TITLE:
Comparison of average weekly pain using recalled paper and momentary assessment electronic diary reports in children with arthritis

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ABSTRACT

Objective: The current study investigated the construct validity of a multidimensional pain diary for youth with juvenile idiopathic arthritis and also compared participants’ responses on electronic and retrospective diary measures. The purpose of the latter part of this study was to compare absolute agreement, between and within-person consistency and judged change in weekly pain between these two methods of assessing pain.

Methods: 70 adolescents with Juvenile Idiopathic Arthritis (JIA) completed both weekly recalled and momentary reports of pain over a 2-week period and assessed their change in pain over the 2-week period using 5-point global change in pain scale. Pearson correlations and intra-class correlation coefficients were computed to demonstrate three different ways of comparing the measures on both a between-persons and within-person basis.

Results: Momentary ratings of pain episodes were consistently greater than weekly ratings of recalled pain. Moderate to strong consistency and agreement correlations were computed for between-person momentary and recalled pain intensity. However, these correlations were much weaker when the within-person data were analyzed. The judged change in pain across weeks was significantly associated with computed change in both average momentary and recalled pain.

Discussion: This is one of the few studies to explore the relationship between the measurement methods of pain recall and momentary assessment in adolescents. The poor within-person correlations observed have important implications for research design and practice in pediatric pain.

KEYWORDS: pain, children, electronic pain diary, recalled pain
INTRODUCTION

Pain is a significant problem for children and adolescents with juvenile idiopathic arthritis (JIA)\(^1\) and negatively impacts all aspects of health-related quality of life.\(^2,3\) Pain in this group is typically reported in the mild to moderate range and is variable between individuals.\(^4\) Severe pain has also been observed in a smaller sub-group, particularly during the experience of arthritic flares.\(^4\) Assessment is crucial to effective pain management and is essential for evaluating the effectiveness of pain therapy. However, current methods (i.e., paper pain diaries) for evaluating pain in children with chronic arthritis suffer from methodological problems (i.e., recall bias, non-compliance).\(^5,6\) The most common method used to assess pain in older school-age children and adolescents is to ask patients to recall pain intensity over the previous week, two-weeks, or month. Inaccurate pain assessment due to recall bias can have negative implications for research and clinical practice. It can result in misleading information about the nature of pain in children and inappropriate recommendations for pain management.\(^7\)

Electronic pain diaries using personal digital assistants (PDAs) or Smartphones employing real-time data capture have been proposed as the standard for pain measurement as they circumvent many of these problems and improve the accuracy of pain self-reports.\(^8,9\) Furthermore, electronic diaries have the potential to maximize the compliance\(^10-12\), validity\(^10-13\), and reliability\(^13,14\) of pain assessment data. Our group has demonstrated the usability\(^15\), feasibility,\(^16\) and validity\(^5\) of one such electronic diary. The e-Ouch© pain diary is a multidimensional pain assessment diary for youth with JIA that collects real-time data at programmed times in ecological settings.

Several studies have compared recalled and momentary pain assessments using electronic diaries similar to the e-Ouch©. van den Brink and colleagues (2001) conducted the first study in
children with persistent pain related to headaches. The authors found that recalled reports of pain were significantly higher than diary pain reports. Subsequently, Lewandowski and colleagues (2009) compared diary and retrospective reports of pain in youth with chronic pain conditions and also found that pain intensity was significantly higher on recall when compared to momentary (diary) report.

Finally, Stone and colleagues (2004) asked adults with chronic pain to complete both recalled and momentary reports with an electronic diary over a two-week period. Participants in this study also rated their perceived change in pain over the two-week period, which was compared with calculated change from momentary ratings. In addition to between-person comparisons, within-person analyses should be examined to account for individual characteristics (e.g., reporting style, age) that may increase correspondence between recall and momentary measures. Furthermore, within-person analyses provide valuable longitudinal data, which is clinically essential for tracking pain over time and tailoring pain management.

