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Do Past Pain Events Systematically Impact Pain Ratings of Healthy Subjects or Fibromyalgia Patients?

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Abstract

We previously reported that three different electronic visual analogue and numerical pain scales are useful in providing refined capacity to discriminate discrete levels of pain intensity. Using the same subjects and scales, we now investigated whether pain scaling is influenced by past pain events and by recalled memories of these events in the rating of pain. Normal control subjects (NC: 19 male; 30 female) and female fibromyalgia (FM) (n = 17) patients received 5 sec suprathreshold heat stimuli (45 - 49°C) to both forearms. The participants rated these experimental heat stimuli using the previously described electronic pain scales. Subsequently, they were asked to report whether they used any prior pain experiences during the process of rating their pain. Out of 49 NC only 6 females (12.2%) and 7 males (14.3%), and out of 17 FM patients only 3 females (17.6 %) stated to have used past pain experiences during scaling. Notably, pain ratings of experimental heat stimuli did not statistically differ between subjects who used past pain experiences during scaling as compared to those who did not. Furthermore, ratings of their most severe past pains were not significantly correlated with ratings of experimental pain stimuli. These results do not provide support for the strong assertion that pain rating scales are “elastic” i.e. being used differently depending on the severity of past pain events such as childbirth.

Keywords

Pain Scales; Visual Analogue Scale; Ratio Scales; Fibromyalgia; Chronic pain

Introduction

We recently described the characteristics of three types of electronic pain scales, visual analogue scale (eVAS), eVAS plus a number box (eVAS-N), and a 0-100 numerical scale

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Perspective: Less than 25% of subjects used memories of past pain events during pain scaling. In addition, if they were used, these pain memories did not influence pain scaling with electronic eVAS and eNUM scales. Thus use of these scales allows reliable comparisons of experimental and clinical pain ratings within and between subjects.

This paper has been presented in abstract form at the 2009 APS meeting in San Diego, CA [21].

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(eNUM), in NC as well as FM patients (for details, see [14]). All three scales were capable of discriminating very small differences in heat pain intensity (e.g., 0.5°C steps) within the nociceptive range (45 – 49°C). In addition, the experimental pain ratings of NC- males (M), NC-females (F), and female FM patients followed very similar monotonic functions, thereby demonstrating the generality of our results across different demographic groups. As expected, FM patients rated identical heat stimuli higher on all scales in comparison to NC subjects, demonstrating the capacity of these scales to detect group differences in pain sensitivity known to exist across FM and NC subjects [16,20]. Although ratings of NC-F and NC-M subjects did not differ for the range of noxious temperatures presented using the eVAS and eVAS-N, NC-F gave higher eNUM ratings than NC-M for the same stimuli [14]. Following brief instructions, all three groups found the three pain scales easy to use, though most participants preferred the eVAS-N or eVAS over the eNUM scale. These results suggest that some types of VAS scales can reliably detect small within-subjects' as well as between group differences in pain intensity, consistent with their capacity to measure substantial variability in individual differences of pain sensitivity [2,8-10].

Although within subjects' reliability of pain ratings is usually very high, it has been argued that between subjects' comparisons are confounded by individual past pain experiences [4]. Specifically, subjects might stretch or compress pain scales to fit past pain experiences (“elastic scaling”), making group or individual comparisons of identical pain conditions suspect due to possible rating biases [1,4]. Despite this conjecture, the influence of past pain experience on the actual process of pain rating has never been directly and explicitly tested. Therefore, the present study is the first to examine these influences by addressing several interrelated questions:

1. What types of imagined or remembered pain events do people judge as the most severe?
2. Do these pain events differ between pain patients and healthy pain-free individuals and are they different according to sex?
3. Do people consciously use past or imagined painful events when they rate pain?
4. Does the use of past painful events affect the pain ratings of individuals?

Using a battery of questionnaires about past and imagined pain experience in combination with subjects' ratings of experimental heat pain, we examined how these factors affected pain ratings on three different types of electronic pain scales in pain-free NC. In addition, we enrolled FM subjects in this study to support the generality of our findings.

