CALM scale – Assessment of the total comfort of the popular female jeans

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Abstract. The present paper consists on the experimental stage of a PhD research, on the study of the popular female jeans comfort, referring to the process of subjective evaluation of comfort to wear, specifically the comfort objective evaluation of the jeans to wear, using CALM scale. The popular jeans in study, refers to the jeans created, produced and consumed by the poor classes of Fortaleza, in the state of Ceará, Brazil (Braga and Abreu, 2017). The purpose is to investigate the female jeans, with the objective of collecting information about the comfort / discomfort perceptions of the consumers of the Fortaleza popular markets. When the collected responses were correlated, it was found that the perception of comfort/discomfort of the jeans is directly related to the touch sensation.

1. Introduction

The present text consists of the presentation of the experimental phase of the Phd research, the study of the comfort of the popular female's jeans, referring to the process of evaluation of the subjective sensations of the comfort to the use.

The jeans popular in study, refer to jeans created, produced and consumed by the popular poor Brazilian classes. The popular jeans market in Fortaleza, in the state of Ceará, Brazil, for having as potential consumers 47.8% of the population of the city, the equivalent of approximately 623,790 women [1] and played an important role as a source of income generation for the poor populations of the suburbs and metropolitan cities [9], surprising from the point of view of the expansion of production, commercialization and consumption [3].

The purpose is to investigate female's jeans, a symbol of popular fashion and popular consumption [4], with the objective of collecting information about the perceptions of comfort / discomfort of consumers in Fortaleza's popular markets when they wear the jeans sold in popular shopping malls in Fortaleza, such as Buraco da Gia, Beco da Poeira and José Avelino Street Fair. To carry out the experiment, five (5) models of jeans were bought at the popular marketing centers of Fortaleza Beco da Poeira, Buraco da Gia and the José Avelino Street Fair.

The group of evaluators consists of 101 women volunteers, aged between 18 and 40 years, consumers of the popular markets of Fortaleza. The tests were applied in real environments of use of jeans by these women. the sensorial analysis to the use of the pieces of jeans, having as instrument the application of inquiry. The investigation was constructed from the combination of three different question models [1]: with the combination of numerical, attributes and faces scales, body maps [2] and with the final question of the CALM (comfort affective labeled Magnitude) scale [3]. The data presented in this article refers specifically to the data obtained from the CALM scale.

The CALM (Comfort Affective Labeled Magnitude) scale was developed through the combination of test instruments with people and equipment developed a methodology consisting of 3 series of experiments with the completion of the third series of tests developed a scale of comfort measurement, using words related to the magnitude of the semantic meaning of sentence construction that indicate different levels of comfort / discomfort [4]

The authors applied the scale in two experiments in order to evaluate the performance and reliability of the scale. With the scale validation tests, it was possible to conclude that the "CALM" scale presents sentences of sensitivity and reliability, identifying these factors as advantages of this scale over previous scales[5].

Cardello and Winterhalter(2003)[4] report that the CALM (Comfort Affective Labeled Magnitude) scale is a non-complex scale, has high levels of sensitivity to comfort and facilitates comparisons of different percentages and consumer perception ratios for tissue evaluation and of clothing.

The realization of the sensorial test to the use of the popular jeans by means of the application of the investigation, from the analysis of the data collected and related among the parameters evaluated was identified by the evaluators that the pants named as model 3 and 5 jeans pointed as the most comfortable.

2. Material and Methods

The sensorial evaluation to use of the jeans, was made according to the following phases:

a) The inquiry was the instrument used for data collection [1]. The inquiry was constructed from the combination of three different steps: with the combination of scales (Figure 1) (numerical, attributes and faces); With two leaves consisting of a front and back body map, with each side (front and back) (Figure 2) being divided in 15 parts, referring to the body zone dressed in jeans, adaptation of the Discomfort Opinion Scales developed by Corlett; Bishop (1976); And the final question concerning the assessment of the total comfort of the jeans through the CALM scale (Comfort Affective Labeled Magnitude) (Figure 3).
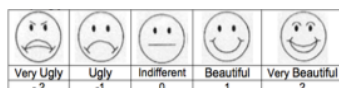

Figure 1. Numerical, attributes and faces scales
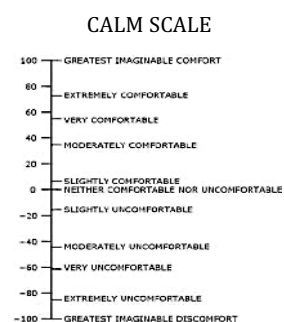
Figure 2. Front and back body map

Figure 3. CALM scale

b) The five jeans models were bought at popular malls and fairs in the city center.

Table 1. Characterization of jeans material

Jeans Models	Jeans 1	Jeans 2	Jeans 3	Jeans 4	Jeans 5
Image					
Composition	98%contton 2%spandex	77%contton 21%polyester 2% spandex	98%contton 2% spandex	96,5%contton 3,5% spandex	77%contton 21%polyester 2% spandex
Structure	Twill (2/1 1)	Twill (2/1 1)	Twill (3/1 1)	Twill (3/1 1)	Twill (3/1 1)
Mass (g/m^2)	281	332	322	289	323
Thickness (mm)	0,70	0,83	0,75	0,72	0,75
Count threats (yarns/cm)	29 x 21	37 x 23	39 x 22	40 x 26	38 x 23

c)   The group of evaluators consists of 101 female volunteers, aged between 18 and 40 years, consumers of the Fortaleza popular markets.

d)   All the tests were performer in real environments (Figure 4). The means of temperature and humidity were between 28°C with variation of ± 2°C and 65%, with variation of ± 2%.

e)   The time of the experiment: 30 minutes for each jeans model.

