

Development of Apparel Product Evaluation (APE) framework: a systematic classification of evaluative criteria

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This is an Accepted Manuscript version of the following article, accepted for publication in International Journal of Fashion Design, Technology, and Education.

Ghalachyan, A., & Karpova, E. (2021). Development of Apparel Product Evaluation (APE) framework: A systematic classification of evaluative criteria. *International Journal of Fashion Design, Technology, and Education*. Published online April 26, 2021.
<https://doi.org/10.1080/17543266.2021.1916839>

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Abstract:

Based on a systematic analysis of extant research on apparel evaluative criteria and following the logical partitioning approach of developing classification schemes (Hunt, 2010, Marketing theory: Foundations, controversy, strategy, and resource-advantage theory. Routledge), we developed a new classification system, titled Apparel Product Evaluation (APE) framework. The framework integrates, clarifies, and logically organises evaluative criteria into four mutually exclusive and clearly defined dimensions: Intrinsic, Marketing, Functional, and Socio-Communicative. Law-like propositions were developed to explicate each dimension and guide the classification of evaluative criteria. Sustainability criteria were incorporated in the framework. This comprehensive classification framework can guide new product development and holistic understanding of how people evaluate apparel products. The framework methodically explains the roles of producers, retailers, consumers, and society and their interactions in defining and activating various evaluative attributes in the four dimensions. Organisation and classification of a phenomenon, such as evaluative criteria, is the first step towards theory-building and helps to advance the knowledge in the area.

Keywords: product cues | evaluative criteria | Apparel Product Evaluation | classification System | product attribute

Article:

1. Evaluation of apparel products

To develop successful apparel products, we need to know how consumers evaluate them and what criteria they use in the process. Evaluative criteria are product attributes, or cues, used by consumers to examine products and make purchase decisions (Forney, Park, & Brandon, 2005; Jeong & Lee, 2014). According to Eckman, Damhorst, and Kadolph (1990), evaluative criteria are ‘manifestations of the consumer’s underlying values and attitudes, stored information and experience, and various psychological, sociological, and economic influences’ (p. 13).

The goal of this research was to develop a comprehensive classification system that integrates apparel evaluative criteria, or product attributes, into distinctive, clearly defined, and mutually exclusive categories. The paper is organised as follows. First, existing classifications for apparel evaluative criteria were critically examined and analysed. Based on the identified inconsistencies and shortcomings, the need for a systematic classification system was presented. Next, we provided a detailed description of the process to develop and justify a new classification system, which followed Hunt’s (2010) theoretical underpinnings. Finally, the proposed Apparel Product Evaluation framework was explained, using a graphical as well as law-like generalisation proposition format. In the last section, we discussed theoretical and practical significance of this research and the proposed framework.

1.1 Existing classifications for apparel evaluative criteria

Apparel evaluative criteria have been the focus of many studies, in which different criteria and classification schemes were proposed. A summary of evaluative criteria and classifications from most frequently-cited studies is presented in Table 1. Earlier studies in this area explored how consumers integrated information to form beliefs about apparel products and the level of importance and contribution of some product attributes or cues in this process, focusing on specific products or market segments (Jenkins & Dickey, 1976; Kelley, Strother, Blouin, & Crouch, 1986; Szybillo & Jacoby, 1974). Cassill and Drake (1987) investigated apparel evaluative criteria in relation to consumers’ lifestyle. Swan and Combs (1976) examined satisfaction with apparel products based on expressive (psychological) and instrumental (physical) product dimensions.

Traditionally, evaluative criteria have been classified based on the dualities of extrinsic and intrinsic cues (Eckman et al., 1990). For example, Szybillo and Jacoby (1974) and Hatch and Roberts (1985) examined the effects of intrinsic and extrinsic cues on perceived quality of apparel products. Intrinsic cues (e.g. colour, fibre) are tangible product attributes that are inherently part of the product and cannot be altered without physically changing the product (Eckman et al., 1990; Swinker & Hines, 2006). Extrinsic cues (e.g. price, brand) are not inherent part of a product, and changing them will not physically affect the product (Forney et al., 2005; Szybillo & Jacoby, 1974).

Table 1. Seminal research on apparel evaluative criteria.

