Metric effects of taking tears out of the Wong-Baker FACES Pain Scale

Batalha, L. (1), Oliveira AM. (2), Fernandes A. (1), Gonçalves JC. (1) (2), Viegas RG.(2), TeixeiraNS.(2)

(1) Nursing School of Coimbra; Health Sciences Research Unit - Nursing,Coimbra,Portugal
(2) Institute of Cognitive Psychology, University of Coimbra, Portugal

Work supported by grant PTDC/PSI-PCO/107910/2008
Portuguese Foundation for Science and Technology

PROBLEM

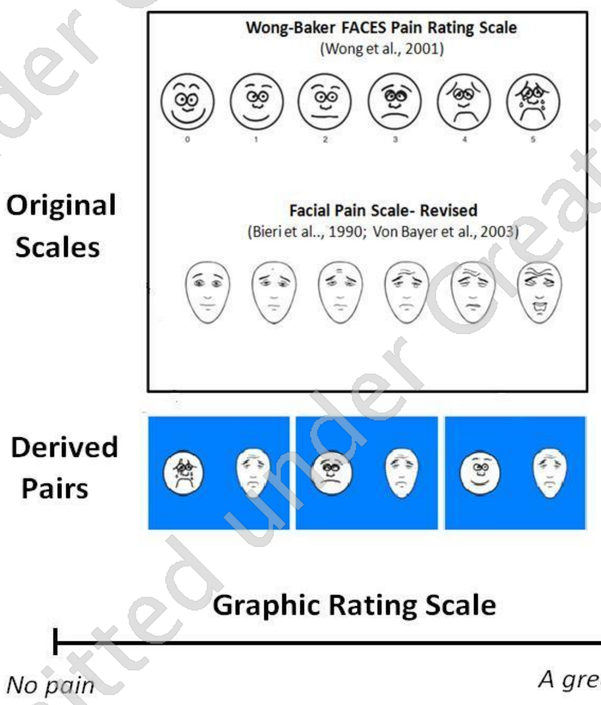
• Whether or not to use anchoring elements such as smiles and tears in pain faces scales remains an open issue (Tomlinson et al., 2010).

•A first step towards settling this issue is to establish their effects over such features as the dynamic range of the scales, their equal-interval properties (linearity) and the relative importance of anchoring faces regarding the other faces in the scale.

•This work is aimed at evaluating the effects of removing tears as an upper anchor in the *Wong-Baker FACES Pain Rating Scale* (FACES: Wong & Baker, 1988)

• The methodology used is the one of Information Integration Theory and Functional Measurement (Anderson, 1981; 1982). An integration task was assembled in which 9-10-years old children judged the overall pain conveyed by pairs of faces obtained from factorially crossing all faces included in the *FACES* and in the *Facial Pain Scale Revised (FPS-R*: Hicks et al, 2001).

METHOD



Participants: 2 groups of pain-free children aged 9-10 years old :

- Group 1 (tears-in Group): (n = 32)
- Group 2 (tears-out Group) (n = 19)

Experimental Design: Full factorial 6 × 6 repeated measures: *Factors:* FACES (6 levels) and FPS-R (6 levels)

Procedure: Pairs of faces randomly presented on a PC monitor.

Response: mouse click over a point of the graphic rating scale (600 pixels wide on the computer screen)

Evaluation dimension: overall pain expressed by each pair of faces

RESULTS – Cognitive Algebra

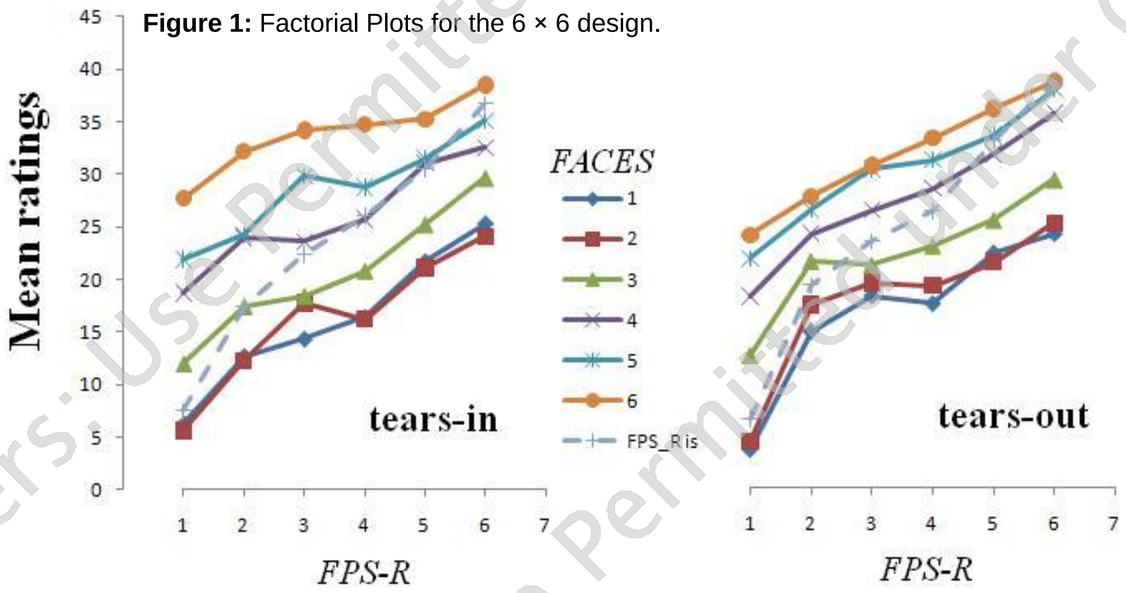


Figure 1: Factorial Plots for the 6 × 6 design.