Materials and Methods

NC subjects came from the Health Science Center and Campus of the University of Florida, Gainesville. Subjects who fulfilled the 1990 American College of Rheumatology (ACR) Criteria for FM were recruited from the Health Science Center Outpatient Clinics and from FM support groups. Informed consent was obtained from all subjects and the study protocol conformed to the ethical guidelines of the Declaration of Helsinki (1975). The University of Florida Institutional Review Board approved the procedures and protocol for this study. Prior to testing, all subjects underwent a clinical examination and were excluded from the study if they had abnormal findings besides FM. Abnormal findings which resulted in exclusion included but were not limited to painful osteoarthritis, peripheral neuropathies, and skin changes that interfered with heat sensory testing. By definition FM patients had to have widespread pain and mechanical hyperalgesia/allodynia. Use of analgesics, including non-steroidal anti-inflammatory drugs (NSAID) and acetaminophen, was not allowed during the study. All subjects were asked to discontinue analgesics for the duration of five drug half-lives before testing, except narcotics which had to be stopped at least two weeks prior to study entry.

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Low dose muscle relaxants and/or amitriptyline (≤ 10 mg/day) were permissible during the study for the treatment of FM-related insomnia.

Experimental design

As previously reported [14], experimental pain was elicited by phasic heat pulses (see below) to the volar surface of each forearm. 5 sec heat stimuli between 45°C and 49°C (see 2.3 Heat Stimuli) were applied to three different areas of each forearm separated by 10 cm in counterbalanced order, using a Peltier thermode (see Thermal Probe).

Ratings of pain

Ratings of experimental pain—Three different horizontal electronic scales were used for pain ratings during the heat pain experiments (see [14]): 1) visual analogue scale (eVAS); 2) eVAS plus number box (eVAS-N); and 3) number box numerical scale (eNUM). All scales ranged from 0 to 100 using intervals of 1. The scales were anchored on the left by: “no pain sensation” and on the right by: “the most intense pain imaginable”. All electronic scales were developed by one of the authors (R.S.) using LabView 7.1 (National Instruments Corporation, Austin, TX). Each pain scale was displayed on a 17 inch liquid crystal display (LCD) computer screen. On a second LCD screen, not visible to the study subject, the investigators could observe the eVAS and numerical results of each pain rating. A computer track-ball was used by the study participants to move the electronic slider of the eVAS and eVAS-N scales increasing or decreasing a red horizontal bar. For numerical pain scaling the number box display changed incrementally from 0 to 100 by moving the track-ball. As described before [11] though slightly modified for the current protocol, all subjects were instructed that there are two aspects of pain: the intensity of painful sensation and how unpleasant or disturbing it is to have the pain.

Ratings of somatic pain—A validated mechanical visual analogue scale (0 – 10) (M-VAS) was used for ratings of somatic pain before and after the experimental protocol [11]. Although NC subjects were required to be pain free at enrollment somatic pain ratings were obtained before and after the testing session to capture new incidental pains like back aches, headache, etc. The scale was anchored on the left with “no pain at all” and on the right with “the most intense pain imaginable”.

Heat stimuli—As reported previously in greater detail [14], 5 sec heat pulses were used as experimental pain stimuli. Each stimulus train was comprised of 5 heat stimuli ranging from 45°C to 49°C (in 1°C steps) to alternate forearms. At the end of each 5 sec heat stimulus the participants were immediately asked to rate the intensity of their painful sensations using one of the electronic pain scales (eVAS, eVAS-N, eNUM). This was followed by another train of counterbalanced 5 sec heat stimuli using one of the remaining pain scales, until all pain scales had been used. The order of pain scale use was counterbalanced to prevent order effects. The interval between stimuli was at least 30 sec or until all heat pain sensations had resolved.

Thermal probe—During the experiments a Peltier thermode with a contact surface of 3 × 3 cm (9 cm^2) (TSA-2001, Medoc Advanced Medical Systems, Ramat Yishai, Israel) was used for the thermal stimuli. For heat pain testing the preheated probe was brought into firm contact with the skin of the volar forearm for 5 sec.

Scale use—After the psychophysical experiments all participants were asked to provide information about the way they used the electronic scales. For this purpose the following questions were asked:

1. Please describe and rate the following events using each of the three scales:
    a. Most painful past physical event

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b. Most painful imagined pain event

2. If you used a specific event as a pain anchor, please describe this event

3. Did you use the memory of this specific event for comparison while using the eVAS, eVAS-N, or eNUM?

Pain coding—After a list of the subjects' most painful physical and imagined pain events had been compiled, two observers who were not involved in pain testing were asked to review and categorize this list of pain events. The first round of coding achieved between 84.3% and 90.0 % agreement During the second round of coding 100% agreement was reached between the two observers.

