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THE McGILL PAIN QUESTIONNAIRE: MAJOR PROPERTIES AND SCORING METHODS

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SUMMARY

The McGill Pain Questionnaire consists primarily of 3 major classes of word descriptors — sensory, affective and evaluative — that are used by patients to specify subjective pain experience. It also contains an intensity scale and other items to determine the properties of pain experience. The questionnaire was designed to provide quantitative measures of clinical pain that can be treated statistically. This paper describes the procedures for administration of the questionnaire and the various measures that can be derived from it. The 3 major measures are: (1) the *pain rating index*, based on two types of numerical values that can be assigned to each word descriptor, (2) the *number of words chosen*; and (3) the *present pain intensity* based on a 1–5 intensity scale. Correlation coefficients among these measures, based on data obtained with 297 patients suffering several kinds of pain, are presented. In addition, an experimental study which utilized the questionnaire is analyzed in order to describe the nature of the information that is obtained. The data, taken together, indicate that the McGill Pain Questionnaire provides quantitative information that can be treated statistically, and is sufficiently sensitive to detect differences among different methods to relieve pain.

INTRODUCTION

The measurement of pain in man is essential for the evaluation of methods to control pain. Yet the tools which are currently used encounter serious difficulties[1,2]. Laboratory techniques for the production and measurement of pain have obvious ethical limitations on the intensity and duration of the pain that can be employed for experimental study. Laboratory pains are necessarily brief and are stopped when they reach unbearable intensity. Clinical pains, in contrast, are often persistent, un-

bearable, beyond the patient's control, and accompanied by high levels of anxiety. It is not surprising, therefore, that there are often marked differences in drug and placebo effects on clinical and experimental pains[1,2].

Even though studies of clinical pain are clearly desirable, severe limitations are imposed by our measuring tools. They invariably treat pain as though it were a specific sensory quality that varies only in intensity. Whether pain is measured by a psychophysical 'dol' scale[3], words such as 'mild, moderate, and severe'[4], or numbers or fractions representing pain intensification or relief[1], only intensity is specified. It is now evident[8] that the word 'pain' refers to an endless variety of qualities that are categorized under a single linguistic label, not to a specific, single sensation that varies only in intensity. Each pain has unique qualities. The pain of a toothache is obviously different from that of a pin-prick, just as the pain of a coronary occlusion is uniquely different from the pain of a broken leg. To describe pain solely in terms of intensity is like specifying the visual world only in terms of light flux without regard to pattern, colour, texture, and the many other dimensions of visual experience.

METHODS AND RESULTS

Towards a pain questionnaire

Melzack and Torgerson[8] have made a start towards the specification of the qualities of pain. In the first part of their study, subjects were asked to classify 102 words, obtained from the clinical literature relating to pain, into smaller groups that describe different aspects of pain experience. On the basis of the data, the words were categorized into 3 major classes and 16 subclasses. The distribution of a portion of the words is shown in Fig. 1. The classes are: (1) words that describe the *sensory qualities* of the experience in terms of temporal, spatial, pressure, thermal, and other properties; (2) words that describe *affective qualities*, in terms of tension, fear, and autonomic properties that are part of the pain experience; and (3) *evaluative* words that describe the subjective overall intensity of the total pain experience. Each subclass, which was given a descriptive label, consists of a group of words that were considered by most subjects to be qualitatively similar. Some of these words are undoubtedly synonyms, others seem to be synonymous but vary in intensity, while many provide subtle differences or nuances (despite their similarities) that may be of importance to a patient who is trying desperately to communicate to a physician.

The second part of the study was an attempt to determine the pain intensities implied by the words within each subclass. Groups of doctors, patients and students were asked to assign an intensity value to each word, using a numerical scale ranging from least (or mild) pain to worst (or excruciating) pain. When this was done, it was apparent that several words within each subclass had the same relative intensity relationships in all three sets. For example, in the spatial subclass, 'shooting' was found to represent more pain than 'flashing', which in turn implied more pain than 'jumping'. Although the precise intensity scale values differed for the three groups, all three agreed on the positions of the words relative to each other. The scale values