Authors/study	Evaluative criteria (product attributes) classified in respective categories
Eckman et al. (1990) (16 attributes in 4 categories)	<i>Aesthetic:</i> Colour/pattern, styling, fabric, uniqueness, appearance <i>Usefulness:</i> Versatility, matching, appropriateness, utility <i>Performance and quality:</i> Fit, comfort, care, workmanship <i>Extrinsic:</i> Price, brand, competition
Fiore and Damhorst (1992) (15 cues in 3 categories)	Intrinsic cues, including aesthetic attributes <i>Layout:</i> Garment style, silhouette and shape (overall and parts), fashionability, coordination with existing wardrobe, compatibility of style with body, situational appropriateness <i>Fabric:</i> Overall pleasingness of fabric, feel or hand of fabric, weight of fabric, fabric selection for the style, fibre content, care, well-constructed <i>Newness:</i> Novelty, style
Lamb and Kallal (1992) (examples of needs/criteria in 3 categories)	<i>Functional:</i> Fit, mobility, comfort, protection, donning/doffing <i>Expressive:</i> Values, roles, status, self-esteem <i>Aesthetic:</i> Art elements, design principles, body/garment relationship
Abraham-Murali and Littrell (1995) (19 attributes in 4 categories)	<i>Physical appearance:</i> Fabric (e.g. content, weight), colour/pattern/texture, construction (e.g. even hems), styling (e.g. neckline, sleeve style) <i>Physical performance:</i> Fabric, colour (e.g. does not fade), care (e.g. washable, easy care), workmanship (e.g. strong seams, zipper does not break), garment (e.g. hold shape, fits well, easy to put on) <i>Expressive:</i> Looks good on me, provides scope for individual creativity, appropriateness to lifestyle, comments of others <i>Extrinsic:</i> Brand, price, store/catalog, country of origin, care label, service
Fiore and Ogle (2000) (20 benefits in 2 categories with 3 subcategories each)	Aesthetic benefits <i>Formal:</i> Beauty, sensual pleasure <i>Expressive:</i> Aroused emotion, creative expression <i>Symbolic:</i> Alternative existence, cognitive challenge, identity Instrumental benefits <i>Formal:</i> Efficiency, physical comfort, physical protection and safety, sexual attractiveness, structural quality <i>Expressive:</i> Reflected emotion, regulated emotion, spiritual ecstasy <i>Symbolic:</i> Quest for knowledge, self-acceptance, social acceptance and affiliation, spiritual protection, status
Swinker and Hines (2006) (16 cues in 4 categories and 11 expectations in 4 categories)	Informational cues <i>Extrinsic:</i> Brand name, country of origin, cost <i>Intrinsic:</i> Garment construction, fabric, notions and findings used <i>Appearance:</i> Colour, design features, fashionability, fabric feel, style in relations to figure <i>Performance:</i> Garment care, garment holding shape, fabric pilling, wrinkling, durability Expectations for high-quality garments <i>Aesthetic:</i> Fashionable vs less fashionable, more style details <i>Economic:</i> Lasts longer than lower quality, quantity vs quality <i>Physiological:</i> Better fit, comfort <i>Social/psychological:</i> Feel good about self, feel more positive, more accepted, more knowledgeable, more successful

Scholars agree that extrinsic attributes are defined by retailers or producers. However, the category of extrinsic attributes has also included ‘approval of others’ or ‘coordination with wardrobe’ (Eckman et al., 1990), which is attributes ascribed to products by consumers. Abraham-Murali and Littrell (1995) argued that in addition to objective product attributes, consumers also evaluate products based on subjective characteristics ‘ascribed to the product by the user’ (p. 65). Classifying evaluative criteria in only two groups, intrinsic and extrinsic categories, might not accurately reflect inherent differences between product attributes.

Eckman et al. (1990) interviewed women in retail settings to elicit descriptions of evaluative criteria when shopping for apparel. The authors identified 17 evaluative criteria and grouped them in four categories: (a) aesthetic, (b) usefulness, (c) performance and quality, and (d) extrinsic (Table 1). Fiore and Damhorst (1992) identified intrinsic evaluative criteria related to apparel quality, grouped in: (a) layout, (b) fabric, and (c) newness categories (Table 1). The researchers noted that three attributes in the fabric category (fibre content, care, and well-constructed) were performance indicators. In this study, aesthetic attributes were considered

as intrinsic evaluative criteria, whereas in other studies aesthetics attributes were listed as a separate category (e.g. Eckman et al., 1990; Lamb & Kallal, 1992).

Abraham-Murali and Littrell (1995) focused on developing a comprehensive list of attributes used by consumers to evaluate apparel. Seventy-nine attributes were identified and classified in four groups: (a) physical appearance, (b) physical performance, (c) expressive, and (d) extrinsic (Table 1). While there is a considerable overlap with Eckman et al. (1990) study, such as performance and extrinsic attributes, some categories are different. For example, Eckman et al. (1990) classified 'appropriateness' and 'matching' under the usefulness category, whereas Abraham-Murali and Littrell (1995) classified these as expressive attributes.