Tender point testing—All subjects underwent tender point testing as defined by the American College of Rheumatology (ACR) Criteria [22]. For this purpose nine paired tender points were assessed by a trained investigator using a Fischer Dolorimeter (Pain Diagnostics, Great Neck, NY).

Statistical analysis—Statistical comparisons utilized SPSS 16.0 software (SPSS, Inc., Chicago, IL). A series of mixed model ANOVAs were performed to test whether experimental pain ratings of subjects who used specific pain events as anchors differed from those who did not. Within subject factors were stimulus temperatures and between subject factors were diagnostic group. Pearson's product-moment correlations were used to test whether ratings of past most intense pain events predicted pain scale use for experimental pain ratings. The significance level was set at .05.

Results

We recruited 49 healthy subjects (females: 30; males 19) [mean age (SD): 34.8 (14.1) years] using advertisements posted throughout the University of Florida, Gainesville and 17 female FM patients [51.7 (11.8) years] from the local community and FM support groups. The chronic pain patients fulfilled the 1990 American College of Rheumatology Criteria for FM ([Wolfe et al., 1990]). All participants were right handed and included 57 Caucasians, two African-American and seven Asian subjects. Of the 47 female subjects (NC=12; FM=9) 21 had delivered at least one child (1 to 5). Most deliveries were vaginal (19); only 2 children were born by cesarean section. Some results of this investigation have been published previously [14].

Clinical pain ratings and tender point count

Using M-VAS (0-10), mean (SD) clinical pain rating of NC and FM subjects was 0.5 (0.6) and 3.7 (3.3) VAS units, respectively. An independent t-test demonstrated significantly higher pain ratings of FM subjects compared to NC ($t(65) = -6.7$; $p < .001$). There was no significant difference in clinical pain ratings between NC-F and NC-M ($p > .05$). The number of tender points in NC and FM subjects was 3.3 and 15.2, respectively ($p < .002$).

Impact of past pain events on experimental pain ratings

Effects of past pain events on averaged heat pain ratings across all subjects (NC and FM)—After the heat pain testing 16 subjects (13 NC, 3 FM) indicated that they used memories of a past pain event as anchor for their experimental pain ratings whereas 50 subjects did not (36 NC, 14 FM) (Table 1). Most frequently used events were injury/trauma (8) and medical conditions (6). Childbirth was only used twice (Table 2). The subjects rated experimental stimuli (45-49°C) using three different pain scales (eVAS, eVAS-N, and eNUM). Each subject's heat pain ratings were averaged for each of the three pain scales. A repeated measures ANOVA with scales (3) as within subject factor and ‘use of past pain event’ (2) as

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between subject factor was used to determine whether individuals who used specific past pain events as anchors rated experimental heat stimuli different from those who did not. The ANOVA showed significant main effects for scales ($F(2,110) = 4.2$; $p = .02$) but not for use of past pain event ($F(1,55) = .6$; $p > .05$). In addition, there was no significant interaction effect between scales and 'use of past pain event' ($F(2,110) = .7$; $p > .05$; $\eta^2 = .01$) (Figure 1). Use of simple contrasts showed that averaged eNUM ratings were statistically greater than those obtained with eVAS-N ($F(1,55) = 6.8$; $p = .01$). These latter findings have been reported previously [14]. These results indicate that experimental pain ratings of subjects who used past pain events for scaling did not differ from those who did not. Furthermore, the magnitude of this effect was very small ($\eta^2 = .01$), suggesting that the lack of statistical significance was not just the result of inadequate sample size. Although in future studies a much larger sample size could be employed to show reliable differences, this effect was very small and thus unlikely to become meaningful.

