

RESEARCHES ON THE INTEGRATION OF AESTHETIC PERCEPTION IN THE ERGONOMIC DESIGN OF WOMEN 'S CLOTHING

Carmen-Melania BLEJAN, Antonela CURTEZA

Faculty of Textiles, Leather and Industrial Management, "Gheorghe Asachi" Technical University of Iasi, Romania

Abstract: The purpose of this paper is to review the literature studies that bring to discussion the aesthetic perception of clothing products and the integration of the ergonomic concept in the fashion design process, pointing out the working methods used and the conclusions reached by the specialists. In the field of fashion design, the visual perception of clothing products is very important because it represents the first consumer assessment and when the product is also supported by ergonomics, this makes it a very important subject nowadays.

Keywords: aesthetics, visual perception, ergonomics, fashion, clothing.

Introduction

Textile and clothing industry encompasses to design new products by taking into account the criterions like aesthetics, functionality, ergonomics, material knowledge, marketability, production methods which address the need and problems of consumers. Ergonomics which utilizes scientific branches like anatomy, anthropology, physiology, psychology and engineering have important contributions to the clothing topic [1].

Considering the direct integration of the clothing with the skin and the topography of the body, the garment generates value of judgment inherent to the perception of the aspects of usability, pleasantness, comfort, enjoyment and satisfaction regarding the needs of the subject [2].

From this principle, ergonomic design provides tools which when applied during the stages of clothing conception, could be able to direct more precisely the characteristics of the product in favor of safety, efficiency and comfort. According to Montemezzo and Santos, the clothing acts like an extension of the body, like a "second skin", which, in turn, is essential to optimize the interface between product and user in order to avoid any discomfort [2].

In the perspective of fashion, all the articulation of the body that involves or maintains a direct contact with clothing have to be analyzed in order to create a product with aesthetic and ergonomics quality. Arms, legs, hips and head, for instance, make several moves that may come into conflict with certain characteristic present in a specific outfit, such as tight sleeves/armholes or collars [2].

The clothes which causes discomfort, restraining movements or creating barriers when working, can be the main reason of the problems arising from garment suitability [1].

The understanding of daily activities also helps to identify common moves that may be affected by clothing. These movements can be simple as sit down, bend the knee and others as well as specific movements of certain activities [2].

Regarding the clothing, its function goes beyond the basics of decoration and covering the body. It involves the sake of mental and physical health once may guarantee comfort and safety to user as well as stimulates the perceived sensations. In this regard, the joint work among ergonomic modeling, body, aesthetic and fabric is significantly important to the assertiveness of the clothing product [2].

1. Study methods

In the field of ergonomics, many researches are carried out on the ergonomics of clothing that include its elements in the design process and support its importance in product development.

Kaya's 2007 study states that in some designers' clothes aesthetic and symbolic functions might be more important than usage functions. On the other hand, the designer in this process must reflect the factors in an effective way by using their creativity that may affect the consumer behaviour. Koca and Koç in their study emphasised that a clothing designer must take into consideration technological data like an engineer, sociological values like a sociologist, sensing and evaluating feature like a psychologist and appraisal capacity to overcome the barriers which may limit the creativity [1].

Martins et al. (2012) set out in their paper a reflection on applying the seven principles of universal design to fashion products and clothing with a view to targeting such principles as recommendations that will guide the early stages of developing the products, and establish strategies for market expansion, thereby increasing the volume of production and reducing prices [3].

Some studies have revealed that the first impression of a product as perceived by consumers is important for manufacturing companies and product designers. The first impression and affective preferences of consumers are strongly influenced by the appearance of the product, called “visual ergonomics”, or “visual aesthetics”. In the field of product design, the visual ergonomics are usually concerned with “product form”, defined as the collection of design features that consumers will appreciate. A good product form design can grab consumers’ attention and then evoke their preferences [4].

Youngjoo Na (2009) in his study attempted a sensibility ergonomic approach to explore how a consumer’s sensibility is associated with physical attributes of design in the textile and fashion fields. A specific fashion design system, which classifies the user’s sensibilities and recommends fashion designs that satisfy the sensibilities, was developed. A database for 60 textiles, 41 fashion designs, 28 pairs of sensibility words and connection mechanisms, and a 2-D cyber product visualized model with user manipulating keys was established. It includes feedback of the recommended fashion design that matches the user’s sensibility by using visual element adjustment tools provided by the system [5].

Integration of ergonomic elements has also been achieved in the case of intelligent clothing by Hu and Zhong (2016) who incorporated the latest intelligent tracking technology into the design in accordance with different stages of the developmental environment for children in order to reduce the likelihood of loss of a child [6].