Fiore and Ogle (2000) argued that consumers evaluate products 'based on optimum value received from the product or product environment', defining value as 'the accumulation of perceived benefits derived by the consumer from acquisition, ownership, use, discussion about, or appreciation of the product or product environment' (p. 34). The authors classified 20 apparel benefits into two categories: aesthetic and instrumental, each containing: (a) formal, (b) expressive, and (c) symbolic sub-categories (Table 1). Aesthetic benefits were 'rewarding and pleasurable in and of themselves', whereas instrumental benefits were utilitarian or functional in nature, and 'rewarding' as they helped to achieve external goals other than aesthetic experience, e.g. social or economic benefits (Fiore & Ogle, 2000, p. 36). The formal benefits are 'perceivable (sensory) features of the form or structure of the product or environment:' colour, shape, texture, proportion, etc. (Fiore & Ogle, 2000, p. 37). Consumers derive instrumental values from formal qualities such as physical comfort, quality, protection, or sexual attractiveness. Expressive benefits help to express or evoke emotion, which can be satisfying or pleasurable for its own sake (aesthetic value) or used to achieve therapeutic effects (instrumental value). Symbolic benefits help communicate ideas about a person or the surrounding environment.

To investigate consumer involvement with knitwear, Jeong and Lee (2014) used the following evaluative criteria from past research: (a) intrinsic criteria, (b) social criteria, and (c) economic criteria. The authors' approach differed from the other classifications as extrinsic criteria were divided into social and economic categories.

Based on extant research, Swinker and Hines (2006) selected 16 informational cues grouped in four categories: (a) extrinsic cues, (b) intrinsic cues, (c) appearance cues, and (d) performance cues (Table 1). They suggested four additional categories to explain consumer expectations for high-quality garments: (a) aesthetic, (b) economic, (c) physiological, and (d) social/ psychological. The authors reported that 75% of the informational cues and 36% of the expectations were used by respondents to evaluate apparel quality. The authors listed cues such as colour, design features, etc. under the appearance category, whereas in other studies these attributes were classified as aesthetic attributes.

Examination of extant research demonstrates an array of product attributes classified into various, often overlapping and unclear, categories and dimensions (Table 1), highlighting the need for a systematically developed classification schemata.

1.2. Consumer needs as evaluative criteria

Lamb and Kallal's (1992) Functional-Expressive-Aesthetic (FEA) model has been extensively used for examining consumer needs and evaluating apparel products and prototypes (Black, Freeman, & Rawlings, 2018; Bye & Hakala, 2005; Christel & O'Donnell, 2016; Michaelson, Teel, & Chattaraman, 2018). According to the model, consumer needs, which serve as apparel design and evaluation criteria, are classified into Functional, Expressive, and Aesthetic dimensions. Functional needs relate to the utility of apparel (e.g. fit, mobility, comfort). This is similar to the performance/ quality dimension in other classifications (Eckman et al., 1990; Swinker & Hines, 2006). Communicative and symbolic needs (e.g. values, self-esteem) make up the expressive category, similar to the expressive/symbolic and social/psychological categories in empirical research (Abraham-Murali & Littrell, 1995; Swinker & Hines, 2006). Aesthetic considerations relate to the need for beauty and include colour, texture, etc. similar to the appearance/aesthetic categories in other classifications (Eckman et al., 1990; Fiore & Ogle, 2000; Swinker & Hines, 2006).

The FEA model provides a useful framework for design and evaluation of apparel products. While the three dimensions of the model are constant, the criteria within the dimensions can vary based on specific design problems and situations. Such flexibility allows the model to be applied to a variety of products, user needs, and cultural environments (Orzada & Kallal, 2021). However, the flexibility and openness for interpretation may create some ambiguity, especially for young designers and scholars. For example, extrinsic attributes such as price or country of origin may be difficult to directly classify with the three dimensions of the framework, even though Orzada and Kallal (2021) state that additional criteria not included in the framework 'could be understood as components already existing within the FEA model', including consumer's cultural context (p. 11).

2. Need for a comprehensive classification system

It is essential to develop a comprehensive and systematic classification system that clarifies, integrates and logically organises various evaluative criteria used by consumers to evaluate apparel products. 'Having a variety of nonstandard classification schemata for the same phenomenon is dysfunctional' and makes it difficult to compare and integrate research findings (Hunt, 2010, p. 200). Defining, organising and classifying elements of a phenomenon is the first step in theory building and a prerequisite for advancing knowledge within a discipline (Hunt, 2010; Pedersen, 2007).