Impact of past pain events on pain ratings of male and female NC—Because FM males were unavailable for comparisons with female FM participants, only results of NC subjects were used for this analysis. In order to evaluate the effects of sex on ratings of painful heat stimuli (45 – 49°C) between male and female NC who used memories of past painful events (n = 13) compared to those who did not (n = 36), a repeated measures ANOVA was performed with averaged heat pain ratings for eVAS, eVAS-N, and eNUM as the within subjects' variables and 'use of pain memory' (2) and sex (2) as between subjects' variables. Averaged ratings of heat stimuli by NC subjects who used past pain events for scaling ranged between 17.3 and 30.9 units (Figure 2). Similarly, NC who did not use past pain events rated heat stimuli on average between 16.5 and 27.9 units. The ANOVA showed neither significant main sex effects for averaged heat pain ratings ($F(2,70) = 2.5$; $p > .05$) nor significant sex × pain memory interaction effects ($F(1,35) = .32$; $p > .05$). There was however, a significant scale × sex interaction noted ($F(2,70) = 5.2$; $p = .008$). Use of simple contrasts showed that female NC rated heat stimuli higher than males using the eNUM ($F(1,35) = 8.9$; $p = .005$), results that we have reported previously [14]. These finding indicate that heat pain ratings of experimental pain were similar for NC male and NC female subjects who did and those NC who did not use a past pain event. These results show that recalling past painful events during pain scaling did not seem to impact pain ratings with electronic scales and was not different between men and women.

Effects of past pain events on ratings of most intense experimental pain stimulus—Past painful events may play an important role in scale usage. Therefore, we explored the impact of remembered most painful past events on most intense heat stimulus (49°C). Pearson's product moment correlations were used to test this relationship using the three pain scales. Because our previous investigation showed a sex effect on scale usage [14], we also explored such effects on experimental pain ratings. For female subjects (NC and FM) the correlation coefficient for experimental pain and past most painful event ranged between $r = -.02$ and $r = .3$ (all $p > .05$) independent of scale type. The same analysis for male subjects, however, showed statistically significant correlation coefficients for all scale types ($r = .5$ to $r = .7$; $p < .04$). However, when z-tests were used to compare these sex differences, the correlation coefficients were found to be not significantly different (all $p > .05$), most likely due to small sample size.

Discussion

The results of this study provide evidence that ratings of experimental pain by NC and FM subjects are not substantially influenced by previously experienced or imagined worst pain for several reasons: 1) Only 26.5 % of 49 NC (6 females = 12.2 %; 7 males = 14.3 %) and 17.6 % of 17 FM subjects (3 females) stated to have used past pain events during the process of rating

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pain; and 2) their ratings of experimental pain were *not* statistically different from the 73 % of NC and 82 % of FM subjects who claimed not to have used such events for ratings of experimental pain. Nevertheless, it is still conceivable that ratings of experimental pain could be influenced by the worst pain previously experienced despite the lack of conscious appreciation of this influence. However, the absence of significant positive or negative correlations between the most intense past pain ratings and participants' ratings of maximum pain experienced during this experiment also argues against this possibility.

These results do not support the assertion that pain rating scales are “elastic” and are used differently depending on the severity of past pain events including childbirth [4]. The present findings are also in agreement with previous work by our group that demonstrated a high degree of stability of scale anchors [3,18]. All these results strongly argue against “scale elasticity” speculations of pain ratings [4]. Specifically, with regards to extreme pain events, our present analysis revealed that only 10.6 % of women considered childbirth to be the worst imaginable pain. Instead, physical trauma and severe burns were much more commonly endorsed by both women and men as “the worst pain imaginable” (Table 3). We also found that traumatic injury and illness/surgery were most frequently reported as “the most severe pain experienced”. Similarly, pain memories in those two categories predominated amongst the small percentage of subjects who remembered past events during pain ratings.

Pain during delivery does not seem to influence pain scale use

Our conclusions that past pain memories seem to have only minor influences on pain scaling are based on cross-sectional data. Ideally, the influence of significant pain experiences on scaling, such as childbirth pain, requires a longitudinal approach, i.e. measuring pain ratings of experimental pain before and after a significant pain event. By using natural childbirth as the specific pain event, a previous study examined ratings of heat induced pain in women who underwent natural child birth for the first time [5]. Fifteen women rated pain from heat stimuli [5 sec stimuli (45-51°C) to the volar forearm] several times during pregnancy and after delivery. Heat stimuli and VAS scales were very similar to those used in the present study. Experimental pain ratings obtained during late pregnancy (33-39 weeks; mean = 34.9 weeks), labor (early to active phase), and 2-3.6 days after delivery were not statistically different nor was there a trend for different ratings across these three time periods (i.e., the stimulus-response curves were nearly identical). Thus pain scaling does not seem to be affected by previous labor pain as a recent [5] or remote event (current study) (Figure 1). Furthermore, because VAS ratings are highly sensitive to change in pain intensity as evidenced by our previous studies [13,14,17], type II errors do not represent a reasonable explanation for these negative results. Additional support was provided by the finding that experimental pain ratings of women who had given birth did not differ at all from age-matched female subjects (N = 19) who had never been pregnant [5].