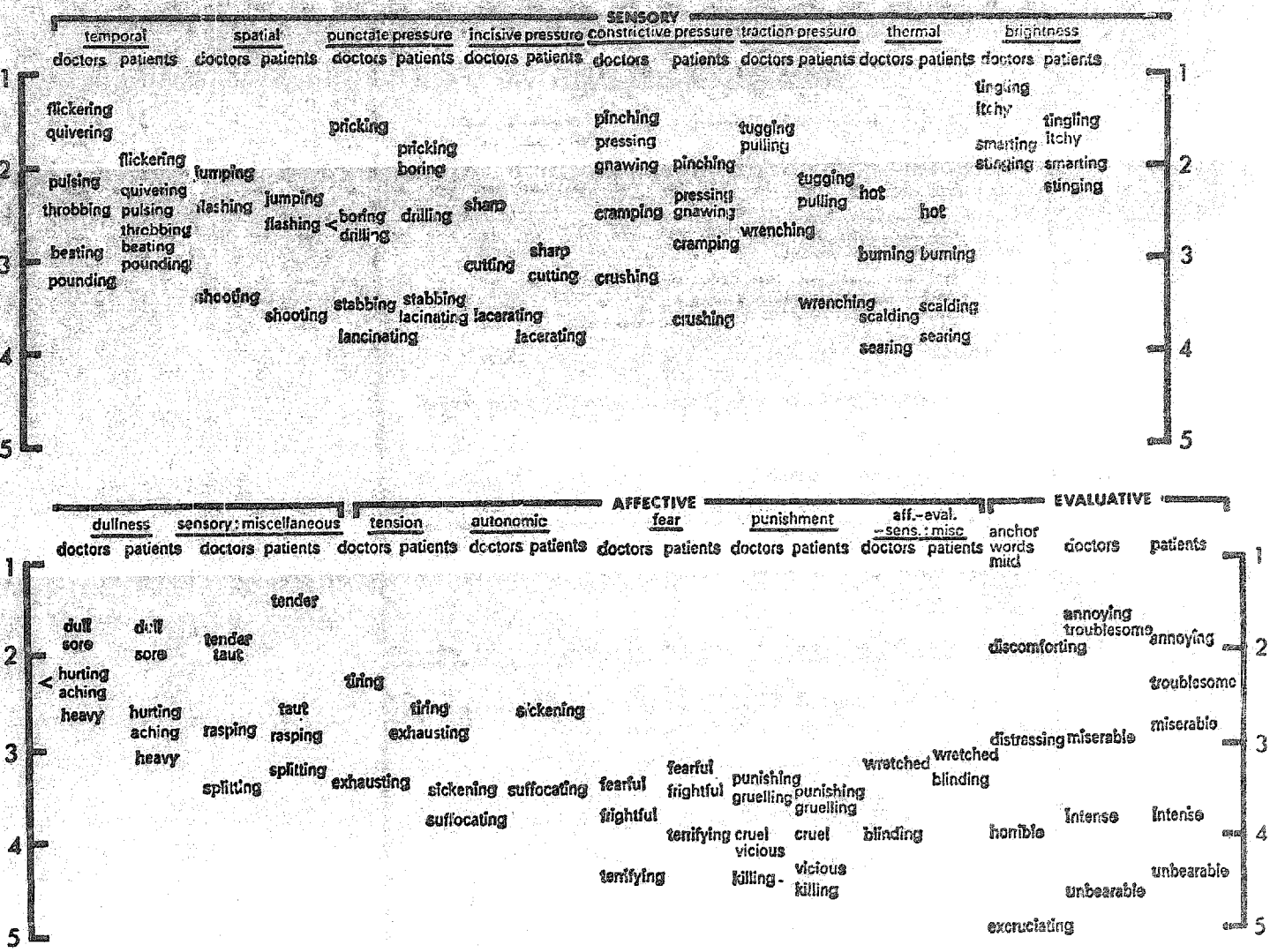


Fig. 1. Spatial display of pain descriptors which have the same rank order, on an intensity scale, for doctors and patients. The scale values range from 1 (mild) to 5 (excruciating). Two words connected by an arrowhead have the same mean scale value. (From Melzack and Torgerson[8].)

of the words for doctors and patients, based on the precise numerical values listed in Melzack and Torgerson[8], are shown in Fig. 1.

Because of the high degree of agreement on the intensity relationships among pain descriptors by subjects who have different cultural, socio-economic, and educational backgrounds, a pain questionnaire (Fig. 2) was developed as an experimental tool for studies of the effects of various methods of pain management. In addition to the list of pain descriptors, the questionnaire comprised a top sheet to record necessary medical information (such as diagnosis and drug intake), line drawings of the body to indicate the spatial distribution of the pain, words that describe temporal properties of pain, and the overall present pain intensity (PPI). The PPI is recorded as a number from 1 to 5, in which each number is associated with the following words: 1, mild; 2, discomforting; 3, distressing; 4, horrible; 5, excruciating. The

McGill-Melzack
PAIN QUESTIONNAIRE

Patient's name _____ Age _____
File No. _____ Date _____
Clinical category (eg. cardiac, neurological, etc.): _____

Diagnosis: _____

Analgesic (if already administered):
1. Type _____
2. Dosage _____
3. Time given in relation to this test _____

Patient's intelligence: circle number that represents best estimate
1 (low) 2 3 4 5 (high)

****

This questionnaire has been designed to tell us more about your pain. Four major questions we ask are:

1. Where is your pain?
2. What does it feel like?
3. How does it change with time?
4. How strong is it?

It is important that you tell us how your pain feels now. Please follow the instructions at the beginning of each part.

Part 1. Where is your Pain?

Please mark, on the drawings below, the areas where you feel pain. Put E if external, or I if internal, near the areas which you mark. Put EI if both external and internal.

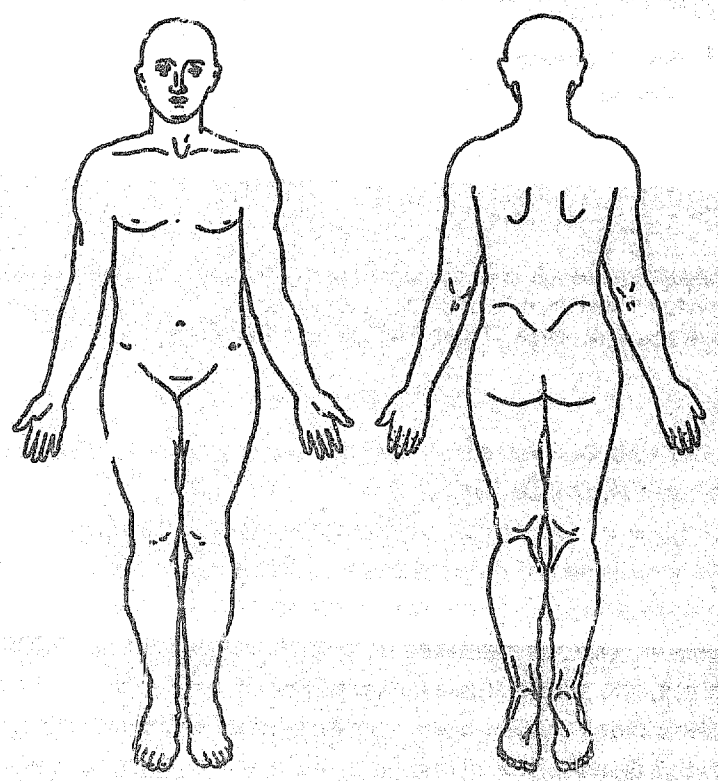


Fig. 2. McGill Pain Questionnaire. For further description see text.

Part 2. What Does Your Pain Feel Like?

Some of the words below describe your present pain. Circle ONLY those words that best describe it. Leave out any category that is not suitable. Use only a single word in each appropriate category—the one that applies best.

1	2	3	4
Flickering	Jumping	Pricking	Sharp
Quivering	Flashing	Boring	Cutting
Pulsing	Shooting	Drilling	Lacerating
Throbbing		Stabbing	
Beating		Lancinating	
Pounding			
5	**6**	**7**	**8**
Pinching	Tugging	Hot	Tingling
Pressing	Pulling	Burning	Itchy
Gnawing	Wrenching	Scalding	Smarting
Cramping		Searing	Stinging
Crushing			
9	**10**	**11**	**12**
Dull	Tender	Tiring	Sickening
Sore	Taut	Exhausting	Suffocating
Hurting	Rasping		
Aching	Splitting		
Heavy			
13	**14**	**15**	**16**
Fearful	Punishing	Wretched	Annoying
Frightful	Gruelling	Blinding	Troublesome
Terrifying	Cruel		Miserable
	Vicious		Intense
	Killing		Unbearable
17	**18**	**19**	**20**
Spreading	Tight	Cool	Nagging
Radiating	Numb	Cold	Nauseating
Penetrating	Drawing	Freezing	Agonizing
Piercing	Squeezing		Dreadful
	Tearing		Torturing

Part 3. How Does Your Pain Change With Time?

