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ORIGINAL ARTICLE

The Acute versus Chronic Pain Questionnaire (ACPQ) and actual pain experience in older people

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Abstract

The Acute versus Chronic Pain Questionnaire (ACPQ) was applied to older people. Two groups emerged from an analysis of which an item of each pair (an acute and a chronic affective item) was considered to cause the most suffering. One group of subjects comprised those who expected to suffer more from one or more acute pain items (high-ACPQ group, $n = 35$). A second group emerged for whom none of the acute items was considered to be a burden (low-ACPQ group, $n = 33$). It was hypothesized that, compared to the low-ACPQ group, the subjects with high-ACPQ scores selected acute ACPQ-items due to a decline in the experience of chronic affective pain. This hypothesis predicted lower scores on the chronic ACPQ-items and lower scores on scales evaluating the subjects' own chronic affective pain. The results showed that, irrespective of the group, the chronic ACPQ-items were considered to produce the most burdens. However, compared with the low-ACPQ group, the high-ACPQ group reported experiencing significantly more pain from the acute ACPQ-items. Moreover, the latter group indicated suffering less pain from their own chronic pain conditions. The present findings suggest that the selection of one or more acute items of the ACPQ (high-ACPQ group) may point to an alteration in subjects' actual pain experience.

Introduction

There are an increasing number of studies on pain assessment in cognitively impaired elderly persons (Ferrell *et al.*, 1990; Parmelee *et al.*, 1993; Ferrell, 1995). More specifically, such studies have been conducted in patients with Alzheimer's disease (AD) (Scherder & Bouma, 1997; Scherder *et al.*, 1999; Scherder & Bouma, 2000a). One of the major problems in this area is how a physician can prescribe analgesics with any accuracy, when pain still cannot be measured in a reliable way. Of note is that in several studies AD patients take considerably fewer analgesics (non-steroidal anti-inflammatory drugs [NSAIDs] and non-NSAIDs) than patients with other types of dementia and cognitively intact elderly people (Scherder & Bouma, 1997; Semla *et al.*, 1993; Wolf-Klein *et al.*, 1988). If this is associated with under-treatment of pain, two explanations might be offered: (1) AD patients are less able to indicate that they are in pain, since their communication abilities progressively decline during the course of the disease (Cutler & Narang, 1986; Bayles & Kaszniak, 1987); (2) AD patients do not indicate that they are in pain, due to a deterioration in memory, in this case memory for pain. Memory deteriorates progressively during AD (Bayles & Kaszniak, 1987). Obviously, in any assessment of pain in AD patients a possible confounding influence of cognitive deterioration cannot be fully excluded. Therefore, pain assessment in these patients should be conducted with very simple tools, as will be discussed in the next section.

The more restricted use of analgesics might also be a proper representation of the actual pain situation for two reasons: (1) AD patients tend to suffer from fewer painful conditions than other elderly people (McCormick *et al.*, 1994; Scherder, 2000; Wolf-Klein *et al.*, 1988). However, this observation has not been confirmed in other studies (Heyman *et al.*, 1984); (2) AD patients suffer less pain due to an alteration in the perception of pain. This latter hypothesis is based upon neuro-degeneration of the hypothalamus, the septo-hippocampal region, and the amygdala in AD (Braak & Braak, 1991; Swaab, 1997). These areas are also involved in the affective responses to pain (Giesler *et al.*, 1994). Considering the neuropathology of AD, it is remarkable

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that studies tend to be aimed at qualifying pain in terms of severity and number of complaints (Parmelee *et al.*, 1993) and disregard the more qualitative, affective components of pain. In a recent study (Scherder & Bouma, 2000a), pain intensity and pain affect in cognitively intact elderly and in early and mid-stage AD patients was assessed by applying visual analogue scales. The visual analogue scales included the Visual Analogue Scale (VAS; Huskisson, 1983), the Coloured Analogue Scale (CAS; McGrath *et al.*, 1996), the Facial Affective Scale (FAS; McGrath *et al.*, 1996), and the Faces Pain Scale (FPS; Bieri *et al.*, 1990). The CAS is primarily meant to assess pain intensity, whereas the FAS and FPS have been specifically developed to assess affective components of pain. The results show that, compared to other elderly people, AD patients indicate that they experience progressively less intensity of pain and pain affect during the course of the disease (Scherder & Bouma, 2000a). It should be noted that only subjects who fully understood the meaning of the scales were included in the data-analyses. Despite their apparent simplicity, the visual analogue scales were less easily comprehended by the AD patients during the course of the disease. Of note is that all early AD patients understood the meaning of the CAS (Scherder & Bouma, 2000a).

