to pain may reflect more of a historical sociocultural difference, whereas the two cautiousness dimensions are more likely to reflect a cognitive shift with advancing age following real or perceived physiological decline. It is possible that the older generations are generally more stoic because of their experience with world war and the Great Depression during the early 1930s. Although one cannot rule out the influence of maturational change on stoic attitudes, its effect appears to be greater for cautiousness as the latter is more related to a perceptual-judgment task that is dependent on sensory efficiency. There is also no reason to believe that one generation is more cautious about pain than the next. As such, differences in cautious attitude between age groups are likely to be attributed to physiological changes and/or cognitive shift following the process of aging rather than any cohort differences.

Further cross-validation of the PAQ will be required, including an examination of clinical populations, in order to establish its utility. It may also be helpful in explaining some of the mixed findings of age-related changes in pain sensitivity and report in studies of experimental pain. Thus, the predictive value of stoicism and cautiousness on pain sensitivity and report, as indicated by parameters such as pain threshold and tolerance, should be demonstrated in future studies.

In conclusion, the PAQ has been shown to be a reliable and valid measure of the pain attitudes of stoicism and cautiousness in healthy, community-based adults. This instrument is able to monitor two different dimensions of stoic attitudes including reticence to report pain and a belief in superiority in pain control and ability to tolerate pain. In addition, two different dimensions of cautiousness attitudes such as self-doubt in pain judgment and a reluctance to label a sensation as painful were identified. There appears to be an age-related increase in stoicism in terms of reticence for pain report as well as cautiousness in terms of self-doubt in pain judgment and reluctance to label something as painful. This increase was most obvious in adults older than age 60. The greater stoicism and cautiousness to pain among older adults do not appear to be due to greater propensity to project themselves in a socially desirable manner but may reflect both sociocultural differences and maturational changes in perceptual processing.

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References
Appendix

Instructions: Using the scale provided where 1 is strongly disagree and 5 is strongly agree, rate how much you agree or disagree with each statement below. There are no right or wrong answers. Just answer them based on your gut feelings:

1. I take a long time to decide whether a sensation is painful or not.
2. When I am in pain I should keep it to myself.
3. When a sensation is mild, I tend to not trust myself in deciding whether it is painful or not.
4. I keep a “stiff upper lip” when I am in pain.
5. I lack confidence in making judgments about whether a sensation is painful or not.
6. I think I can tolerate more pain than other people.
7. I make light of the pain; sometimes I wouldn’t call it pain at all.
8. I need time to decide whether a sensation is painful or not.
9. I would rather not make a decision when it is difficult to decide whether a sensation is painful or not.
10. I think I can control my pain better than other people.
11. I avoid making a decision when I am not sure whether a sensation is considered painful or not.
12. I rarely lose control when I am in pain.
13. I take great care to avoid labeling a sensation as painful when it is not.
14. When I get odd sensations, I don’t necessarily think they are painful.
15. I tend to be reluctant to label a sensation as painful unless I am very certain.
16. I never cry or moan when I am in pain.
17. I do not see any good in complaining when I am in pain.
18. I go on as if nothing has happened when I am in pain.
19. I maintain my pride and keep a stiff upper lip when in pain.
20. It is easy to decide if a sensation is painful.
21. When in pain, I remind myself how much worse things could be.
22. I make light of the pain; I refuse to get too serious about it when in pain.
23. I get on with life despite being in pain.
24. Pain is something that should be ignored.
25. I hide my pain from others.
26. If a sensation is even slightly uncomfortable I would call it painful.
27. I need to be absolutely certain a sensation is painful before I will label it as painful.

Note: A revised pain attitudes questionnaire with four additional items for the Stoic–Superiority subscale is available on request from the author.