Implications for pain measurement in clinical and experimental settings

Our present results support the view that past or imagined pain experiences do not seem to significantly influence experimental pain ratings with electronic scales. This lack of significant influence of worst imagined or experienced pain events on pain scale use has important implications for pain measurement in clinical and experimental settings. If remembered or imagined intense pain events have systematic influences on pain scale use, then individual and group differences in pain ratings of the same intensities of stimuli should vary as a function of these factors. Because our results indicate otherwise, the variability in pain ratings known to exist across individuals in response to identical stimuli (e.g. 49°C) [2] is not due to differences in the way pain scales are used, but reflects differences in the actual experience of pain.

Consistent with our present results, several lines of converging evidence support the conclusion that individual differences in pain ratings of identical stimuli are a function of differences in

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pain sensitivity and not pain scale use [2,6]. Imaging studies have shown that differences in reported pain are accompanied by corresponding alterations in brain activity despite the fact that identical stimulus intensities were used in all subjects [2]. A second line of evidence is based on results that individuals do not seem to have systematic biases in the way they use pain scales, mostly because such biases should increase correlations between ratings of different types of pain stimuli. However, since correlations between ratings of different types of experimental pain are generally very low, and sometimes approach zero [6], it has been argued that bias in scale use is negligible. Third and finally, a genetic study of twins using structural equation modeling found that genetic effects explained 60 % of the variance in cold-pressor pain and 26 % of the variance in contact-heat pain, after corrections for gender and measurement error [10]. An important finding related to the issue of whether individual differences in pain ratings reflect scale use or actual pain sensitivity differences was that the genetic and environmental factors influencing these two pain modalities were distinct. Only 6 % of the variance in cold-pressor pain and 3 % of the variance in heat pain was attributable to genetic factors that were common to both pain modalities. Similarly, only 5 % of the variance in cold-pressor pain and 8 % of the variance in heat pain was attributable by environmental factors that were common to both pain modalities. Since scale use applies to environmental and genetic factors common to both pain modalities, results of this twin study suggest that differences in scale use account for very little of the individual differences in pain ratings of same intensity stimuli.

Limitations

Although the relationship between current pain perception and past pain experience is likely complex and may be influenced by both explicit and implicit factors, our study focused on the role of explicit memory for pain scaling. Additional studies will be necessary to address the role of implicit memory for pain scaling. The statistical power of our study to detect group difference in pain scaling may have been limited by the small number of individuals who used past pain events for scaling of experimental pain. However, confidence in our conclusions is strengthened by the low effect size ($\eta^2 = .01$) of remembered past pain events, indicating that only 1% of the variance in pain scaling could be attributed to past pain events. Another limitation of this study is that no corroborating evidence was obtained to support or refute study subjects' assertion whether they had used imagined or past painful events during pain scaling. Future functional brain imaging studies, however, may be able to distinguish different neural activation patterns across subjects who do or do not use past experiences or use imaginary pain events.

Conclusions

The present results with electronic pain scales demonstrate the relative independence of pain ratings from specific imagined or experienced past worst pain events, a factor that further validates these types of pain scales. They add to a growing literature that well constructed VAS and VAS-N scales (using adequate instructions) have psychometric characteristics that are superior to other pain scaling methods [11,15], particularly the 0-10 numerical scale that does not have ratio properties [7]. Of particular importance is that VAS scales have high repeatability and test-retest reliability [19], ratio scale properties [12], distinguish very small differences in pain intensity [14], and discriminate between sensory intensive and affective pain dimensions [11]. Most recently, electronic versions of these scales have demonstrated ease of use and scoring [14], and both healthy volunteers and pain patients seemed to prefer eVAS over other methods, such as numeric rating scales (NRS) [14]. More research on recall of pain events, specifically implicit memories, will be necessary to confirm that pain ratings with electronic scales are independent of pain memories. Electronic or mechanical VAS, combined with adequate instructions may offer the best option to date for rating both clinical and experimental pain.