In the Stone study, interclass (Pearson’s correlation coefficient) and intraclass correlations were calculated to compare momentary and recall pain ratings. Comparing weekly recall and momentary pain intensity on a between-person basis, the correlations were generally moderate to high. However, these authors also examined the within-person correspondence by exploring the association between changes in momentary and recalled pain over a two-week period, and these correlations were low. Furthermore, judged change was only weakly related to change computed using momentary pain reports.

These studies have demonstrated the methodological concerns and inaccuracies of relying on retrospective pain reports for clinical and research purposes. Nonetheless, no study to date has examined inter- and intra-person correspondence between momentary and recall pain in a
pediatric population. Known and important differences in cognitive development\textsuperscript{19}, language of reporting pain\textsuperscript{20}, memories of pain\textsuperscript{21}, and pain coping strategies\textsuperscript{22} between pediatric and adult populations exist. For instance, children’s perceptions and responses to pain differ qualitatively and quantitatively from those of adults. Young people may experience a painful stimulus as more intense than adults, but the sensation of pain may diminish sooner\textsuperscript{23}. Children and adolescents are also known to express pain both verbally and non-verbally in a manner distinct from adults. These important differences necessitate an evaluation of the relationship between the measurement methods of pain recall and momentary assessment in children and adolescents. Knowledge of this relationship will help to inform pain management in pediatric clinical practice and may improve research rigor by providing in-the-moment pain data.

To address this gap, our study sought to compare children and adolescents’ retrospective and momentary (e-Ouch©) pain reports using data from our previous validation study. This study aimed to compare average momentary and recalled pain intensity using a between-person and within-person approach. We also sought to examine the degree to which judged change corresponded with computed change in pain. Lastly, we sought to investigate whether recalled pain intensity was predicted by maximum or last momentary pain rating (i.e. peak-end effects). The Supplementary Table(Supplemental Digital Content 1, http://links.lww.com/CJP/A86) presents a glossary of terms and definitions used to define correlation, change in pain over time and the time-course of pain assessment in this paper.

Based on previous research\textsuperscript{18,4}, using pain as the principle variable of interest, we hypothesized: (a) momentary pain ratings in the mild to moderate range that varied between children; (b) moderate Pearson correlation coefficients between momentary and recalled pain ratings but reduced intra-class correlations; (c) considerably smaller within-person than between-
person correlations when momentary and recalled pain are compared, and (d) low to moderate correspondence between judged and computed change in pain.

METHODS

Setting and participants

Participants were recruited from a large integrated rheumatology clinic housed in two university-affiliated pediatric tertiary care centres in Ontario, Canada. A convenience sampling method was used. Adolescents were eligible to participate if they were: (a) between 9 and 18 years of age; (b) diagnosed with JIA by a rheumatologist and having at least one active joint; and (c) English-speaking. Adolescents were excluded if they had: (a) major cognitive impairments which may have interfered with their ability to complete pain assessments; (b) major medical conditions in addition to JIA which may have contributed to participant-reported pain; (c) vision impairments that would interfere with seeing the e-Ouch© screen; and (d) major hand deformities that would interfere with use of the e-Ouch©. The study was approved by Institutional Review Boards at both sites.

Materials and measures

e-Ouch© multi-dimensional electronic pain diary. All momentary pain assessment data were collected using an electronic diary. The Tungsten W™ PDA using the Palm Operating System™ was used as the diary platform. Diary software called Graalpad24 was developed using the Appforge™ program and managed the screen displays and tabulated and stored participant-entered data. Specific information related to diary program functioning, usability testing, and construct validity testing has been previously published.5,15
Weekly pain recall questionnaire. Pain recall assessments were made using the Recalled Pain Inventory (RPI), which is a modified version of the Brief Pain Inventory (BPI). Participants recorded their least, average and worst pain intensity, interference and unpleasantness ratings for the previous week. Least, average and worst pain intensity ratings (as well as interference and unpleasantness ratings) were completed on a paper 10-centimeter visual analogue scale (VAS). This measure also includes a 5-point global rating of change in pain over the past 7 days (change is rated as ‘much worse’, ‘a little worse’, ‘the same’, ‘a little better’ or ‘much better’).