A major problem in the studies mentioned above is that a number of AD patients with a painful condition (e.g. arthritis/arthrosis) did not indicate experiencing pain at all. Consequently, the possible causes for a lack of pain experience, e.g. a decrease in pain intensity and/or a decrease in the extent of suffering from pain (pain affect), remain obscure. To avoid this problem, a new simple questionnaire was developed (Scherder & Bouma, 2000b). Instead of inquiring about the patients' pain experience, the patient is presented with 10 pairs of daily painful items, each pair consisting of one acute item and one chronic, more affective situation (Acute versus Chronic Pain Questionnaire: ACPQ see Appendix) (Scherder & Bouma, 2000b). Subsequently, respondents have to indicate which of two painful conditions in each pair they would suffer from the most (a forced choice). It was observed that, compared to cognitively intact elderly, AD patients during the course of the disease increasingly reported that they suffered more from an acute than from a chronic, affective pain item. These findings, along with those described above, strengthen the assumption that in AD the experience of affective components of pain declines (Scherder & Bouma, 2000b).

One limitation of the latter study was that, although the ACPQ items were very simple, one could not be sure that all AD patients completely understood the meaning of the items. Brain areas that are affected in AD, e.g. the hypothalamus, the septo-hippocampal region, and the amygdala also show degenerative changes in normal aging, but compared to AD to a much lesser extent (Coleman & Flood, 1986). Therefore, in the present study the ACPQ was administered to elderly people with benign forgetfulness and with chronic painful conditions such as arthritis/arthrosis. The subjects were divided into two groups, i.e. one group that expected to suffer from one or more acute pain items of the ACPQ (high-ACPQ group) and another group for which none of the acute items was considered to be a burden (low-ACPQ group). The aim of present study was to examine two hypotheses:

- Hypothesis 1. Compared to the low-ACPQ group, the high-ACPQ group would indicate suffering less from the chronic pain items. To test this hypothesis, the acute and chronic pain items of the ACPQ were presented in succession instead of in pairs (original ACPQ). Subsequently, the extent of suffering for each separate item was examined by applying a visual analogue scale.
- Hypothesis 2. The subjects of the high-ACPQ group report suffering less from their own chronic, affective pain condition(s). To test this hypothesis, three visual analogue scales and one verbal affective pain questionnaire were employed.

Methods

Subjects

The sample consisted of 68 elderly, drawn from a larger sample of 500 elderly, who lived in a residential home for the elderly. The subjects met stage II of the Functional Assessment Staging (FAST), implying a mild subjective decline in functioning (Sclan & Reisberg, 1992). None of the subjects met the NINCDS-ADRDA criteria for the clinical diagnosis of probable AD (McKhann *et al.*, 1984). Furthermore, subjects with visual disturbances, a history of psychiatric disorder, alcoholism, cerebral trauma, cerebrovascular disease, hydrocephalus, neoplasm, epilepsy, disturbances of consciousness, or focal brain disorders were excluded from participation in this study.