Other studies have examined aesthetic and design issues in consumer behaviour and marketing (e.g., Creusen and Schoormans 2005; Holbrook 1986; Page and Herr 2002; Veryzer and Hutchinson 1998). Veryzer and Hutchinson (1998), in a leading paper on product design in consumer behaviour, investigate the influence of the design principles on aesthetic responses of consumers [7].

Holbrook (1980) pointed out that a theoretical framework was necessary to discuss aesthetic consumption while Beardsley (1969) stated that aesthetic experiences and aesthetic values are connected with emotional reactions. Charters (2006) made a distinction between aesthetic consumption and aesthetic products. In today’s world, many people analyse the symbolic value a product more in detail [8].

The relationship between products and the relevance of product aesthetics in a consumer’s life was investigated by, for instance, Bloch et al. (2003), who developed a scale that measures individual differences in the centrality of visual product aesthetics (CVPA), “defined as the level of significance that visual aesthetics hold for a particular consumer in his/her relationship with products” (p. 551). While the concept of CVPA is subjective in nature (self reported consumer measure), the authors show that high CVPA versus low CVPA individuals evaluate highly aesthetic products as more pleasing and have a more positive attitude and a higher purchase intention of these products than the ones with a lower aesthetic appeal [7].

Muncu and Kimzan 2015 have investigated the relationship between visual aesthetics of products and consumers’ price sensitivity and the results revealed that visual aesthetics of products and also its sub-dimensions including value, acumen, and response are negatively associated with consumers’ price sensitivity. Product aesthetics (independent variable) was measured by the scale of Bloch et al. (2013). The scale includes value, acumen and response dimensions of visual product aesthetics. These items were measured with 5-point, Likert type scales (1 = strongly disagree, 5 = strongly agree). Price sensitivity (dependent variable) was measured by the scale of Wakefield and Inman (2003). Furthermore, visual aesthetics is one of the most important factors affecting consumer perception in many ways. An outstanding product design helps to distinguish products from its competitors and enables to make a difference in the market (Bloch et al., 2003). Besides, product design can affect people's quality of life positively (Crilly et al., 2004). Visual aesthetics has a symbolic role that can affect evaluation of product [8]. Perez Mata et al. (2013) investigated how the desire to own a product is related to the perceptions and aesthetics of the product. Findings from the case study indicate that there exist significant relations between the desire to own a product and how the product is perceived [9].

Following research on aesthetics of women's clothing products, several hypotheses have emerged, for example Greggianin et al. study in aesthetic and functional bra attributes as emotional triggers, suggest that relaxation and pleasantness may not be influenced by the product’s aesthetic [10]. Lowe study regarding aesthetics in women’s apparel indicate some of the rules can be attributed to existing design principles, but in several cases the sheer magnitude of the discrepancy between what is taught as good design and empirical reality suggests that certain aesthetic rules may need to be rephrased [11].

DeLong case study on clothing and aesthetics consisted in visual exposure and discussion, prior to and after 40 hours, regarding a wide range of costume body forms. 51 subjects were asked to respond to eight costume body forms varying in visual effect. Both pre- and post-responses included a description of each

costume body form and a selection of the slides liked best and least. Descriptions were compared as to: (1) orientation of the observer to the whole form and (2) the morphologic-axiological orientation [12].

In the aesthetic field of clothes, many other studies have been conducted for certain product categories such as T-shirt, dress, costume and others, to obtain personalized results. Among these studies we mention Wang et al. "Study of Aesthetic Evaluation of Women's Collarless T-Shirt's Collar Style" (2011), Johnson et al. research in the social psychology of dress, Lowe and Anspach study regarding dress perception – "Freedom in Dress: A Search for Related Factors", and the latest Yen and Hsu study (2017) which presents students perception of costume fashion design elements. [13][14][15][16] Kelley et al. study "Application of Benefit Segmentation to a Generic Product Study in Clothing and Textiles" explores 2 hypotheses (1) whether clusters of consumers could be established based on their evaluations of aesthetic and performance characteristics in selected generic categories of fashion goods, and (2) if the demographic profiles of consumers within these clusters were different [17].

Venkatesh et al. (2010) paper theorizes and empirically investigates how female consumers' attitudes and preferences relating to bodily appearance are linked to their perceptions of the aesthetics of fashion. The theoretical work is based on three streams of research: aesthetics of production, aesthetics of reception and aesthetic labour. The study covers four themes: fashion as wearable art, body and self-identity, bodily appearance and high fashion brands, and aesthetic labour through fashion. The focus on fashion aesthetics and identity formation provides valuable information for a broader discussion on the growing importance of aesthetics in understanding consumer behaviour [18].

Conclusions

In the field of ergonomics more and more researchers are aware of its importance and are trying to include it in all segments of the clothing industry and in product development. More researchers suggested that body movements should be analyzed and taken into account when designing the garment to provide comfort. Also, researchers have come to the conclusion that the first impression, the first visual contact with the product is decisive in the formation of an image and in the purchasing decision.