Procedures

Prior to their rheumatology appointment, eligible adolescents were approached by a health care team member and those interested in participating met with the investigator who obtained informed consent. The participant’s rheumatologist then rated their disease severity on a 10-centimeter VAS. Demographic and disease characteristics were obtained from participants and medical chart review. Using standardized pain vignettes, participants were given a 15-20 minute demonstration instructing them on how to use the PDA and e-Ouch© software.

The device was then sent home with participants and they were asked to complete electronic pain assessments 3 times each day (morning, afternoon, evening) for 14 days. The PDA used auditory signals at scheduled times to alert participants to complete diary entries. Pain was rated on a 5-centimeter VAS (0 to 100 metric in units of 0.5 mm) designed for the screen size of the PDA and the scale was anchored using ‘no pain’ at 0-centimeters and ‘very much pain’ at 5-centimeters. These VAS pain assessments were translated into a numerical rating (made on a 100-point scale). It has been previously demonstrated that pain ratings on the electronic 5-centimeter VAS have very high correspondence with those on the traditional 10-centimeter paper-based VAS (Pearson correlation coefficients between 0.97-0.99). Each diary
entry was date and time stamped, the software tabulated user responses, and all data were wirelessly downloaded to the study database once an entry was completed.

On Day 7 of the study, following completion of Week 1 diary entries, participants were contacted by phone and asked to complete the RPI for the preceding week and reminded to continue completing electronic momentary assessments for the remainder of the study. At the close of the study, following the completion of Week 2 diary entries, participants again completed the RPI assessing pain during the preceding week and the 5-point global rating of change in pain.

**Statistical analyses**

Sample size was based on the hypothesis that the correlation coefficient between average momentary and recalled pain would be significantly greater than a moderate correlation of $r = 0.50$, as shown previously. All data obtained from the electronic momentary and RPI assessments were coded and entered into SAS Version 9.1.3 statistical software for analyses. Details related to the methods used to analyze the raw data have been previously published. For the purposes of the present study, differences were considered statistically significant at $p \leq 0.05$. Compliance was defined operationally as 100% when 3 diary entries were completed for each of the 14 data collection days by a given study participant. On the basis of the hypothesis that patients may only consider those times when they actually experienced pain during the recall process, Stone and colleagues compared weekly recalled pain to average momentary pain during pain episodes only. We replicated this analysis using our dataset from children and adolescents. In defining a pain episode, we considered it to be any electronic momentary report when pain is reported as present (i.e., greater than 0) because pain intensity in children with JIA is known to be in the mild to moderate range. To examine whether using a different definition
for pain episodes would affect the correspondence between momentary and recalled pain, we conducted an exploratory within-person analysis using momentary pain intensity ratings of $\geq 30/100$ as a cut-off. Pain intensity of $\geq 30/100$ was selected as a cut-off because seminal research in the area suggesting this as clinically significant pain.\textsuperscript{29}

To evaluate the degree of correspondence between the momentary and recalled pain over time, the change in weekly recalled ratings was compared with the change in momentary ratings from week 1 to week 2. The percentage of shared variance is equal to the correlation ($r^2$) between two variables multiplied by 100. Since the underlying data were not normally distributed, the nonparametric Wilcoxon Signed Rank (WSR) test was used. Pearson correlation coefficients were calculated between recalled pain intensity and (i) last momentary pain report, defined as the absolute last pain reported by week; (ii) maximum momentary pain report, defined as the most intense pain reported by week.