Subjects with high and low scores on the ACPQ. Before administering the ACPQ, an assessment was made as to whether the subjects comprehended the difference between an acute and a chronic pain item by asking which of the two pain items was the most persistent. All subjects gave the correct answer. Next, the subjects had to choose between a chronic and an acute pain item in each pair of the ACPQ (see Appendix). This generated two complementary

scores for chronic and acute pain items, respectively, with a total score of 10. The score of the ACPQ consisted of the number of acute pain items chosen by the subjects (for further details, including instructions, see Scherder & Bouma, 2000b). After administration of the ACPQ, subjects were divided into two groups: one group who expected to suffer most from one or more acute pain situations (high-ACPQ group, $n = 35$) and one group who registered none of the acute pain items as the most painful (low-ACPQ group, $n = 33$). The reliability of the ACPQ was assessed by means of Cronbach's alpha ('internal consistency'), which was 0.89. Test-retest reliability yielded a Pearson's correlation coefficient of 0.78 ($p < 0.000$; $n = 36$; Scherder & Bouma, 2000b).

Cognition, age, gender, and education. The level of cognitive functioning was determined by the Mini-Mental State Examination (MMSE; Folstein *et al.*, 1975), i.e. the shortened 12-item version with a maximum score of 12 (Breakhus *et al.*, 1992). The high- and low-ACPQ group differed in their scores on the MMSE ($M = 9.60$; range 7–11, and $M = 10.36$; range 8–12, respectively; $t\ (66) = 2.16$; $p < 0.04$). The high- and low-ACPQ group showed a significant difference in age ($t\ (66) = 2.03$, $p < 0.05$), although the difference in mean scores between both groups was small ($M = 87.83$ and $M = 85.55$, respectively). The gender of both groups did not differ significantly (low-ACPQ group: 27 females, 6 males; high-ACPQ group: 30 females, 5 males) ($\chi^2 = 0.19$, $df = 1$, $p < 0.67$). Education of the subjects was measured on a seven-point scale: (score 1) uncompleted elementary school; (score 2) elementary school six grades; (score 3) eight grades; (scores 4 and 5) three and four years lower general secondary education respectively; (score 6) pre-university education, technical college, higher vocational education; (score 7) university. No significant difference in education levels were observed between the high- and low-ACPQ groups ($M = 3.3$, and $M = 3.5$, respectively; $t\ (66) = 0.50$; $p < 0.62$).

Depression, anxiety. In view of the possible influence of depression and anxiety on pain experience (Schuster & Goetz, 1994), it was important to assess whether the two groups differed on depression and anxiety. For this purpose, two scales were administered: (1) two five-point subscales from the Dutch version of the SCL-90 (Arrindell & Ettema, 1986), i.e. the subscale Depression (15 items) and the subscale Anxiety (10 items), and (2) a two-point subscale of the Nottingham Health Profile (NHP) (Hunt *et al.*, 1985), Dutch version (Bonsel et al., 1988; Essink-Bot *et al.*, 1996), i.e. the subscale Emotional Reactions (nine items) focussing on subjects' affective functioning. The high- and low-ACPQ groups did not show differences, either on the SCL-90 Anxiety scale ($M = 14.47$, and $M = 14.18$, respectively; $t\ (65) = 0.24$; $p < 0.81$), the SCL-90 Depression scale ($M = 23.38$, and $M = 24.21$, respectively; $t\ (65) = 0.50$; $p < 0.62$), or the NHP Emotional Reactions scale ($M = 1.23$ and $M = 1.12$; $t\ (65) = 0.32$; $p < 0.75$).

Characteristics of pain conditions. Participants were selected on the presence of at least one chronic pain condition, i.e. a pain condition with duration of at least six months that was considered to produce pain regularly. The pain conditions were collected by one of the authors (EJAS) by reviewing the medical records and by the present nursing home physician. These medical records have an updated front page summarising the subjects' medical history and their present mental and physical/somatic status. Reports from the neurologist, orthopaedic surgeon, psychiatrist, and neuropsychologist were added as well. The following four pain categories emerged: (1) arthritis/arthrosis; (2) recent fractures (within the last year); (3) postoperative states (e.g. total hip); (4) miscellaneous (tendonitis and diabetes neuropathia). These pain conditions are similar to those generally observed in nursing home residents (Ferrell et al., 1990). Participants who showed a combination of these painful conditions (e.g. arthritis and fractures) participated in this study. No significant differences between the low- and high-ACPQ groups were observed ($\chi^2 = 0.59$, $df = 4$, $p < 0.96$), with respect to the category of the painful conditions.