There is a clear need to reconsider and eliminate overlapping categories as it is the case in the existing classifications. Classification categories must be clearly defined and be mutually exclusive. For example, extrinsic and intrinsic categories have been utilised in many classifications reviewed; however, they have not been used consistently. Whereas some scholars have classified only product structural and physical attributes (e.g. fibre content, construction)

under the intrinsic category (Swinker & Hines, 2006), others have also included product performance, quality, and aesthetic attributes (Fiore & Damhorst, 1992; May-Plumlee & Little, 2006).

The use of the term 'extrinsic' as a classification category needs to be reconsidered. Extrinsic category has generally included evaluative criteria such as price, store, brand, country of origin, and other manufacturer or retailer-defined attributes that are not inherent part of products (Eckman et al., 1990). Yet, in a multidimensional classification system, the use of extrinsic category may imply that all other criteria are intrinsic, or inherent part of products, which is not accurate. For example, communicative or symbolic criteria, such as fashionability, are not intrinsic part of products. Using terms that accurately and exclusively describe distinct categories will enhance a classification system.

A significant shortcoming in the existing classification systems is the lack of a criterion related to sustainability. Consumers are increasingly aware of the environmental and social issues, and some consider these when evaluating and purchasing apparel (Gam & Banning, 2011; Gleim, Smith, Andrews, & Cronin, 2013). Sustainability-related criteria must be included in a comprehensive classification system. Sustainability is a complex, multidimensional concept, and consumers may consider related criteria in various way when shopping for apparel. For example, they may consider sustainability of materials (e.g. natural dye, organic cotton) or product features that enable sustainable use (e.g. repairability; laundry requirements) and disposal of products (recyclability, etc.). Consumers may also consider retailer sustainable practices such as charitable donations, contribution to climate change, etc. Other considerations may include consumption of sustainable brands as identity and status symbol.

Another limitation of the existing classification systems is the lack of full consideration of human sensory modalities (i.e. sight, touch, hearing, smell). While sight (appearance) and touch (tactile properties) modalities have been included in the existing classifications, smell and hearing modalities might also be important, as products are experienced through these senses as well (Davis, 1996). Apparel products can possess certain odours due to fibres, finishes, and dyes used in manufacturing processes. A garment in a store could have unpleasant chemical odours, or an enticing aroma if the product contains encapsulated essential oils. Further, a product can make a sound during movement, depending on the type of material used. To ensure a holistic representation of apparel attributes, it is important to consider criteria related to smell and hearing sensory characteristics. An integrated and expanded classification with distinct categories of apparel evaluative criteria can provide a useful framework for examining and understanding consumer evaluation process and decision-making related to apparel products.

3. Development of Apparel Product Evaluation (APE) framework

According to Hunt (2010), classification schemes should: (a) adequately specify the phenomenon to be classified; (b) adequately specify and consistently adhere to the principles on which classifying is to be done; (c) have mutually exclusive categories; (d) have collectively exhaustive

categories; and (e) be useful. To guide the classification process of evaluative criteria, Hunt's (2010) logical partitioning approach was followed. Classification systems involve partitioning of heterogeneous phenomena into clearly defined 'classes or sets that are homogeneous with respect to some categorical properties' (Hunt, 2010, p. 200). The logical partitioning approach involves the following three stages:

1. Clear definition of the phenomenon to be classified;
2. Delineation of the categorical terms that specify the properties based on which the classification is carried out; and
3. Labeling the emerged categories.

The development of a comprehensive evaluative criteria classification system, titled Apparel Product Evaluation (APE) framework, was based on:

- Systematic review and analysis of the extant research on apparel evaluative criteria,
- Hunt's (2010) theoretical principles for developing mutually exclusive and well-defined classifications schemes

During the first stage of the classification system development, literature review was conducted, based on which the concept of evaluative criteria was clearly defined, and evaluative criteria from extant research were identified and recorded. The literature search was conducted using combinations of the following key words: evaluative criteria, evaluation, attributes, and evaluative cues and apparel, clothing, and product. The most comprehensive and frequently cited sources found on the subject, summarised in Table 1, contained dozens of evaluative criteria. While some unique evaluative criteria were identified in each study, most criteria were the same. Other studies found on the subject borrowed the criteria from one of the studies included in the analyses (Table 1). Data saturation was reached, as the additional studies revealed only repeating information, and no new evaluative criteria emerged. During the next stage, Hunt's (2010) initial logical partitioning process was employed, followed by delineation of categories, as described below.