RESULTS

Pain Reporting

Patient compliance was 78% with scheduled momentary reporting. Pain recall reporting compliance was 93% (n=71) in week 1 and 92% (n=70) in week 2. Pain was reported as being present on 44% and 54% of momentary reports for week 1 and week 2, respectively and pain intensity data were collected from these reports. Means and standard deviations calculated from reported recalled and average momentary pain intensity data from weeks 1 and 2 are presented in Table 1. In keeping with our hypothesis, mean pain ratings were mild, and considerable variability was observed in both weeks. Mean reports of average momentary pain were significantly lower than those of weekly recalled pain for each of the two weeks (Week 1: paired
t-test, t=2.32, p=0.02; Week 2: paired t-test, t=2.29, p<0.03). When comparing weekly recalled pain to average momentary pain during pain episodes only, significant differences were found for week 2 but not week 1 (Week 1: paired t-test, t=1.60, p=0.11; Week 2: paired t-test, t=3.58, p=0.0008). Mean weekly recalled pain was lower than mean levels of experienced pain during pain episodes only (Table 1).

**Between-person Consistency and Agreement**

**Between-person Consistency**

Examination of the Pearson correlation for between-person recalled and momentary consistency showed a moderate correlation coefficient of 0.55 for week 1 and a stronger coefficient of 0.76 for the second week (Table 2). Exploratory factor analysis indicated that this finding translated into 30% and 58% of variance being shared between the two report methods for week 1 and week 2 respectively, ignoring the differences in means and standard deviations. Using the ICC(C,1) model to assess consistency, a similar pattern to that of the Pearson correlation was seen, which again was significant. Both measures of consistency show moderate levels of correspondence between pain recall and momentary pain ratings during week 1 and good levels of consistency during week 2.

**Between-person Agreement**

Absolute agreement, calculated using ICC(A,1), yielded coefficient values for weeks 1 and 2 that were similar to the corresponding measures of consistency (Table 2). These correlations were significant across both weeks. This result indicates similarity between the observed differences in mean reports of recalled and momentary pain.
Within-person Consistency and Agreement

The median change in weekly recall pain ratings was -2 on the 100-point scale, which was a significant decrease (WSR = -386.5, p = 0.0071). The median change in momentary pain was -1.4 on the 100-point scale, which was also a significant decrease (WSR = -420.5, p = 0.02). The magnitude of change demonstrated by the two assessment methods did not differ significantly (WSR = -86, p = 0.6). There were no differences between within-person consistency and agreement when pain episodes were defined as pain ≥ 0/100 or when defined as pain ≥ 30/100.

Within-person Consistency

The within-person consistency measures, Pearson correlation and ICC (C, 1), are shown in Table 2. These within-person correlations indicate that approximately 8% of the variance in change scores when pain episodes are defined as any pain ≥ 0/10 is shared between the momentary and recall variables. A plot of the change scores for the recall variable versus the momentary variable using this definition of pain is shown in Figure 1. The plot indicates that there is only a modest association between the two measures of change.

Within-person Agreement

As shown in Table 2, the intra-class correlation for within-person agreement was very similar to the intra-class statistic for consistency.

Judged Versus Computed Changes in Pain
The perception of change in pain was previously reported by Stinson et al. (2008). In the present study, participants’ perception of change was compared with the computed measures of change for both assessment methods. Analysis of variance was used to determine the association between the categorical ratings of judged change in pain and the continuous (VAS) computed change variables. Judged change was significantly associated with computed change in both average momentary pain \( [F(3,63)=3.76, P=0.015] \) and recalled pain \( [F(4,63)=4.38, P=0.0037] \).

**Peak-End Effects Between Recalled Pain Intensity and Momentary Pain**

During week 1, recalled pain intensity was significantly predicted by last momentary pain intensity and maximum reported momentary pain intensity. This relationship was maintained during week 2, as shown in Table 3.