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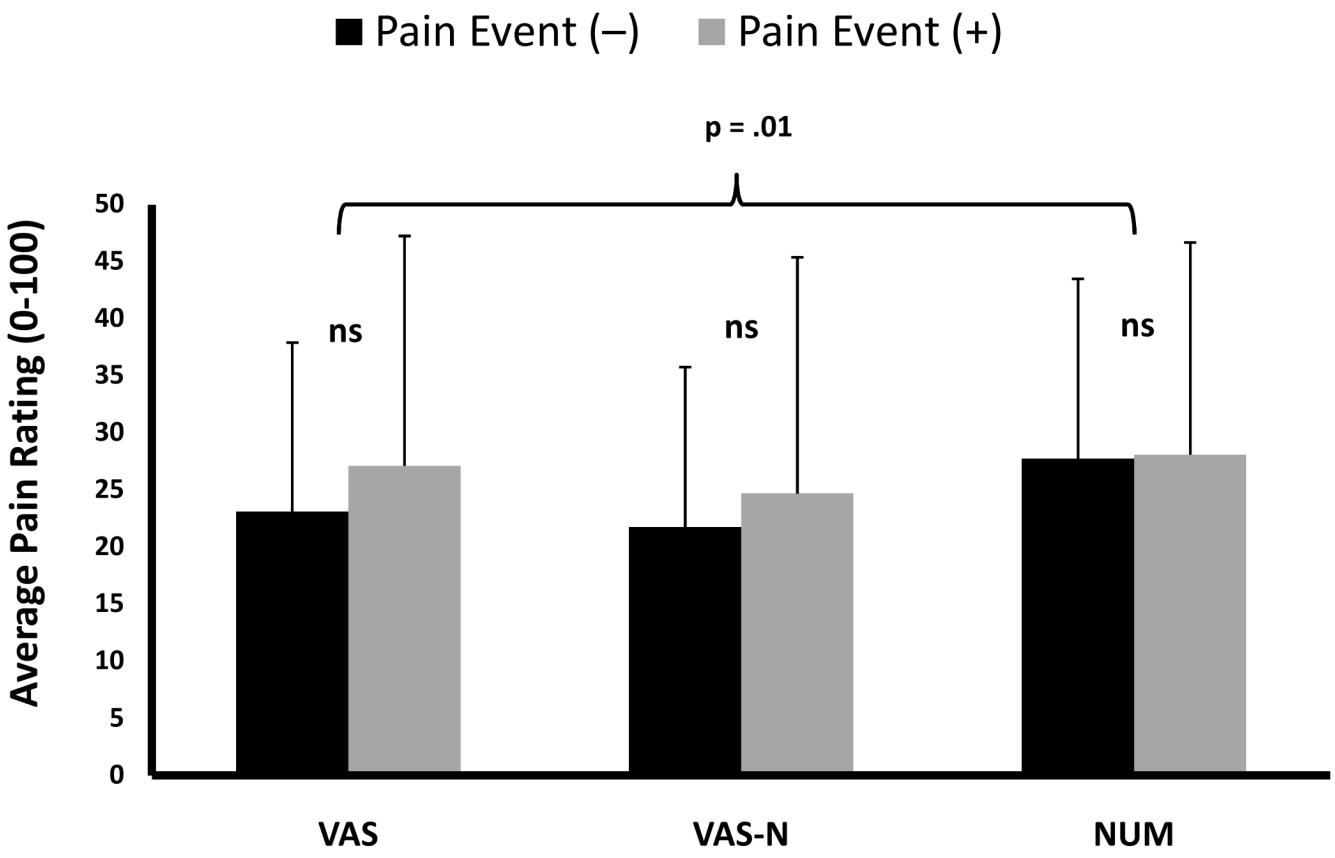

Figure 1.

Averaged (SD) ratings of 5 sec heat pulses between 45 and 49°C by all subjects (16 subjects who used a past pain event as anchor for pain ratings and 50 subjects who did not use a specific painful event). These results were obtained using eVAS, eVAS-N, and eNUM scales. A repeated measures ANOVA showed a sex effect on pain scaling, e.g. females rated experimental pain higher using the eNUM compared to the other two scales ($p = .01$). However, this analysis did not show significantly different pain ratings between subjects who used and those who did use a past pain event during scaling ($p > .05$; $\eta^2 = .01$). Thus using specific pain events as anchors does not seem to influence pain ratings with these electronic pain scales. eVAS = electronic visual analogue scale; eVAS-N = electronic visual analogue scale with number box; eNUM = electronic number scale; (-) No pain event used for scaling; (+) pain event used for scaling; ns = non significant