1. Which word or words would you use to describe the pattern of your pain?

1	2	3
Continuous	Rhythmic	Brief
Steady	Periodic	Momentary
Constant	Intermittent	Transient

2. What kind of things relieve your pain?

3. What kind of things increase your pain?

Part 4. How Strong Is Your Pain?

People agree that the following 5 words represent pain of increasing intensity. They are:

1	2	3	4	5
Mild	Discomforting	Distressing	Horrible	Excruciating

To answer each question below, write the number of the most appropriate word in the space beside the question.

1. Which word describes your pain right now? _____
2. Which word describes it at its worst? _____
3. Which word describes it when it is least? _____
4. Which word describes the worst toothache you ever had? _____
5. Which word describes the worst headache you ever had? _____
6. Which word describes the worst stomach-ache you ever had? _____

Fig. 2.

mean scale values of these words, which were chosen from the evaluative category, are approximately equally far apart[8], so that they represent equal scale intervals and thereby provide 'anchors' for the specification of overall pain intensity. Additional questions related to the PPI (Fig. 2, part 4) provide information on the patient's personal tendency to rate pain at the low or high ends on the scale.

In a preliminary study, the pain questionnaire consisted of the 16 subclasses of descriptors shown in Fig. 1, as well as the additional information (described above) deemed necessary for the evaluation of pain. It soon became clear, however, that many of the patients found certain key words to be absent. These words were then selected from the original word lists used by Melzack and Torgerson[8], were categorized appropriately, and ranked according to scale values. A further set of words — cool, cold, freezing — was used by patients on rare occasions but was indicated to be essential for an adequate description of some types of pain. Thus, 4 supplementary subclasses were added to the word lists of the questionnaire (Fig. 2). The final classification, then, appeared to represent the most parsimonious and meaningful set of subclasses without at the same time losing subclasses that represent important qualitative properties.

The present study is based on questionnaire data obtained from 297 patients. The major diagnostic pain categories and the number of patients in each are the following: arthritis, 27; cancer, 23; dental, 15; dermatological, 11; gastrointestinal, 10; low back and/or sciatica, 50; menstrual, 25; musculoskeletal, 46; neurological, 64; obstetric, 4; phantom limb, 17; post-surgical (iatrogenic), 5. Because analyses of the data were carried out at different times during the study, the number of patients varies among the different sections of the study.

Method of administration

Preliminary studies showed that data obtained by allowing a patient to fill out the questionnaire by himself are sometimes unreliable. Patients may fail to read the instructions carefully and miss 3 essential features in part 2: (1) they may choose more than one item from a word list; (2) they may feel compelled to choose a word from every subclass; and (3) they may fail to describe the pain at that moment in time and use words that describe a pain they had hours earlier. It is important, therefore, that the instructions be read out loud to the patient by a research assistant or nurse to make sure that they are fully understood. In this way, the patient learns to select carefully *only* those words that describe the pain at the time the questionnaire is administered.

It is also important that the patients understand the meaning of the words. Some of them may be beyond the patient's vocabulary and may need to be defined. Although this is relatively rare, it occurs from time to time. Sometimes a patient is not sure whether a word in a particular subclass is appropriate, and may ask to have the words re-read. This may be done several times until the patient reaches a decision. It is important that the administrator utilizes patience and understanding; impatience may lead to hurried decisions by the patient.

Generally, a questionnaire initially requires 15–20 min; with increasing experience, it is completed in 5–10 min.

Two aspects soon become apparent to the administrator of the questionnaire. (1) The patients are usually highly selective; they may reject word after word, until one comes up that is clearly 'right'; they may smile, say 'that's it!' with a sense of certainty, and continue the process of rejection and selection. Generally, then, the patient appears to feel 'compelled' to choose only the appropriate words. (2) Patients are grateful to be provided with words to describe their pain; these kinds of words are used infrequently, and the word lists save the patient from having to grope for words to communicate with the physician. Furthermore, patients are pleased to see (or hear) words which they use to describe their pain to family and friends but which they would not tell the physician because he may consider them psychologically unsound; the administrator thus often senses the patient's relief at seeing such words in a list, implying that they are acceptable and sound descriptors.

Analysis of the data

This paper describes ways of analyzing the word descriptor information obtained with the questionnaire. Analysis of other portions of the questionnaire will be described elsewhere.

Descriptor data

Four types of data can be obtained from the questionnaire.

(1) Pain rating index based on the patients' mean scale values obtained by Melzack and Torgerson[8], designated henceforth as the PRI(S). This consists of the sum total of the scale values of all the words chosen in a given category (sensory, affective, etc.) or for all categories.

(2) Pain rating index based on the rank values of the words — PRI (R). In this scoring system, the word in each subclass implying the least pain is given a value of 1, the next word is given a value of 2, etc. The values of the words chosen by a patient are then added up to obtain a score for each category, and a total score for all categories.

(3) The number of words chosen (NWC).

(4) The present pain intensity (PPI) — the number–word combination chosen as the indicator of overall pain intensity at the time of administration of the questionnaire.

Each type of data represents a quantitative index of pain and can also be used to indicate the extent of change in pain quality and intensity as a result of some manipulative procedure. The questionnaire is administered before and after the procedure, and the difference can be expressed as a percentage change from the initial value.

Correlations between PRI (S) and PRI (R)

Table I shows that there is a high correlation between the scale- and rank-value methods for determining the PRI scores for each category. Not only are the

TABLE I

CORRELATION COEFFICIENTS BETWEEN RANK (R) AND SCALE (S) VALUES OF THE PAIN RATING INDEX (PRI)

The categories are: S, sensory; A, affective; E, evaluative; M, miscellaneous; T, total. Based on N = 248.