**DISCUSSION**

This is one of few studies to investigate the relationship between the measurement methods of pain recall and electronic momentary assessment among children and adolescents with chronic pain. In examining pain reporting by youths, average recalled pain intensity was significantly greater than the average of all momentary pain reports. This phenomenon of inflation has been previously demonstrated in studies comparing momentary to recalled pain in children, adolescents, and adults. However, unique to this study, when only pain reports from pain episodes were considered, momentary pain was reported as greater than recalled pain. This finding is contrary to data reported by Stone, where adult participants reported recalled pain as greater than momentary pain assessments even when only data from pain episodes were considered. It is important to consider the dissimilarities in patient population as well as
methodological differences between our study and that of Stone. First, the magnitude of reported
pain intensity differed greatly. The mean reported pain intensity in our study was in the mild
range (34.2-36.98 on a 0-100 point rating scale). These mild pain levels are typical of youth with
JIA under active treatment\textsuperscript{28}. In contrast, the Stone study sample was comprised of adults
diagnosed with at least one of four chronic pain disorders, and were also required to have an
average self-reported level of pain $\geq 4$ (on a 0-10 rating scale). When on study, these adult
participants reported higher average (standard deviation) momentary scores for pain episodes
$[53.0 (17.9) – 53.8 (19.1)]$ with similar variability when compared to our adolescent data. These
findings raise future research questions regarding the possibility of inflated retrospective ratings
of pain being associated with higher experienced levels of momentary pain.

The discrepancy between youth and adults may also have arisen from methodological
differences in how pain recall was measured. For example, in the present study, adolescent
participants received telephone calls to remind them to complete paper recall diaries at home. In
contrast, adult participants in the Stone et al (2004) study were asked to recall their pain in the
presence of a research team member during weekly office visits.\textsuperscript{18}

Both the between-person consistency and agreement analyses showed moderate to strong
relationships between recalled and momentary pain measurements for each of the two weeks
examined. This finding is in agreement with previous reports\textsuperscript{18,31} and would appear to support
the notion that those participants who report momentary pain as high also rated their pain as high
during recall assessments. As ICC(A,1) analyses accounted for variances in the mean reported
pain between the two measures, the lack of difference between Pearson, ICC(C,1) and ICC(A,1)
coefficients reflects the relatively small differences in mean pain reported during momentary and
recall assessments.
However, within-person correlations between recalled and momentary pain over the same time period were weak both when pain episodes were defined as pain ≥ 0/100 and pain ≥ 30/100. Weak within-person correlations may result from the fact that momentary pain assessments were conducted only three times per day and these momentary collection points may not be entirely representative of average daily pain. Large variability in pain intensity reported by youth with JIA, both within and between days, has previously been discussed⁵, and could theoretically result in discrepancies between momentary and recall ratings. Several means to improve the accuracy of momentary pain assessments have been suggested³²,³³,³⁴. For instance, in the case of electronic data collection, the timing of assessments can be personalized to accommodate the daily schedule and symptom fluctuations experienced by individual patients. The advanced technical capabilities of modern electronic devices provide the additional opportunity for ad hoc pain assessment, which could minimize the chance of missing a pain episode. This adaptation could enhance patient adherence with diary reporting. In addition, recall biases have been previously highlighted as important contributing factors affecting retrospective pain reports¹⁸,³⁵ and may impact the correlation coefficients that we report. Because clinical pain management decision-making should be based on pain reports from an individual child or adolescent, the determination of within-person (as opposed to a between-person) consistency and agreement is paramount.

On average, participants exhibited significant decreases in pain across the two-week study period on both recall and momentary assessment methods. It is important to note that 30 (39.5%) adolescents had a change in medication during the study, such as increased dosage, addition of a new medication, or change in route of administration.⁵ Although change in medication did not explain the decrease in pain, it is possible that unrecorded alterations in treatment protocol or self-management strategies could account for the observed reduction in
reported pain. A previously published exploratory analysis including age, gender and disease severity revealed that males had a significant decrease in momentary pain from Week 1 to 2 while females had little or no change. However, the factors of age, gender, and disease severity could not account for the significant change in pain scores on the recall measure. Stinson et al (2008) describe in detail other possible reasons for the unexpected decrease in reported pain, such as diary reactivity, random fluctuations in pain over the measurement period, regression to the mean, pain denial among males, and natural resolution of arthritis symptoms. Future research involving a longer measurement period and fixed treatment protocol is required to explore potential reactivity of the e-Ouch© and recall measure among children and adolescents with chronic pain.