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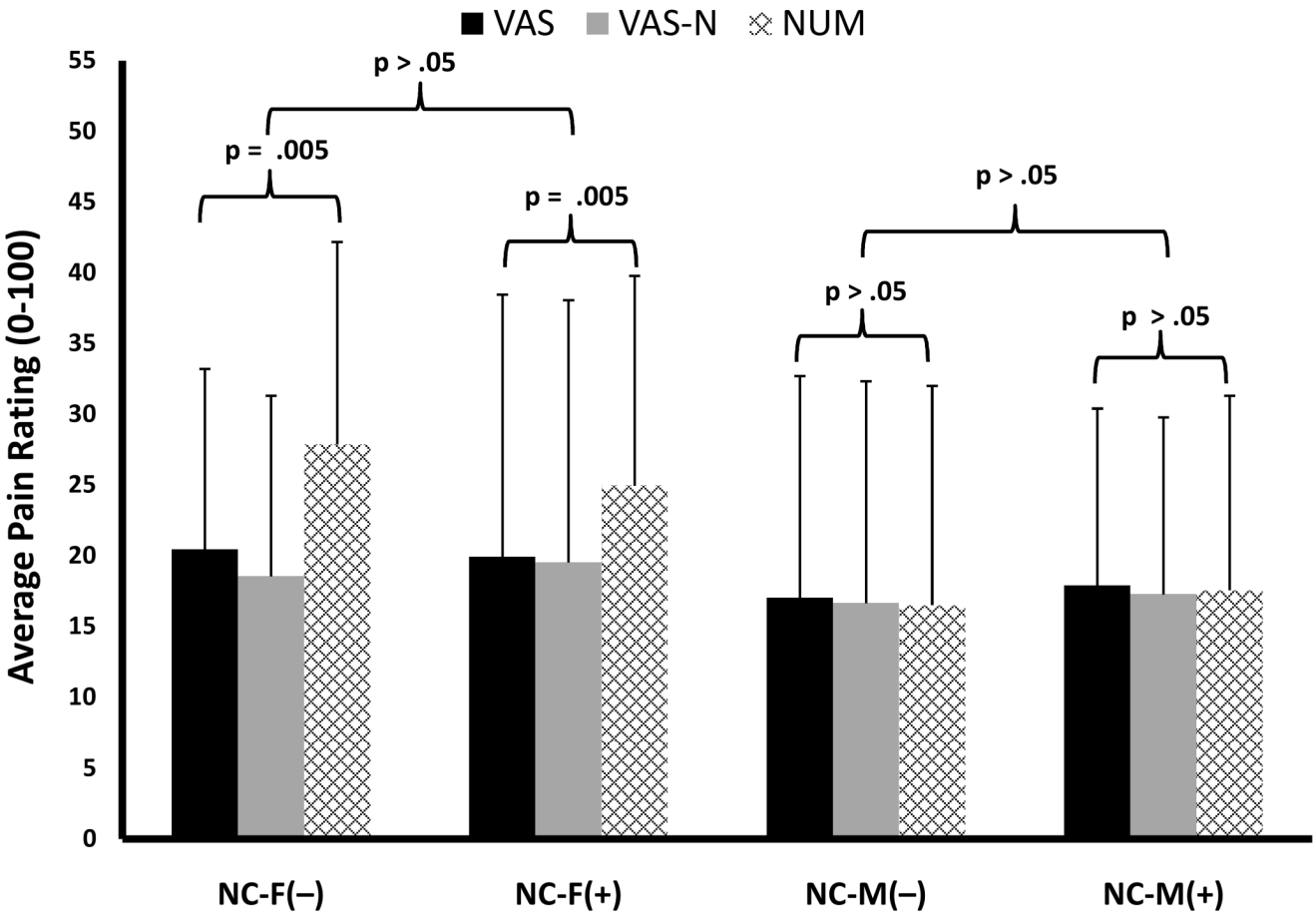

Figure 2.