	PRI (S)					*PRI (R)*				
	S	*A*	*E*	*M*	*T*	*S*	*A*	*E*	*M*	*T*
PRI (R)										
S	0.94									
A		0.92				0.41				
E			0.93			0.27	0.42			
M				0.91		0.35	0.45	0.22		
T					0.95	0.87	0.70	0.49	0.69	
PRI (S)										
S										
A	0.41									
E	0.26	0.33								
M	0.37	0.41	0.10							
T	0.84	0.75	0.41	0.69						

Criterion values for the Correlation Coefficient for N = 200; two-tailed test: $P < 0.05$: 0.14; $P < 0.01$: 0.18

intercorrelations higher than 0.9 for all 4 categories, but the intercorrelations among the various subclasses are almost all at the same level. The intercorrelations for each subclass are the following: *sensory*: 1, 0.91; 2, 0.97; 3, 0.95; 4, 0.84; 5, 0.92; 6, 0.95; 7, 0.93; 8, 0.92; 9, 0.92; 10, 0.95; *affective*: 11, 0.82; 12, 0.94; 13, 0.90; 14, 0.87; 15, 0.92; *evaluative*: 16, 0.93; *miscellaneous*: 17, 0.90; 18, 0.88; 19, 0.23; 20, 0.94. The only intercorrelation less than 0.80 is that for subclass 19 (cool, cold, freezing) which is often used to describe dental pain but rarely for any other pain. It is clear from these data, then, that the PRI (R), which can be computed extremely easily, provides a simple way of scoring the descriptors.

Correlations between NWC and PRI (S) or PRI (R)

The number of words chosen (NWC) correlates highly with the PRI calculated with either the scale (S) value ($r = 0.97$) or the rank (R) value ($r = 0.89$). Although the correlation is higher for the scale- than for the rank-value calculations, both correlations (based on N = 248) are so high that the difference is insignificant. The high correlations are not surprising, since the larger the number of words chosen, the higher the PRI.

Correlations between PRI and NWC or PRI (R)

The patients' ratings of overall present pain intensity (PPI) correlate significantly ($P < 0.01$ in all cases) with the total number of words chosen (NWCT) and the PRI (R) for each category and for all categories together. Based on N = 248, the correla-

tion coefficients between PPI and each of the other indices are: NWCT, 0.32; PRI (R) sensory, 0.29; PRI (R) affective, 0.42; PRI (R) evaluative, 0.49; PRI (R) miscellaneous, 0.18; PRI (R) total, 0.42. The correlations with PRI (S) are virtually identical to those computed with PRI (R). The high correlation between the PPI and PRI (R) evaluative is of particular interest because the PPI words were initially chosen from a large pool of evaluative descriptors[8]. Although the PPI correlations with NCW and PRI are statistically significant, the fact that most are between 0.3 and 0.4 suggests that a large part of the variance of the PPI may be determined by factors other than those indicated by the descriptors.

Several factors may account for this variance. First, the PPI is based on the single choice of a number–word. It is obvious, when the questionnaire is administered, that each patient has a different anchor for determining the PPI. The number–word designation clearly means different things to different people. What is a '1–mild' pain for one person may be '2–discomforting' for another. Furthermore, on the basis of casual reports from the patients, it is apparent that the PPI fluctuates considerably as a function of psychological factors at the moment: mood, anxiety level, attention, and so forth[5]. In contrast, the verbal descriptors represent *specification* of properties of the pain, such as burning, wrenching, and shooting. They designate sensory or affective qualities of the pain which can be specified by the patient in terms of descriptors that have implied intensities that are agreed upon by people of differing cultural and socio-economic background[8]. Moreover, because the PRI and NWC involve multiple choices (in contrast with the PPI which involves a single choice), they are less bound to the vagaries of the moment.

The fact that the PPI correlates more highly with the 'evaluative' category than with the other categories suggests that the number–word designation is an overall evaluation determined not only by the sensory and affective dimensions of the pain, but also by the patients' past experience, mood and expectation; it may even represent in part an implicit communication requesting help from the physician or indicating optimism that relief may occur. Furthermore, the PPI correlates more highly with PRI (R)A then PRI (R)S, indicating a stronger relation between the intensity scale and the affective or emotional qualities of pain than with the sensory qualities. In short, the PPI appears to be more labile than the other indices and more susceptible to influence by variables other than the sensory dimensions of pain.

Correlations based on percentage changes in pain scores

The correlations between PPI and PRI (R) discussed so far are based on static descriptions of pain at a given moment. However, when *changes* in pain are examined, that is, when the percentage differences between the PPI scores before and after a treatment are correlated with differences between the PRI (R) scores before and after the treatment, the correlations between PPI and PRI (R) are much higher. Data obtained from 29 patients who participated in a study of the effects of brief, intense electrical stimulation on pain[6] were examined. All patients had 3 or more stimulation sessions. The average percentage changes from pre- to post-treatment were calculated for PPI scores and for PRI (R) scores for each patient. The correlation coefficients

between PPI percentage changes and the percentage changes for each of the PRI indices are: sensory, 0.90; affective, 0.82; evaluative, 0.96; miscellaneous, 0.92; total, 0.94.

These correlations stand in marked contrast to the correlation coefficients of about 0.. obtained with static pain questionnaire scores. These data indicate that, although there is great variability among patients in their designation of a PPI score compared with the specification of pain on the Pain Rating Index, there is an astonishingly high consistency in the patients' determination of *changes* from a given designated level. That is, the choice of the PPI score and the words that comprise the PRI score may show considerable variability — each patient chooses an 'anchor' in each measure that shows a relatively high degree of variance with the other. Having chosen the 'anchors', however, any *changes* in pain indicated on the two measures are extraordinary consistent. This consistency is reflected in the high correlations, which are all statistically significant at better than the 0.001 level of confidence.

Taken together, all correlations are highly significant statistically and indicate an internal consistency among different categories of the PRI and among the three indices in the questionnaire. It is apparent, then, that the questionnaire provides valid indices of some, at least, of the dimensions of pain, and can be used to determine the effects of different therapeutic manipulations.

Frequency of choice of each subclass

The frequency of patients (N = 248) who chose a word in each subclass (Fig. 2, Part II) is the following for the 20 subclasses: *sensory*: 1, 117; 2, 117; 3, 120; 4, 111; 5, 168; 6, 84; 7, 96; 8, 80; 9, 225; 10, 129; *affective*: 11, 188; 12, 64; 13, 56; 14, 80; 15, 40; *evaluative*: 16, 234; *supplementary*: 17, 96; 18, 111; 19, 32; 20, 126.