As described by Stone et al (2004), within-person correspondence between momentary and recall measures is important to consider for longitudinal studies that aim to assess change in pain over time. To determine the level of within-person correspondence, we examined the association between changes in averaged momentary pain and changes in recalled pain from Week 1 to 2. As shown in Table 3, the magnitude of the two consistency measures, Pearson correlation and ICC (C, 1), are markedly lower for the within-person data, compared with the between-person measures. Concurring with the results of Stone et al (2004) for adult pain, our data indicate that momentary and recall measures are not interchangeable when assessing pediatric pain over time. Indeed, these low within-person correlations suggest that the recall and momentary measures may be tapping into different underlying constructs. Recent pediatric studies have shown discordance between pain experiences and memories for pain, suggesting again that the cognitive processes involved in experiencing in-the-moment pain are unique from those involved in the recall of the pain episode. This potential dichotomy in construct represents
an interesting vein for future research and will require careful conceptualization to examine empirically.

Previous studies have demonstrated peak-end effects of pain on pain intensity recall\textsuperscript{10-42}. In particular, these studies have shown that “peak” pain, or the most intense pain experienced over a period of time, and “end” pain, or the pain reported most recent to the retrospective report, influences recalled pain. These studies have been conducted in adults with pain and it is unknown whether peak-end heuristics operate with regard to pediatric recall bias. Our results demonstrate that in children with JIA, the peak-end effect does influence recall of pain. These data once again show that retrospective pain reporting is insufficiently valid as a means to understand the momentary pain experience of children with JIA. The clinical implications of the peak-end heuristic finding are important to consider, especially in the context of chronically painful conditions such as JIA. Clinic appointments for this population may be infrequent (i.e., occurring several months apart) and clinicians should consider that child reports of pain since last appointment may be tempered by peak-end effect. As a whole, the demonstration of a peak-end effect on recalled pain and the low within-person correspondence between momentary and recalled pain provides support for the clinical use of momentary pain assessment to realistically capture the pain experience of children over time. Furthermore, it is important for clinicians and researchers to recognize the variability of reported pain scores both between and within subjects, as shown in our dataset as well as previous research\textsuperscript{4,43}. The clinical implication of this variability is that a measurement period of two weeks or longer may be necessary to fully capture the pain experience of these children. Likewise, the research implication of this variability is that point-measurements of pain in response to clinical intervention may be insufficient in examining intervention effectiveness. Recently, Stinson and colleagues reported that adolescents would be
willing to use electronic momentary pain diaries for up to six weeks, suggesting the feasibility of long-term momentary pain assessment from a clinical and research perspective.\textsuperscript{44}

Several limitations of this study should be addressed. Since the sample was recruited from a single site and was limited to JIA, the generalizability of our results to other childhood chronic pain conditions will have to be explored through future multi-site studies. Furthermore, our study design did not include a practice period for participants to gain familiarity with the e-Ouch\textsuperscript{©} pain diary. Thus, a learning curve may have affected the momentary pain ratings from Week 1 to Week 2. Lastly, it is possible that the average weekly momentary ratings were influenced by the 22\% of data that were missing from the analysis.\textsuperscript{45} As described by Stinson et al\textsuperscript{5}, we explored different options for replacing the missing data. However, from a clinical perspective, the difference was so small that the advantage of data weighting was unsupported. Correlations were calculated between the proportion of missing data (by week) and the recalled and momentary pain intensity reported. If participants who were experiencing higher levels of pain were more likely to have missing data, then we would expect to see significant correlations. These analyses revealed no significant correlations between these variables. Furthermore, despite the level of missing data, it is important to note that the compliance rates we observed are in line with those typically observed in studies of electronic momentary pain assessment.\textsuperscript{46}