Martins et al. believes that principles of universal design, ergonomics and usability introduced in developing fashion design lead to optimizing processes, adding value and quality to products, which in turn will contribute to increasing the useful life of the product and its emotional connection with its user and consequent reduction in its environmental impacts [3].

Hoyer et al. emphasised the role of taste in consumer judgment and decision making, representing a fertile ground for future theory development and research. Clearly, aesthetic taste plays a critical role in determining how consumption situations are judged and evaluated [7].

The visual perception is very important in the product design, and needs to be taken into consideration because the aesthetics of the product influence the perception of the consumer, its behaviour, and its mark on the purchasing decision.

References

1. Koca E., Kaya Ö. A Research on Ergonomic Approaches of Apparel Designers, Chapter · January 2016 DOI: 10.1007/978-3-319-41983-1_29.
2. Érica P. das Neves, Aline C. Brigatto, Luis C. Paschoarelli. Fashion and Ergonomic Design: Aspects that influence the perception of clothing usability. 6th International Conference on Applied Human Factors and Ergonomics and the Affiliated Conferences, AHFE 2015. Procedia Manufacturing 3 (2015), 6133-6139.
3. Martins, S. B. Dr. and Martins, L. B. Dr. Ergonomics, design universal and fashion, Work 41 (2012) 4733-4738 DOI: 10.3233/WOR-2012-0761-4733 IOS Press.
4. Lin, Y-C., Wei, C-C. A hybrid consumer-oriented model for product affective design: An aspect of visual ergonomics, WILEY, 25 May 2016, DOI: 10.1002/hfm.20403.
5. Na, Y., Fashion Design Styles Recommended by Consumers' Sensibility and Emotion, Human Factors and Ergonomics in Manufacturing, Vol. 19 (2), 158-167 (2009), DOI: 10.1002/hfm.20143.
6. Hu, X., Zhong, J. The Study of Design of Children's Anti-lost Clothing Based upon Ergonomics, V.G. Duffy (Ed.): DHM 2016, LNCS 9745, 13-21, 2016, DOI: 10.1007/978-3-319-40247-5_2.
7. Hoyer, W.D. & Stokburger-Sauer, N. E. The role of aesthetic taste in consumer behavior, J. of the Acad. Mark. Sci. (2012) 40: 167-180 DOI 10.1007/s11747-011-0269-y.

8. Mumcuca, Y., Kimzan, H. S. The Effect of Visual Product Aesthetics on Consumers' Price Sensitivity, 4th World Conference on Business, Economics and Management, WCBEM, Procedia Economics and Finance 26 (2015), 528-534.
9. Perez Mata, M., Ahmed-Kristensen, S., & Yanagisawa, H.(2013). Perception of Aesthetics in Consumer Products. In Proceedings of the 19th International Conference on Engineering Design (ICED13): Design For Harmonies (Vol. 7, pp. 527-536). Design Society.
10. Greggianin, M., Tonetto, L.M., Brust- Renck, P. Aesthetic and functional bra attributes as emotional triggers, Greggianin et al. *Fash Text* (2018) 5:31, <https://doi.org/10.1186/s40691-018-0150-4>.
11. Lowe, E.D. Aesthetic rules in women's apparel: Empirical fact or fantasy, *Journal of Consumer Studies and Home Economics* (1984) 8, 169-181.
12. DeLong, M.R. Clothing and Aesthetics: Perception of Form, *Home Economics Research Journal*, June 1977, Vol. 5, No. 4.
13. Wang, S.S., Zhang, X.-X., Qin, F., Liu, G.-L. Aesthetic Evaluation of Women's Collarless T-Shirt's Collar Style, M. Zhou (Ed.): *ISAEED 2011, Part III, CCIS 210*, pp. 628-634, 2011.
14. Johnson, K., Lennon, S.J., Rudd, N. Dress, body and self: research in the social psychology of dress, *Fashion and Textiles* 2014, 1:20, <http://link.springer.com/article/10.1186/s40691-014-0020-7>.
15. Lowe, E-D., Anspach, K.A. Freedom in Dress: A Search for Related Factors, *Home Economics Research Journal*, November 1978, Vol. 7, No. 2.
16. Yen, H-Y., Hsu, C-I. College student perceptions about the incorporation of cultural elements in fashion Design, *Fashion and Textiles* (2017) 4:20, DOI 10.1186/s40691-017-0105-1.
17. Kelley E., Strother, C.M., Blouin, D., Crouch, C. Application of Benefit Segmentation to a Generic Product Study in Clothing and Textiles, *Home Economics Research Journal*, June 1986, Vol. 14, No. 4.
18. Venkatesh, A., Joy, A., Sherry, F. J., Deschenes, J. The aesthetics of luxury fashion, body and identify formation, *Journal of Consumer Psychology* 20 (2010), 459-470.