Figure 4. Tests application

3. Results and discussion

Through the analysis of the data collected, the evaluators pointed out: the jeans 1 and jeans 2 showed very close data in all parameters analysed, and the jeans 1 (Figure 5) and jeans 4 (Figure 6) showed the same data, as the most uncomfortable jeans.
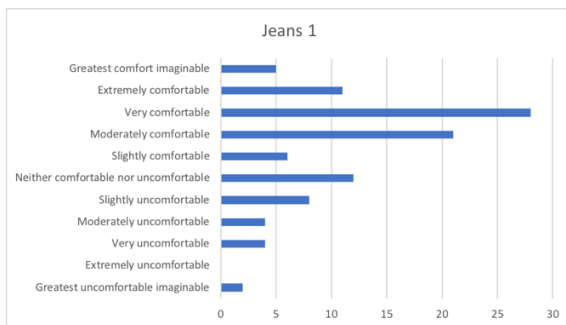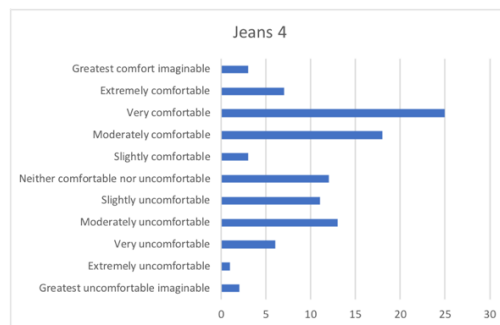

Figure 5. Jeans 1 data

Figure 6. Jeans 4 data

The jeans 3 and jeans 5 showed the very close data, as the most comfortable imaginable jeans.
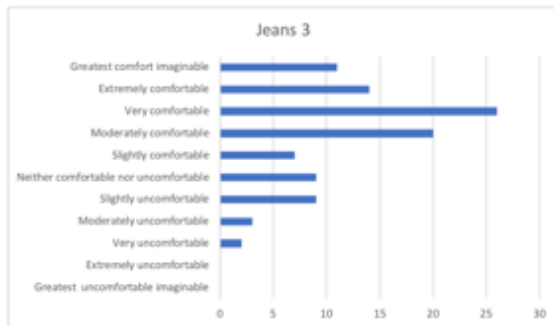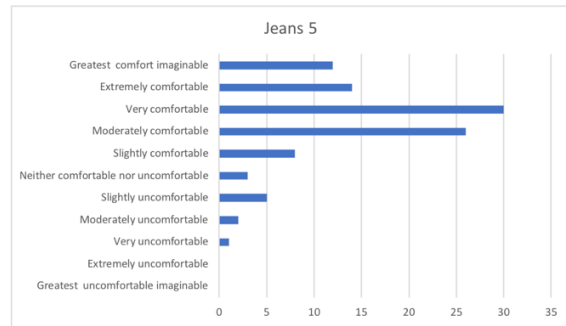

Figure 7. Jeans 3 data

Figure 8. Jeans 5 data

When comparing the data of all models of the jeans tested it was observed that, in general, the models were evaluated as comfortable as showed in the Figure 9. Being that the jeans 5 stood out by having the greater number of positive evaluations of comfort and therefore it was considered most comfortable jeans. While the data of jeans 4 demonstrated to be regarded as most uncomfortable.
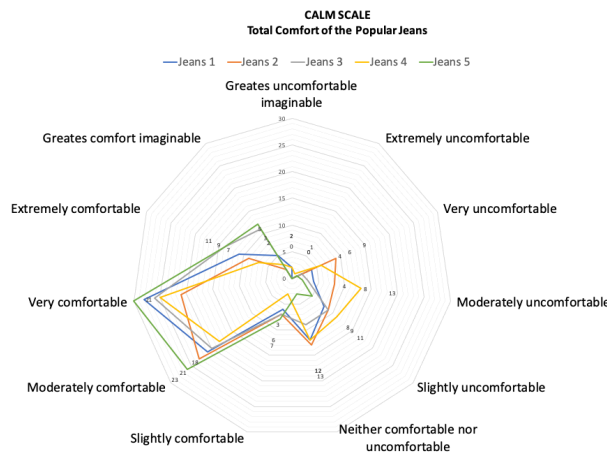

Figure 9. Comparison of jeans evaluation data

During the application of the tests, it was possible to observe the level of satisfaction/dissatisfaction to wearer of popular jeans, relating not only to the aesthetics attributes of the tested jeans, but also to the sensorial aspects brought when the skin is in contact with the jeans. The recognition of the sensory test applied to the popular jeans by means of the application of this investigation, starting from the analysis of the collected data and related among the evaluated parameters identified that the jeans as model 3 and 5 jeans pointed as the most comfortable.

When the collected responses it was found that the perception of comfort/discomfort of the jeans is directly related to the sensation of touch.

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