It is clear from this frequency distribution that all subclasses were utilized. It is interesting to note that, on the average, the sensory subclasses are more frequently utilized than the affective subclasses: sensory — mean of 125 words; affective — mean of 85.6 words. Virtually all patients (234, or 95%) chose a word in the evaluative subclass even though there was no instruction for them to do so and no indication that it represented a distinctive category. The miscellaneous (or supplementary) subclasses also contributed to the patients' PRI and NWC scores (mean of 91 words). Subclass 19 (cool, cold, freezing) was used primarily by patients with dental pain and rarely by patients in other diagnostic pain groups.

There is further evidence that the 4 miscellaneous subclasses provide useful information. Calculation of the correlations between PPI and PRI (R) values (N = 228) shows that the correlation is higher for the 20 subclasses (0.39) than for the 16 original subclasses (0.33). The miscellaneous subclasses, therefore, not only provide additional descriptors, but also account for more of the variance of the overall pain intensity as indicated by the PPI.

Consistency of choice of subclasses

It is important to determine whether a given patient tends to choose the same subclasses on successive presentations of the questionnaire. Variations in pain quality

and intensity, as well as changes in mood and other psychological variables, would produce some variability in word choices on successive questionnaires. Nevertheless, patients suffering from a particular pain syndrome would be expected to show a considerable degree of consistency in the subclasses that characterize the pain syndrome. A constellatory analysis of the choices in several pain syndromes will be reported elsewhere. However, in a preliminary analysis of consistency of choice, the questionnaires of 10 patients were analyzed. These patients answered 3 questionnaires at intervals ranging from 3 to 7 days and reported the same PPI level (that is, their pain was unaffected by any attempted manipulation). The consistency of choice of subclasses among the 3 questionnaires ranged from 50% to 100%, with a mean consistency of 70.3%. The possibility that this high degree of consistency is due simply to the patients' recalling the words they chose during earlier presentations is unlikely; it has already been noted that patients are highly selective in their choices, ponder each subclass list carefully, and the choice of a word is usually accompanied by behavioral signs (such as an exclamation of strong agreement) that the words genuinely reflect the properties of their pains.

Analysis of individual pain syndromes

The above analyses are based on pooled data obtained with patients suffering a wide range of pain syndromes. It is important, therefore, to examine the data of individual syndromes to see whether the high correlations among PRI (R), PRI (S), NWC and PPI obtained with pooled data are comparable to data for individual syndromes obtained with smaller numbers of patients.

Correlations based on individual syndromes

Correlation coefficients between rank (R) and scale (S) values for the 20 subclasses were determined individually for several pain syndromes. Table II shows that these correlation coefficients, based on data obtained with individual syndromes, are generally somewhat higher than those obtained with the pooled data.

Correlation coefficients between the various PRI (R) and PRI (S) values, based on category and total scores, as well as those between the PPI and the NWC were also determined for individual pain syndromes. These correlations, shown in Table III, are also generally higher than those obtained with the pooled data (*cf.* Table I).

Means, SDs and ranges based on individual syndromes

Table IV shows the means, SDs, and ranges for each of the major pain syndromes examined in this study. Although it is clear that the pain in some syndromes is worse than in others, they are all remarkably close together. One of the reasons may be that many of the patients received drugs prior to administration of the questionnaires since it was considered unethical to withhold drugs for the purpose of the study. It is reasonable to assume that the PPI, NWC and PRI scores would show a wider spread if patients suffering some of the more severe forms of pain were deprived of drugs. Nevertheless, the PRI values for the 4 major categories — sensory, affective, evaluative, miscellaneous — reveal interesting differences among the syndromes. For

TABLE II

CORRELATION COEFFICIENTS BETWEEN RANK AND SCALE VALUES FOR THE 20 SUBCLASSES OF THE PAIN QUESTIONNAIRE DETERMINED INDIVIDUALLY FOR SEVERAL PAIN SYNDROMES

	Pain syndrome						
Subclass	*Menstrual (N = 25)*	*Arthritis (N = 19)*	*Cancer (N = 16)*	*Dental (N = 15)*	*Back pain (N = 14)*	*Phantom (N = 6)*	*Post-herpetic (N = 5)*
1	0.81	0.95	0.97	0.95	0.98	0.99	0.80
2	1.0	1.0	0.98	0.96	1.0	1.0	1.0
3	0.99	0.74	0.97	0.98	0.94	0.94	0.75
4	0.93	0.40	0.87	0.86	0.92	1.0	*
5	0.88	0.89	0.92	0.87	0.93	0.82	0.57
6	0.92	0.95	1.0	1.0	0.98	1.0	0.67
7	0.97	0.92	0.99	0.94	0.95	0.98	0.94
8	*	0.93	0.91	0.96	0.89	1.0	1.0
9	0.74	0.91	0.95	0.93	0.93	0.99	0.97
10	0.97	1.0	0.97	0.95	1.0	*	*
11	0.90	0.67	0.89	0.96	0.82	0.90	0.92
12	0.96	0.94	0.97	1.0	0.96	1.0	0.67
13	1.0	0.94	0.96	0.95	0.86	1.0	*
14	0.89	0.92	0.74	0.96	0.89	0.81	0.61
15	1.0	0.55	1.0	1.0	1.0	*	1.0
16	0.97	0.61	0.97	0.96	0.99	1.0	1.0
17	**	0.97	0.87	0.93	0.87	1.0	1.0
18	**	0.84	1.0	0.87	0.94	1.0	1.0
19	**	*	*	0.89	*	*	*
20	**	0.93	0.97	0.90	0.92	1.0	0.95

* Subclass not chosen.
** Subclass not used.

example, pain due to cancer lesions has a high value on the sensory dimension: the sensory input is clearly prepotent; yet the effect (which should be high because of the serious implications of the disease) is no higher than that for menstrual pain which has virtually no implications for survival.

Analysis of a research project

The value of a pain questionnaire lies in its ability to provide useful research data. The questionnaire was therefore used in a study to determine the relative effectiveness of alpha-feedback training, hypnotic training, and a combination of both procedures in the treatment of several clinical pain syndromes[7]. A summary of the relevant data is shown in Table V.

The way in which the data were calculated is the following.