Irregular pain experiences. The ACPQ-items refer to painful experiences that occur occasionally in daily life. However, previous pain experience with such infrequently occurring painful conditions, e.g. a headache, might differ between subjects and, hence, might create a response bias. One of the researchers (EJAS) reviewed the medical records and listed those pain conditions that were specifically mentioned in a category classified as 'somatic conditions'. The following conditions emerged: (1) fractures (not within the last year; see above); (2) headaches; (3) lower back pain; (4) epicondylitis, and (5) muscular pains. The total number of painful conditions did not differ between the low- and high-ACPQ groups ($M = 1.36$ and $M = 0.94$, respectively) (Mann-Whitney U: $Z = 0.36$; ns).

Comorbidity. The prevalence of specific categories of illness in both groups were compared in order to determine if one group had diseases that might contribute to their pain experience. Specific categories of illness were: congestive heart failure, peripheral vascular disease, chronic pulmonary disease, diabetes mellitus, chronic renal failure, tumours, ulcer disease, anaemia, hyper/hypothyroidism, cholecystectomy, hearing and vision problems, urology, hypertension, Dupuytren's disease, migraine, diverticulosis, esophagitis, liver disturbances, psoriasis, and Menière's disease. Comparisons were made for each separate category of illness, between the two groups employing χ^2 tests.

Compared to the low-ACPQ group, the high-ACPQ group showed a somewhat higher prevalence of cholecystectomy (6.1% and 22.9%, respectively) (Fisher's Exact: $p < 0.09$), and congestive heart failure (27.3% and 51.4%, respectively) (Fisher's Exact: $p < 0.06$). Subsequently, the total number of illnesses between the two groups was compared. The results revealed that the total number of illnesses did not differ significantly between the low- ($M = 2.40$) and high-ACPQ group ($M = 2.70$) (Mann-Whitney U: Z = 0.68; ns).

Materials and procedure

Assessment of the separate acute and chronic items of the ACPQ. The Coloured Analogue Scale (CAS) (McGrath *et al.*, 1996) was used to assess pain experience for each of the separate acute and chronic items of the ACPQ, presented in succession, instead of in pairs. Originally, the CAS was exclusively meant to measure non-verbally the intensity of the subject's pain. The CAS appears like a thermometer (a triangular shape). Different colours mark the different scale positions, which help the subjects to select the scale position which best reflects the intensity of their pain (McGrath *et al.*, 1996). In the original scale, selecting the appropriate scale position took place by sliding a horizontal marker from the bottom (no pain) to the top (maximum pain). In the present study, the bottom with the label 'no pain' was replaced by the label 'no suffering' and the label 'maximum pain' at the top was replaced by the label 'a lot of suffering'. Each scale position had a number (a numerical value), which was on the back of the scale. The maximum score was 100.

Assessment of the experience of participants' own affective pain condition. The McGill Pain Questionnaire (Melzack, 1987) (Dutch version: MPQ-DLV; Verkes et al., 1989) was employed to measure the experience of subjects' own affective chronic pain condition. Two original parts and one modified version of this questionnaire were used in the present study.

- The Visual Analogue Scale 1 (VAS1: pain intensity; Huskisson, 1983) provides data on pain intensity only. By making a mark on a horizontal line with the label 'no pain' at the left end and the label 'worst possible pain' at the right end. Participants indicated how much pain they had at the moment of administration. The score is the number of millimetres, starting from the zero point (maximum score: 100 millimetres).
- A modified version of the VAS1: pain affect (Huskisson, 1983). Similar to the original VAS1, the participant is requested to make a mark on a horizontal line. However, in the modified version, at the left end of the line the label 'no pain' is replaced by the label 'no suffering' whereas at the right end of the line the label 'worst possible pain' is replaced by the label 'a lot of suffering'. The question the subject is asked, namely to indicate how much he is suffering from the pain, is identical to item 16 of the subscale Affective Distress of the Multidimensional Pain Inventory-Dutch language version (MPI-DLV; Lousberg *et al.*, 1994). Maximum score is 100 millimetres.
- The Affective Pain scale, which consists of five items, each item including three affective adjectives. The items are arranged by increasing intensity (ranking), which allows the subject to indicate the nature of the pain, (e.g. worrying, depressing). The adjectives were read aloud by the examiner. Adding the results of this scale results in a maximum score of 15.