This study has uniquely compared momentary and recalled pain ratings in children and adolescents with chronic pain and has demonstrated modest agreement between these two measurement methods. Consistent with previously reported findings,\textsuperscript{18} correlation coefficients for within-person analyses were far lower than from the between-person analyses. These low within-person correlations mean that children’s recalled pain reports do not equate to assessing their in-the-moment pain experience. This finding is further supported by correlations of both
“peak” pain and “end” pain with retrospective reports. This study further validates the need to use electronic momentary assessment in collecting pain data from children and adolescents to address this reporting discrepancy. Investigations into the correspondence between within-person average and recalled pain in other painful childhood conditions (e.g. cancer) are also warranted to determine the generalizability of these results.
REFERENCES


24. Petroz GC, Stinson JN. GraalPad. 2004


27. SAS Version 9.1.3. 2006


ADDITIONAL FILES

Tables 1-3 uploaded separately as a Microsoft Word document.

Figure 1 uploaded separately as a Microsoft Word document.
Table 1. Child reported recalled pain intensity, average momentary pain intensity and average momentary pain intensity during pain episodes

<table>
<thead>
<tr>
<th>Week of Measurement</th>
<th>Week 1</th>
<th>Week 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly recalled pain</td>
<td>27.58±22.72</td>
<td>22.17±22.15</td>
</tr>
<tr>
<td>Average momentary pain</td>
<td>21.66±20.08</td>
<td>19.02±22.47</td>
</tr>
<tr>
<td>Average momentary pain for pain episodes only</td>
<td>34.20±19.72</td>
<td>36.98±22.25</td>
</tr>
</tbody>
</table>

Data are means ± SD ratings on a 100-point VAS. N\text{participants} =70 to 76.
**Table 2.** Between-person and within-person consistency and agreement measures for momentary and recall data

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Between-Person</th>
<th>Within-Person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Week 1</td>
<td>Week 2</td>
</tr>
<tr>
<td></td>
<td>Pain episode defined as momentary pain ≥ 0/100</td>
<td>Pain episode defined as momentary pain ≥ 30/100</td>
</tr>
<tr>
<td>Pearson correlation</td>
<td>0.55(0.37-0.69)</td>
<td>0.76(0.64-0.84)</td>
</tr>
<tr>
<td>ICC (C, 1)</td>
<td>0.53(0.35-0.67)</td>
<td>0.76(0.63-0.84)</td>
</tr>
<tr>
<td>ICC (A, 1)</td>
<td>0.52(0.34-0.67)</td>
<td>0.75(0.63-0.83)</td>
</tr>
</tbody>
</table>

Data are correlation coefficients (and 95% confidence intervals). N participants = 70 to 71.
Table 3. Peak-End Effects Between Momentary and Recalled Pain Intensity

<table>
<thead>
<tr>
<th>Momentary</th>
<th>Recalled Pain Intensity</th>
<th>Pearson Correlation Coefficient</th>
<th>Number of observations</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Week 1</td>
<td>Week 2</td>
<td>Week 1</td>
<td>Week 2</td>
</tr>
<tr>
<td>Pain Intensity (Last Report)</td>
<td>0.42</td>
<td>0.68</td>
<td>74</td>
<td>71</td>
</tr>
<tr>
<td>Pain Intensity (Maximum)</td>
<td>0.50</td>
<td>0.75</td>
<td>74</td>
<td>71</td>
</tr>
</tbody>
</table>
Scatterplot of change in recalled pain versus change in momentary pain

- Reported change in pain differed significantly between the two methods.
- Both methods indicated a decrease in pain.
- (Centre square) No change in pain with either method.
- Both methods indicated an increase in pain.
- Slight decrease in momentary pain and modest increase in recalled pain.