PRI (R) scores. These were calculated by adding the rank values of the words in the questionnaires given before and after each session for each patient. The *net change* from pre- to post-sessions for each category of words and for all words was calculated as a percentage of the pre-session scores for the baseline, training and practice sessions

TABLE III

CORRELATION COEFFICIENTS BETWEEN RANK (R) AND SCALE (S) VALUES OF THE PAIN RATING INDEX (PRI), THE PRESENT PAIN INTENSITY (PPI), AND THE NUMBER OF WORDS CHOSEN (NWC) FOR INDIVIDUAL PAIN SYNDROMES

S, sensory; A, affective; E, evaluative; M, miscellaneous; T, total.

Pain syndrome	*(R)S–(S)S*	*(R)A–(S)A*	*(R)E–(S)E*	*(R)M–(S)M*	*(R)T–(S)T*	*PPI–NWC*	*PPI–(R)T*
Menstrual N = 25	0.96*	0.94*	0.97*	***	0.96*	0.42**	0.4**
Arthritis N = 19	0.94*	0.96*	0.61*	0.91*	0.91*	0.5**	0.63*
Cancer N = 16	0.96*	0.87*	0.97*	0.99*	0.98*	0.21^{NS}	0.19^{NS}
Dental N = 15	0.96*	0.97*	0.96*	0.95*	0.98*	0.61**	0.72*
Back pain N = 14	0.97*	0.89*	0.99*	0.85*	0.93*	0.37^{NS}	0.58**
Phantom limb N = 6	0.98*	0.99*	0.99*	1.0*	0.98*	0.56^{NS}	0.75^{NS}
Post-herpetic N = 5	0.91**	0.96*	1.0*	0.97*	0.99*	-0.18^{NS}	0.04^{NS}

* $P < 0.01$.
** $P < 0.05$.
NS not significant.
*** category not used.

TABLE IV

MEAN PRESENT PAIN INTENSITY (PPI), NUMBER OF WORDS CHOSEN (NWC) AND PAIN RATING INDEX (RANK VALUES, PRI (R))

The categories of the PRI (R) are: S, sensory; A, affective; E, evaluative; M, miscellaneous; T, total.

Pain syndrome	*N*	*Mean age*	*Mean PPI*	*Mean NWC*	*Mean PRI (R)*				
					S	*A*	*E*	*M*	*T*
Menstrual	25	20	2.4	6.7	12.6	2.4	2.5	*	17.5
Arthritis	19	55	1.9	8.1	10.3	2.5	1.9	4.1	18.8
Cancer	16	56	2.8	8.8	17.3	2.3	4.1	2.3	26.0
Dental	15	33	2.3	8.3	11.8	1.7	2.2	3.8	19.5
Back pain	14	48	2.6	10.9	14.0	3.5	3.3	5.5	26.3
Phantom limb	6	54	3.0	8.3	17.2	3.2	3.3	1.3	25.0
Post-herpetic	5	72	3.0	10.4	14.4	2.4	2.4	3.4	22.6

* Category not used.

TABLE V

THE RELATIVE EFFECTS ON CLINICAL PAIN BY 3 TREATMENT PROCEDURES

Combined alpha training plus hypnotic training (group I); hypnotic training alone (group II); alpha training alone (group III). Groups I, II, and III had N's of 12, 6, and 6 respectively. PRI(R), Pain Rating Index (rank values); NWC, Number of Words Chosen; PPI, Present Pain Intensity. (From Melzack and Perry[7].)

	PRI (R)								
	Group I			*Group II*			*Group III*		
Pain indices	*B*	*T*	*P*	*B*	*T*	*P*	*B*	*T*	*P*
Sensory	14%	33%*	29%	11%	21%	49%	10%	12%	0%
Affective	8%	48%*	25%	29%	32%	45%	18%	15%	25%
Evaluative	26%	38%	43%	11%	34%	45%	12%	10%	14%
Miscellaneous	23%	30%	31%	29%	11%	15%	16%	4%	1%
Total (all days)	16%	34%*	36%	14%	23%	45%	10%	9%	17%
Total (last 2 days)	16%	36%*	36%	14%	22%	45%	10%	—4%**	17%
NWC	0.98	2.6	2	1.7	2	3	0.83	0.62	0.60
PPI	5%	24%*	32%	15%	40%	42%	0%	13%	4%

* $P < 0.05$.
** Indicates net increase in pain (PRI).

for each patient. The mean percentage change was then calculated for the whole group. Thus, the percentages indicate the amount of change in a dimension of pain or in overall pain as indicated by the descriptors in the questionnaire. It is apparent that in group I, for example, there were significant decreases in both the sensory and affective dimensions, as well as the overall PRI, but that the affective dimension shows the largest decrease.

Statistical analyses to determine the effectiveness of the procedure can be carried out by comparing the net changes during baseline-placebo and training sessions. If the net change in the training sessions for a patient is greater than that for the baseline-placebo sessions, the change is rated as '+'; if it is less, it is '—'; if no change, it is '0'. Then, a simple sign test for significance can be carried out. Similarly, the *t* test can be used in which the mean net changes are calculated, and the differences from the mean are calculated for the baseline-placebo and training sessions to determine whether a statistically significant difference has occurred. Both types of tests were used in the study[7]. Formulae for calculating these statistical differences can be found in any standard textbook on statistics.

NWC scores. The NWC represents a further index. The NWC on the pre-session and post-session questionnaires can be calculated, and the change (the net difference) is easily determined. Thus, in group 1, the mean decrease in NWC is 0.93 in the baseline sessions, and 2.96 in the training sessions. These differences were determined by calculating the net differences in NWC for each person, and then a mean for all subjects

in the group. None of the differences in NWC scores were statistically significant.

PPI scores. Finally, the percentage change in the PPI number values from pre- to post-sessions can be determined for each patient, and the means can be calculated for each type of session. Differences between types of session can then be calculated, and statistical significance can be computed by using the sign test or the *t* test.