• The two pain informers (FACES and FPS-R) were combined in both groups according to an averaging rule (signalled by the crossover of the blue dash line, corresponding to isolated presentations of faces of the FPS-R).

• The averaging model allows estimatiing independent measures of importance (at the ratio level) and of scale values (at the interval level, with a commom unit across the two scales) for each face in each scale.

RESULTS – Functional Measurement

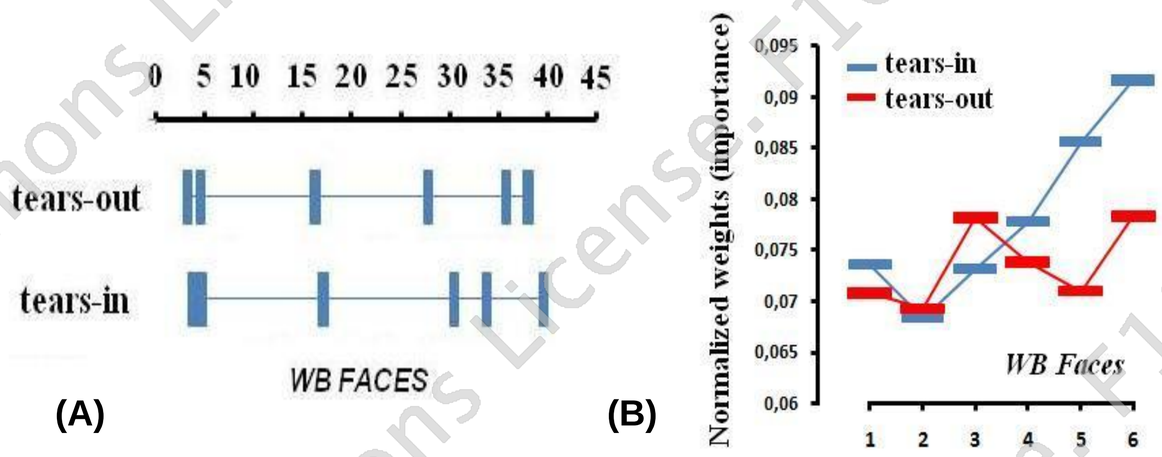


Figure 2: *Left* (A)*:* Estimated scale values of the WBFACES with and without tears in the extreme anchor. Values on the horizontal are expressed on a conventional 0-45 scale. ***Right* (B):** Normalized measures of weights/importance (weights sum to1) for each of the faces in the WBFACES. The 6 faces are in the abscissa, .with tears-in and tears-out as the curvature parameter.

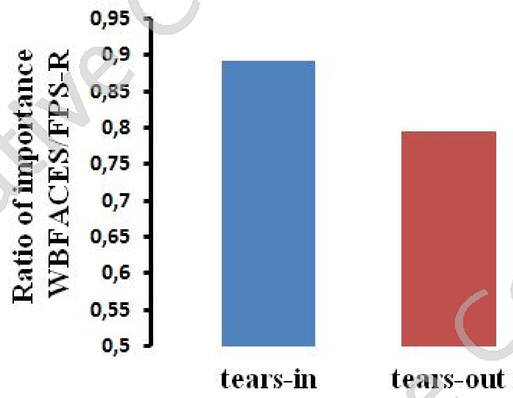


Figure 3: Relative importance/weight of the WBFACES as regards the FPS-R with and without tears in the extreme anchor.
Overall weight of each scale was computed as the mean weight of its levels (faces). Relative importance was computed as the mean weight of WBFACES dividing by the mean weight of FPS-R

DISCUSSION

▪ A slight reduction in the range of the WBFACES was observed when tears were removed. The scale value of face 5 was the most affected, becoming closer to face 6 than to face 4. The entire scale became slightly closer to an equal-interval ideal – if only the two lower faces and the two upper faces (in both cases close to an overlap) are collapsed. [Figure 2 (A)]

▪ The large relative importance of the right end face in the WBFACES is lost when tears are removed [Figure 2 (B)].The relative importance of the entire scale as regards the FPS-R was also somewhat reduced. [Figure 3]

▪ Given the easy modulation of psychological “importance” by emotional factors, this reduction in “importance associated with tears” may help in preventing confusions between pain and pain-related fear.

▪ Taking tears out of the WBFACES doesn’t seem to impact much on the metric properties of the scale. However, it may be beneficial on two regards: (1) approaching the equal-interval ideal and (2) reducing the impact of fear/worry on the response.

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