CC/NUMBER 22
JUNE 3, 1991

This Week's Citation Classic®

Revill S I, Robinson J O, Rosen M & Hogg M I J. The reliability of a linear analogue for evaluating pain. *Anaesthesia* 31:1191-8, 1976.
[Dept. Psychology, Wales College of Medicine, and Dept. Anaesthetics, Univ. Hospital of Wales, Cardiff, Wales]

The reliability of a visual analogue rating of pain was tested by requiring subjects to perform at short intervals several visual analogue ratings of the intensity of a distant-recalled pain. It was assumed that subjects should make ratings of a similar value on each occasion if the rating was reliable. This hypothesis was found to be true. [The *SCI*® and the *SSCI*® indicate that this paper has been cited in more than 225 publications.]

A Rapid Measure of Sensation and Feelings

J.O. Robinson
School of Psychology
University of Wales College of Cardiff
Cardiff CF1 3YG
Wales

Cooperative research by anaesthetists and psychologists is not very common even today. In the late 1960s when, by Michael Rosen's initiative, he and I began working together, it was rare. This still surprises us because the two disciplines share interests that are central to both, namely, awareness, or consciousness, and sensation. With the rapid increase in day case procedures, short acting anaesthetics have been used increasingly. Early discharge of patients has focused attention on speed of recovery and quality of regained awareness.

Our chief interest at first was the measurement of pain relief in childbirth, and this impelled the group in Cardiff to seek a simple and reliable measure of pain. Our efforts with the methods of classical psychophysics (using pain thresholds) had been, like others, unsuccessful.

We found the simple "direct" measures of S.S. Stevens's "new psychophysics"[1] appealing. In particular, he had shown that subjects could reliably express a value of one subjective continuum (for example, the brightness of a light) in terms of another (for example, pressure of grip on a dynamometer); indeed, he used the dynamometer to "measure" a variety of other subjective continua.

Unfortunately, our efforts with our newly designed, capacitance sensitive dynamometer met with little success. Women in childbirth, asked to express the pain of contractions in terms of force of handgrip, gripped the device as they might have bitten the bullet; there was a very marked ceiling effect, which surprised no one.

Using distance from the end of a line in the same way was much more successful. We have now used the visual analogue (a name for the technique that avoids the suggestion that there is a proven linear relationship between the marked value and the sensation that it expresses) for the assessment of a wide range of symptoms and feelings in a variety of studies.[2,3]

We believe the wide appeal of the method, which has led to the citations, has largely been its simplicity, though this can also be a danger.[4] The ends of the line must be carefully defined and the subject must understand the task clearly.

We also have increasingly realized the importance of the ability to measure sensations in a clinical setting. Our studies have demonstrated repeatedly that visual analogues of sensations show drug effects more sensitively than tests of cognitive or psychomotor function. This is not particularly surprising when we remember the salience both in health and illness of how we "feel," or the fact that we would always expect any sort of impairment to be accompanied by, if not preceded by, aversive sensations. Finally, we would emphasize that the reproducibility of the test relies on visual-motor control; our subjects (and patients) were young and fit. Similar tests on other groups have not been carried out; they should be.

1. **Stevens S S.** *Psychophysics.* New York: Wiley, 1975. (Cited 365 times.)
2. **Sanders L D, Isaac P A, Yeomans W A, Clyburn P A, Rosen M & Robinson J O.** Propofol-induced anaesthesia. *Anaesthesia* 44:200-4, 1989. (Cited 365 times.)
3. **Sanders L D, Davies-Evans J, Rosen M & Robinson J O.** Comparison of diazepam with midazolam as I.V. sedation for outpatient gastroscopy. *Brit. J. Anaesth.* 63:726-31, 1989.
4. **Robinson J O & Sanders L D.** Subjective measurement and visual analogue scales. (Klepper I D, Sanders L D & Rosen M, eds.) *Ambulatory anaesthesis and sedation: impairment and recovery.* Oxford, England: Blackwell. (In press.)

Received November 19, 1990