Table V, taken as a whole, shows clearly that there is a consistency among all the scores. The NWC scores, however, fail to show statistical significance. This may be due to the fact that, with partial relief, NWC does not necessarily diminish. Patients often choose a less intense word within a subclass or category rather than drop the subclass or category altogether. This naturally results in PRI decreases which are not reflected in changes in the NWC. The PPI difference scores, moreover, though statistically significant, fail to reflect changes in pain as satisfactorily as the PRI (R). Taped recordings were made of the patients' comments before and after each session, and these comments regarding pain level, drug intake and activity levels were compared with the PPI and PRI (R). It was clear that the PRI (R) is generally a more valid index of the change. Thus, some patients reported that their pain was still at the same PPI level, but had changed in a way that was difficult to describe — it was somehow less sharp, less gnawing, not as exhausting and miserable as before. These changes were clearly reflected in the PRI (R), which showed a substantial percentage change, even though the PPI remained unchanged.

Exceptional cases

Some exceptional cases presented problems in computation of the data. Thus, some patients reported that their PPI decreased by a half unit, *e.g.*, from 2 to 1.5. In these cases, the report was scored to the nearest upper value — 2, in this case — so that no net change in PPI was recorded. A further problem was presented by subjects who chose no words in a given category (*e.g.* affective) in the pre-session questionnaire, but chose a word or two after the session (indicating an increase in the pain on that dimension). However, a change from 0 to any number results in an infinitely large percentage change, which is clearly not an accurate numerical description of the actual change in pain. The score was therefore left out of the reckoning of the group mean percentage change, but was used in the statistical analysis which employed the sign test.

Yet another problem occurs when *no* words are chosen in a given category on either the pre- or post-session questionnaires. This, of course, cannot occur in the *total* PRI scores since it would mean that the patient has no pain whatsoever to begin with, and the rationale of the questionnaire is to study patients who are suffering pain. When it occurs within a single category, however, the patient's data for that category must be excluded from the statistical analysis, since the data do not represent zero-change in the sense that a PRI of 15 before and after represents zero-change. Rather it means that no data are available for this category.

It should be noted, in Table V, that the PPI scores for the baseline sessions are 5%, 15% and 0% for groups I, II and III, respectively. These do not correspond to the comparable PRI total scores. Indeed, none of the groups differed from the others

in either PPI or PRI baseline scores at a statistically significant level. It is reasonable to assume, then, that the PPI percentage-change scores represent a genuine placebo response during the baseline sessions, but also reflect the degree of the patients' anticipation of pain relief as a result of instructions given during these sessions. Thus, those who received instructions regarding hypnotic training alone may have anticipated the highest degree of pain relief while those who received instructions for alpha training alone anticipated little or no relief. Group I, which received both, is at an intermediate level. This is, of course, merely speculative. The data, however, reflect the relative stability of PRI data and the greater lability of PPI scores; the latter are based on a single decision which may reflect a variety of psychological variables in addition to the patient's evaluation of overall pain intensity.

MCGILL PAIN ASSESSMENT QUESTIONNAIRE

Date _____ Administrator _____

Patient's Name: _____ ID: _____ Age: _____

Address: _____ Phone: _____

Referring Doctor: _____ Yrs. in Pain: _____

Diagnosis:

	Arthritis		Migraine
	Cancer		Musculoskeletal
	Central N.S.		Peripheral N.S.
	Cervical Back Pain		Phantom Limb
	Iatrogenic		Sciatica
	Low Back Pain		Other

Comments:

Present Drug Intake:

Medication	Dose	Frequency	Duration of relief	Amount of relief	Date Started

Comments, Side Effects:

Fig. 3. McGill Pain Assessment Questionnaire. For further description see text and following pages.

Medical History:

A) Year Pain Began: _____

B) Circumstances of Onset:

	Accident at Work		Following Illness
	Accident at Home		Following Surgery
	Other Accident		Pain "Just Began"

Comments:

C) Previous Surgery:

Date	Details

D) Previous Major Illnesses:

Date	Details

E) Previous Physiotherapy/ Other Treatments

Date	Details

Fig. 3B.

Medical History (Cont'd):

F) Doctors and Other Health Professionals Consulted Since Pain Began:

	Allergist		Plastic Surgeon
	Anesthesiologist		Proctologist
	Cardiologist		Psychiatrist
	Dermatologist		Radiologist
	Ear-Nose-Throat		Surgeon (Gen.)
	Endocrinologist		Dentist
	Gen. Practitioner		Psychologist
	Internist		Hypnotist
	Neurologist		Osteopath
	Obst./Gyn.		Chiropractor
	Ophthamólogist		Acupuncturist
	Orthopedist		Clergyman
	Pediatrician		Faith Healer

Other/Comments:

G) Present Programme(s) of Treatment (other than drugs):

Psychotherapy Counselling	
Physiotherapy Occup. Therapy	
Surgery	
Other:	

Fig. 3C.

Personal History:

A) Ethnic Group:_____

B) Marital Status:

	Unmarried		Number of Children
	Married		No. of childr.at home
	Divorced/separated		Ages of childr.at home
	Widow/widower		No.of others at home
Comments:			

Present Pain Pattern:

A) Throughout the Day:

Time	Duration	Time-Pattern
Morning		
Afternoon		
Evening		
Night		

B) Body Position: What happens to pain when:

Sitting	
Standing	
Lying	

C) Has your mood (outlook on life, attitudes to other people, etc.) changed since your pain began? Yes_____ No_____

If yes: how?

Fig. 3D.

DISCUSSION

The present report indicates that the McGill Pain Questionnaire represents a useful tool for examining the dimensions of pain: (1) it provides quantitative information that can be treated statistically; (2) it is sufficiently sensitive to detect differences among different methods to relieve pain; (3) it provides information about the relative effects of a given manipulation on the sensory, affective, and evaluative dimensions of pain. The pain questionnaire so far is, to be sure, only a rough instrument. It is a start, however, toward the measurement of clinical pain and permits research on the effects of experimental and therapeutic procedures on pain in clinical rather than laboratory conditions.

The pain questionnaire shown in Fig. 2 has recently been revised to permit

collection of additional data deemed necessary for the assessment of pain in the setting of a pain clinic. The revised Pain Assessment Questionnaire, which is presented in Fig. 3, is used when the patient is first admitted to the clinic. The standard questionnaire (Fig. 2) is used routinely before and after each therapeutic session in the clinic. In addition, the PPI alone is used to enable the patient to record pain levels at home. The questionnaire for home recording, which is printed on a card that folds into an ordinary business envelope, is shown in Fig. 4. Thus, the PPI is recorded 4 times each day, at specified intervals, and the duration and magnitude of any changes in pain can be determined over periods of weeks or months.