Administration of Scales. For each scale, the participants were first tested for comprehension of the concept. For the (modified) VAS they were asked to indicate at what end a mark should be made on a horizontal line, when a person has no pain/no suffering (left end) or worst possible pain/a lot of suffering (right end). They were then requested to make a mark on the horizontal line which best reflected their own experience of pain/suffering. For the CAS they were asked to indicate at what level the marker should be positioned when a person has maximum pain/a lot of suffering (top of the scale) or no pain/no suffering at all (bottom of the scale). On the CAS they were requested to indicate where the marker should be to match their own level of pain/suffering. The adjectives of the Affective Pain Scale were read aloud by the examiner.

Independent investigator. The person who administered the ACPQ and other scales was blind to the subjects' scores on the MMSE, and the absence/presence of pain conditions.

Data-analyses

The SPSS-PC program was used for statistical analyses, including MANOVA, ANCOVA, Mann-Whitney U tests, and paired *t*-tests, at a 0.05 significance level (Norusis, 1988). Effect sizes (n^2) were assessed, i.e. small < 0.20, medium < 0.50, or large > 0.80 (Cohen, 1992).

Results

Assessment of separate acute and chronic items of the ACPQ by CAS

Considering the difference in MMSE-scores between the high- and low-ACPQ groups, which might be potentially confounding, the following analyses were performed. First, a preliminary analysis evaluating

the assumption of homogeneity-of-slopes indicated that the relationship between the covariate and the dependent variables did not differ significantly as a function of the independent variable (F (2,55) = 0.91, p = 0.407, n^2 = 0.03).

Second, a MANCOVA was conducted to evaluate the effect of group (high- and low-ACPQ group) and an MMSE on the separately administered acute and chronic pain items of the ACPQ. The MANCOVA indicated a significant main effect for the groups (F (2,56) = 13.14, p < 0.001, n^2 = 0.32). No significant effect was found for the covariate (MMSE) in this model (F (2,56) = 0.21, p = 0.81, n^2 = 0.007).

Further analyses revealed a significant simple main effect for the groups on the acute pain conditions of the ACPQ measured by CAS (F (1,57) = 17.03, p < 0.001, n^2 = 0.23), indicating that, compared to the low-ACPQ group, the high-ACPQ group reported experiencing significantly more pain from the acute pain conditions of the ACPQ. No significant simple main effect was observed for the groups on the chronic pain conditions of the ACPQ, measured by CAS (F (1,57) = 0.15, p < 0.71, n^2 = 0.003). Mean CAS scores of the two groups for the chronic and acute items of the ACPQ are shown in Table 1.

Paired t-tests further revealed that overall the extent of suffering from the chronic painful conditions (M = 57.13, SE = 1.99) exceeded the extent of suffering from the acute pain items of the ACPQ (M = 28.69, SE = 2.35) (t (59) = 12.25; p < 0.001).

Assessment of the experience of participants' own affective pain condition by VAS1, modified VAS1, Affective Pain scale

The results of the present study revealed that the scores on both the VAS1 (intensity) and the modified VAS1 (affect) significantly differed between both groups. More specifically, the data show that compared to the low ACPQ-group the high-ACPQ group indicated experiencing less intense pain (VAS1) (Mann-Whitney U: Z = 2.91; p = 0.002) and less pain affect (modified VAS1) (Mann-Whitney U: Z = 2.75; p = 0.003) from their own pain condition. The latter finding was also reflected in the score on the Affective Pain scale of the MPQ-DLV, which was significantly lower for the high-ACPQ group than for the low-ACPQ group (Mann-Whitney U: Z = 2.37; p = 0.009). Mean scores of the two groups for each scale are presented in Table 1.

