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Sensory Analysis in the Garment and Textile Industry

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As a strategy to improve product marketing, sensory analysis has increasingly been exploited by non-food sectors to evaluate different products. Textile sensory analysis has been the focus of studies to measure and compare the quality in different types of textile products in view of user comfort. Tactile sensory comfort in textiles is the result of the amount of tension generated in the material in contact with the skin. Thus, it has a strong relationship between tactile function and mechanical properties of fabrics. The tactile properties of fabric sensory comfort were standardized through descriptive and psychophysical sensory analysis techniques from the 1990's [1]. This method has been adapted from international standards developed for the evaluation of food and cosmetics. Commonly, sensory assessment uses sense perception (vision, smell, hearing, taste, and touch) to assess attributes of food products. This sensory evaluation in textiles is the result of descriptive psychological and physiological responses of individuals, where the sensations, when a material is touched, are quantified, and the human hand is the only instrument applied. In textiles, sensory analysis has been mainly investigated by tactile perception [2-9]. All of these sensory comfort investigators evaluated textile samples (two-dimensional structures) with certain textile finishing or coming from a specific product and / or specific characteristics, however, they did not explore the tactile sensory evaluation of a textile product in its three-dimensional form, i.e., the product in its final form.

It is difficult to define comfort and to meet the desired level of satisfaction and specific performance, it is necessary to define the intended end-use terms for clothing [10], that is, to know which comfort attributes are desired by the consumer. Therefore, sensory analysis is a significant new tool for textile materials in general where tactile feeling is of paramount importance to the consumer. Sensory analysis methodologies use descriptive research to characterize the attributes of different types of products and involve qualitative and quantitative analysis of sensory perceptions. For the sensory analysis some steps are necessary: preparation of the work environment [11]; selection and training of volunteers [12] and development of their own lexicon [13]. Finally, after the evaluators have gone through the training sessions, it is possible to conduct the tests for the evaluation of the samples, following the methodology of quantitative descriptive sensory analysis, evaluating, comparing and discriminating the product as a whole or by its individual characteristics [14]. It is also possible, through statistical analysis, to determine if there are significant differences between the samples used. Philippe et al. (2004) [15] made the first investigations in France adapting the sensory analysis norms of the food sector, where they developed lexicons for the tactile sensory evaluation in tissues.

Nogueira (2011) [16] later compared Portuguese and French lexicons, and added to their studies visual sensory evaluation. Other studies of quantitative sensory analysis in textiles have been done by other researchers [1,4,6,17-22] however, only Portuguese research made a comparative study with two trained panels, one Portuguese and one French, thus validating the methodology. Nagamatsu et al. [23] used the same methodology

employed by Philippe et al. [24] and Nogueira et al. [25] and developed a Brazilian lexicon for the selection and training of a sensory panel and later for the evaluation of textile samples. Brazilian lexicons were compared with those developed in France and Portugal, noting that seven attributes in common are the most mentioned among the panels: light and heavy; thick and thin; cold and warm; soft; plushy; elastic and the falling Nagamatsu et al. [9]. These attributes offer high subsidies for the assessment of textile tactile comfort, as well as to describe its tactile qualities, and can also be used as a strategy by the textile and garment industries to improve the process of developing and marketing their products worldwide.

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