The McGill Pain Assessment Questionnaire and Home Recording Card are presented here as a possible basis for a uniform method of acquisition of information necessary for the study of pain in a clinical setting. It is clear that the investigation of pain requires a wide range of information. It is not yet known, however, which

Present Pain Pattern (Cont'd)

D) Accompanying Symptoms

	Nausea		Constipation
	Headache		Diarrhea
	Dizziness		Menses
	Urination		Other

Comments:

E) Other Present Illness:

F) Causes of Increase (+) or Decrease (-) of Pain:

Indicate a "+" or a "-" opposite appropriate cause			
	Liquor		Sleep, Rest
	Stimulants (coffee etc.)		Lying down
	Eating		Distraction (T.V., etc.)
	Heat		Urination, Defecation
	Cold		Tension
	Damp		Bright lights
	Weather changes		Loud noises
	Massage, Vibrator		Going to work
	Pressure		Intercourse
	No movement		Mild exercise
	Movement		Fatigue

Comments:

G) Have you learned ways to relax at moments of tension?
Yes_____ No_____

If yes: what methods do you use?

Fig. 3E.

Pain and Sleep:

	always	sometimes	never
Trouble falling asleep			
Medication needed to fall asleep			
Awakened by Pain			
Comments:	Average No. Hours Sleep		

Pain and Sexual Relations:

	Desire	Ability
Same as before		
Somewhat less than before		
Very much less than before		
None at all		
Comments:		

Pain and Work/Activity:

A) Type of Work (incl. housewife): _____

B) Compensation: Yes: _____ No: _____

Type: _____

C) Ability to work at regular job: _____

D) Occasional need to stop all activities because of pain: Yes: _____ No: _____

E) If "Yes" to D), Number of times: Daily: _____

Weekly: _____

F) Comments:

Fig. 3F.

items of information have research relevance and which do not. There are a multitude of items which can be recorded; a major aim of future studies is to select the items that provide meaningful research information and to reject those that waste the patient's and physician's time, take up valuable information storage space, and obscure any important patterns that could emerge from a parsimonious, carefully selected questionnaire. The questionnaire presented here, it is hoped, will eventually be refined by investigators in other laboratories and clinics. Ultimately, they may lead to universal tools for the measurement and assessment of pain that will permit rapid exchange of data among all investigators of clinical pain phenomena.

Eating Habits:

A) Has your food intake changed since the onset of pain? _____

Details: _____

B) Do you follow a specific diet? _____

Details: _____

Pain Description:

A) Choose one word group

	Continuous, Steady, Constant
	Rhythmic, Periodic, Intermittant
	Brief, Momentary, Transient

The following words represent pain of increasing intensity:

1	2	3	4	5
Mild	Discomforting	Distressing	Horrible	Excruciating

B) Choose the number of the word which best describes:

	Your pain right now
	Your pain at its worst
	Your pain at its least
	The worst toothache you ever had
	The worst headache you ever had
	The worst stomach-ache you ever had

Fig. 3G.

What Does Your Pain Feel Like?

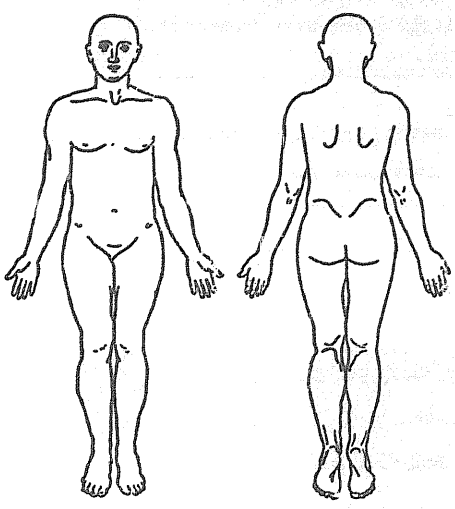
Some of the words I will read to you describe your present pain. Tell me which words best describe it. Leave out any word-group that is not suitable. Use only a single word in each appropriate group--the one that applies best.

1	2	3	4
1 Flickering	1 Jumping	1 Pricking	1 Sharp
2 Quivering	2 Flashing	2 Boring	2 Cutting
3 Pulsing	3 Shooting	3 Drilling	3 Lacerating
4 Throbbing		4 Stabbing	
5 Beating		5 Lancinating	
6 Pounding			
5	**6**	**7**	**8**
1 Pinching	1 Tugging	1 Hot	1 Tingling
2 Pressing	2 Pulling	2 Burning	2 Itchy
3 Gnawing	3 Wrenching	3 Scalding	3 Smarting
4 Cramping		4 Searing	4 Stinging
5 Crushing			
9	**10**	**11**	**12**
1 Dull	1 Tender	1 Tiring	1 Sickening
2 Sore	2 Taut	2 Exhausting	2 Suffocating
3 Hurting	3 Rasping		
4 Aching	4 Splitting		
5 Heavy			
13	**14**	**15**	**16**
1 Fearful	1 Punishing	1 Wretched	1 Annoying
2 Frightful	2 Gruelling	2 Blinding	2 Troublesome
3 Terrifying	3 Cruel		3 Miserable
	4 Vicious		4 Intense
	5 Killing		5 Unbearable
17	**18**	**19**	**20**
1 Spreading	1 Tight	1 Cool	1 Nagging
2 Radiating	2 Numb	2 Cold	2 Nauseating
3 Penetrating	3 Drawing	3 Freezing	3 Agonizing
4 Piercing	4 Squeezing		4 Dreadful
	5 Tearing		5 Torturing

Fig. 3H.

Where is your Pain?

Please mark, on the drawings below, the areas where you feel pain. Put E if external, or I if internal, near the areas which you mark. Put EI if both external and internal. ALSO: if you have one or more areas which can trigger your pain when pressure is applied to them, mark each with an X.



Comments:

Fig. 3.

McGill Home Recording Card

NAME:_____ DATE STARTED:_____

	Morning	Noon	Dinner	Bedtime
M				
TU				
W				
TH				
F				
SA				
SU				

PLEASE RECORD

1. Pain Intensity #:
   0- no pain
   1- mild
   2- discomforting
   3- distressing
   4- horrible
   5- excruciating
2. No. of Analgesics you have taken.
3. Please make note of any unusual symptoms, pains or activities on back of card.
4. Record hours slept in morning column.

Fig. 4. McGill Home Recording Card.

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