Averaged (SD) ratings of experimental heat stimuli by female and male NC subjects only (13 subjects who used past pain events for scaling (+) and 36 subjects who did not (-). A repeated measures ANOVA did not note significant effects of sex ($p > .05$) or pain memory ($p > .05$) on averaged heat pain ratings, regardless of sex. However, female NC reported higher pain ratings using the eNUM scale ($p = .005$). These latter results of differential scale usage by women have been reported previously [14]. eNUM = electronic number scale

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Table 1

Subjects who used specific pain events for ratings of experimental pain

NC (n=49)		FM (n = 17)
Male	**Female**	**Female**
7 (14.3 %)	6 (12.2 %)	3 (17.6 %)

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Table 2

List of most intense imagined and past pain events

A) All subjects			
VARIABLE	**CATEGORY**	**Frequency**	**%**
Pain Events Imagined	Traumatic Injury	28/66	42.4%
	Illness/Surgery	6/66	9.1%
	Severe Burn	21/66	31.8%
	Childbirth	5/47	10.6%
	Other	6/66	9.1%
Pain Events Experienced	Traumatic Injury	27/66	40.9%
	Illness/Surgery	21/66	31.8%
	Severe Burn	1/66	1.5%
	Childbirth	7/47	14.9%
	Other	10/66	15.2%
Pain Events Used for Scaling	Traumatic Injury	8/16	50.0%
	Illness/Surgery	5/16	31.3 %
	Severe Burn	1/16	6.3%
	Childbirth	2/16	12.5%
B) Females only			
VARIABLE	**CATEGORY**	**Frequency**	**%**
Pain Events Imagined	Traumatic Injury	19/47	40.4%
	Illness/Surgery	3/47	6.4%
	Severe Burn	14/47	29.8%
	Childbirth	5/47	10.6%
	Other	6/47	12.8%
Pain Events Experienced	Traumatic Injury	18/47	38.3%
	Illness/Surgery	10/47	21.3%
	Severe Burn	1/47	2.1%
	Childbirth	9/47	19.1%
	Other	9/47	19.1%
Pain Events Used for Scaling	Traumatic Injury	2/9	22.2%
	Illness/Surgery	4/9	44.4 %
	Severe Burn	1/9	11.1%
	Childbirth	2/9	22.2%
C) Males only			
VARIABLE	**CATEGORY**	**Frequency**	**%**
Pain Events Imagined	Traumatic Injury	8/19	42.1%
	Illness/Surgery	3/19	15.8%
	Severe Burn	6/19	31.6%
	Other	2/19	10.5%

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A) All subjects			
VARIABLE	**CATEGORY**	**Frequency**	**%**
Pain Events Experienced	Traumatic Injury	6/19	31.6%
	Illness/Surgery	8/19	42.1%
	Severe Burn	2/19	10.5%
	Other	3/19	15.8%
Pain Events Used for Scaling	Traumatic Injury	3/7	42.9%
	Illness/Surgery	2/7	28.6 %
	Severe Burn	0/7	0.0%
	Other	2/7	28.6%

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Table 3

Pain ratings of most intense imagined and past pain events by all participants using the 3 electronic pain scales

VARIABLE	CATEGORY	eVAS	eVAS-N	eNUM
	Mean (SD)			
Pain Events Imagined	Traumatic Injury	97.8 (7.1)	98.2 (4.5)	98.7 (3.0)
	Illness/Surgery	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)
	Severe Burn	99.9 (0.6)	99.9 (0.4)	99.9 (0.5)
	Childbirth	94.3 (7.6)	92.8 (8.8)	93.0 (8.1)
	Other	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)
Pain Events Experienced	Traumatic Injury	77.5 (20.7)	76.8 (20.1)	77.5 (20.2)
	Illness/Surgery	77.2 (23.2)	80.1 (17.7)	85.1 (16.0)
	Severe Burn	54.0 (0.0)	56.0 (0.0)	56.5 (0.3)
	Childbirth	85.4 (16.5)	85.6 (15.6)	81.0 (13.3)
	Other	82.5 (20.0)	81.7 (19.8)	84.9 (18.8)
Pain Events Used for Scaling	Traumatic Injury	81.6 (17.1)	78.4 (17.3)	84.0 (14.8)
	Illness/Surgery	87 3 (9.7)	84.8 (7.5)	85.5 (13.4)
	Severe Burn	77.0 (12.3)	82.0 (11.9)	82.0 (18.1)
	Childbirth	85.5 (6.5)	87.5 (5.9)	100.0 (4.3)
	Other	92.5 (12.1)	91.0 (15.6)	94.5 (11.9)