Spearman's correlation coefficients showed a significant relation between VAS1, modified VAS1, and the Affective Pain Scale (see Table 2).

Discussion

In the present study, two research questions were examined. We first hypothesized that, compared to the low-ACPQ group, the high-ACPQ group would report to suffer less from the separately presented chronic items of the ACPQ. This hypothesis could not be confirmed, since both the high- and low-ACPQ groups reported the same amount of suffering from the chronic pain items of the ACPQ. In contrast, compared to the low-ACPQ group, the high-ACPQ group indicated with the CAS that they experienced a significantly greater burden from the acute pain items of the ACPQ. It is noteworthy in that the extent of suffering of both groups from the acute pain items of the ACPQ was significantly less than that experienced from the chronic pain items. This finding was not unexpected since 91% of the subjects in the high-ACPQ group still felt that the majority of the chronic pain items caused the most suffering.

The second hypothesis of the present study was that the subjects who selected one or more acute

TABLE 1. Means and standard errors of the mean of the (modified) Visual Analogue Scale (VAS1), Affective Pain scale, and the modified Coloured Analogue Scale (CAS)

Groups	VAS1 pain intensity		Modified VAS1 pain affect		Affective Pain Scale		Chronic items ACPQ by CAS		Acute item ACPQ by CAS	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Low-ACPQ	39.88	4.37	31.03	5.00	5.06	0.93	57.92	2.68	20.65	2.40
High-ACPQ	23.00	4.46	16.03	4.51	2.24	0.61	56.29	3.00	37.84	3.48

ACPQ: Acute versus Chronic Pain Questionnaire. Chronic items ACPQ by CAS: total CAS scores on all 10 chronic conditions of the ACPQ; Acute items ACPQ by CAS: total CAS scores on all 10 acute conditions of the ACPQ.

TABLE 2. Spearman's correlation coefficients (Rho') between the Visual Analogue Scale (VAS1), modified VAS1, and the Affective Pain Scale

	VAS1			Modified VAS1		
	Rho'	*n*	*p* <	Rho'	*n*	*p* <
VAS1	–	–	–	–	–	–
Modified VAS1	0.82	69	0.001	–	–	–
Affective Pain Scale	0.59	44	0.001	0.43	44	0.005

pain items from the ACPQ (high-ACPQ group) suffered less from their own chronic, affective pain condition(s). Indeed, the results of the VAS1, modified VAS1 and the Affective Pain Scale suggest that, compared to the low-ACPQ group with similar chronic painful conditions, the high-ACPQ group experienced less pain intensity and pain affect. This latter finding could not be ascribed to a difference in affective states, since both groups showed similar scores on the SCL-90 Depression scale, the SCL-90 Anxiety scale and the NHP.

Taken together, elderly participants (high- and low-ACPQ groups) were still able to imagine the extent of suffering, which could be caused by a separately presented chronic pain item. However, there appeared to be some elderly people who expected to experience more suffering from an acute pain item than from a chronic pain item when both items were presented in pairs. This group (the high-ACPQ group) indicated suffering less from their own chronic painful condition. One explanation might be that in this latter group, the degenerative changes in certain brain areas cause a shift in suffering pain, i.e. less suffering from chronic, affective pain towards greater suffering from acute pain. This argument is to some degree supported by studies which examined the presence of nociceptive reflexes in aging and AD (Franssen *et al.*, 1991; 1993; Vreeling *et al.*, 1995). The results of these studies suggest that the occurrence and intensity of nociceptive reflexes increase during aging and AD. Nociceptive reflexes may be considered as 'release signs', which result from a decrease in cortical inhibition (Vreeling *et al.*, 1995), and might parallel the application of an acute painful stimulus. An alternative explanation might be that some elderly people felt drawn to the high intensity of the acute pain items of the ACPQ and mistook pain intensity for the suffering from pain.

In addition, the dichotomy acute/chronic in the items of the ACPQ might have been confusing. The items of the ACPQ represent simple everyday painful situations. The acute items have a high intensity and a short duration (a few seconds) and may be rather called 'transient' (Loeser & Melzack, 1999). The chronic pain items have a much stronger affective component and a longer duration (hours to days). In clinical practice it is not the duration of the pain but the lack of recovery of normal physiological functions that is characteristic of a chronic pain condition (Loeser & Melzack, 1999). However, even if the distinction between the acute and chronic items of the ACPQ deviated somewhat from the clinical nomenclature, it is nevertheless an interesting finding that the high-ACPQ group also experienced less pain affect from their own actual chronic pain conditions.

Although the influence of the difference in MMSE-scores between both groups on the results in the present study was excluded, it is interesting that the high-ACPQ group had the lowest MMSE-scores. This finding parallels a previous study in which AD patients selected significantly more acute items of the ACPQ than the cognitively intact control group (Scherder & Bouma, 2000b). The question arises whether there is a relationship between the level of cognitive functioning and pain experience? In other words, is imagining the suffering from pain, a mental process, and representative for the suffering from a truly existing painful condition. Imagining the suffering from pain is often based on memory. For example, older people who do not have their own teeth may still be able to imagine what toothache is like. Interestingly, data from recent studies show that specific brain areas, e.g. the thalamus, the anterior cingulate cortex, the hippocampus, the amygdala, and the insula, are involved in both memory for pain and the processing of the affective components of pain (Treede *et al.*, 2000; Peyron *et al.*, 1999; Davis *et al.*, 1997; Lathe, 2001; Hua *et al.*, 2000; Kwan *et al.*, 2000). The areas that enable recall of suffering are also the areas that play a role in the processing of the affective components of actual pain.

Pain experiences in the past may vary among people and, hence, memory for pain may create a bias when filling in the ACPQ. A subject with a history of severe headaches will respond differently to the ACPQ than someone who has never had a headache. It is important to control for pain experiences earlier in life. In the present study, prior pain experiences, e.g. low back pain, appeared not to differ significantly between the high- and low-ACPQ groups. However, the extent of suffering from e.g. low back pain may still vary among the subjects and influence the choice between an acute and chronic ACPQ item.

The discussion of a possible relation between imagined and actual pain experience is in essence the discussion of the clinical applicability of the ACPQ. To draw firm conclusions about the clinical value of the ACPQ, it is necessary to follow the subjects in the present study in a longitudinal project to examine whether, compared to the low-ACPQ group, a higher percentage of the subjects in the high-ACPQ group would incur AD later. If this were found, one could argue that an alteration in (imagining) pain experiences might become an early marker for AD.

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Appendix

The Acute versus Chronic Pain Questionnaire (ACPQ)

Date of administration: ..... .
Name & address: ....
Date of birth: ....
Education: ....
Occupation: ....
Male/female
How much pain do you have at this moment? 0 1 2 3 4 5 6
No pain a lot of pain

Can you indicate the location of the pain?..... .

Instructions: I describe to you two familiar painful situations that might cause heavy burden. Even if you have never experienced a similar situation yourself, you can probably imagine what it would be like. *Question*: 'Please indicate from which of the two following situations you would suffer most'.

Pairs of items

1. Headache (c)*	0	– bumping your head hard (a)*	0
Repeat question			
2. Biting your tongue (a)	0	– toothache (c)	0
Repeat question			
3. Having your ear pulled (a)	0	– earache (c)	0
Repeat question			
4. Bellyache (c)	0	– your toes being stepped on (a)	0
Repeat question			
5. Stomach ache (c)	0	– having your hair pulled (a)	0
Repeat question			
6. Burning your finger on a match (a)	0	– a sore throat (c)	0
Repeat question			
7. Pain in your knee (c)	0	– being hit (a)	0
Repeat question			
8. Being pinched nastily (a)	0	– muscle ache (c)	0
Repeat question			
9. Bumping your funny bone (a)	0	– backache (c)	0
Repeat question			
10. Pain in the neck (c)	0	– pricking your finger on a pin (a)	0

Total Score chronic pain:..... Total Score acute pain:..... .

*a, acute painful condition; c, chronic painful condition

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