3.1. Initial logical partitioning: tangible and intangible criteria

The authors carefully analysed, compared, and discussed the recorded evaluative criteria (Table 1) with the goals: (a) to identify clear properties or terms based on which to carry out categorisation of the evaluative criteria and (b) to determine classification categories (Hunt, 2010). Initially, the apparel evaluative criteria were logically partitioned into two broad categories: tangible and intangible. Tangible criteria are inherent or physical characteristics of product perceivable through human senses of sight, touch, smell, or hearing (Eckman et al., 1990). Typically, tangible criteria are easy to measure directly and objectively. Evaluative criteria

that fit these specifications (colour, material, construction, etc.) were classified under the tangible category. Intangible criteria are not physical characteristics of a product (Abraham-Murali & Littrell, 1995); these attributes are often abstract and might be difficult to assess objectively using human senses. Intangible criteria can be changed without altering the product itself (e.g. price) and can be subjective depending on individual perception and relatively complex to measure (e.g. comfort, uniqueness).

First, the evaluative criteria (Table 1) were analysed to aggregate similar ones and to eliminate redundancies. For example, situational appropriateness (Fiore & Damhorst, 1992), appropriateness (Eckman et al., 1990), and appropriateness to lifestyle (Abraham-Murali & Littrell, 1995) were combined as appropriateness attribute. As another example, fabric-related attributes (e.g. weight, fibre content) were aggregated under one attribute labeled as 'material'. Next, using the constant comparison method and the delineation process (MacInnis, 2011), all remaining evaluative criteria were classified into one of the two categories, tangible or intangible.

3.2. Multi-level classification: delineating emerging dimensions

Hunt (2010) emphasises that logical partitioning can result in single- or multi-level classification schemes, and that multi-level classifications have 'greater systemic power', meaning, they systematically organise a phenomenon with greater depth and detail and lead to better understanding of the phenomenon (p. 201). Upon further analysis and constant comparison of the criteria in the tangible and intangible categories, four subcategories or dimensions were developed. Law-like propositions were formulated to explicate each of the four dimensions, delineate classification terms, and guide the further classification of evaluative criteria into these dimensions. Based on this, all tangible criteria were classified into one dimension: Intrinsic attributes. The intangible criteria were classified into three dimensions: Functional, Marketing, and Socio-communicative attributes (Table 2 and Figure 1). These four dimensions are defined and discussed below.

3.2.1. Intrinsic attributes

Intrinsic criteria, or attributes, relate to product appearance, composition, and structure and are observable or perceivable through the human senses (Fiore & Ogle, 2000). These attributes are determined by designers and producers during the product development and manufacturing stages (indicated by an arrow in Figure 1). Aesthetic and physical appearance criteria (Abraham-Murali & Littrell, 1995; Eckman et al., 1990) and intrinsic criteria (Fiore & Damhorst, 1992; Jeong & Lee, 2014; Swinker & Hines, 2006) were considered for this dimension: colour, pattern, texture, product construction, design features, materials, shape/silhouette, smell and sound of a product, etc. Some of these attributes might carry information related to sustainability of a product, for example, organic cotton or natural dyes. While the importance of these

attributes is context- and consumer-specific, they are integral and tangible parts of any product. Intrinsic attributes determine and enable product functional and socio-communicative performance when products are used and are often used by retailers to define marketing attributes for informational and advertisement purposes.

Table 2. Dimensions and attribute in Apparel Product Evaluation (APE) framework

Tangible criteria	Intangible criteria		
Intrinsic attributes (examples)	Marketing attributes (examples)	Functional attributes (examples)	Socio-communicative attributes (examples)
Colour/pattern	Price	Comfort	Fashionability
Texture	Brand	Fit	Appropriateness
Materials	Country of origin	Durability	Uniqueness
Construction	Service	Performance	Novelty/newness
Design features		Protection Care	Identity
Shape/silhouette			Status
Style			
Smell			
Sound			
<i>Examples of sustainability attributes for each dimension</i>			
Organic or recycled fibre	Charitable donations	Product care options	Display of logos of sustainable brand
Natural dyes	Buy-Back program	Repairability	Display of patched/repared garments
	Retailer repair services	Adaptability	

3.2.2. Marketing attributes

Marketing attributes (Table 2) include product characteristics that are defined or added by producers or retailers to aid in promoting and selling products (indicated by arrows in Figure 1).

Extrinsic and economic evaluative criteria identified in extant research (Table 1) were considered for this dimension. Marketing attributes inform consumers about product cost, where it was made and by what company/brand, included services, ethical or sustainability features, etc. The following attributes are the most typical and important in the marketing dimension: price, brand, country of origin, service (e.g. product warranty), as well as social responsibility and sustainable practices of the producer or retailer (e.g. charity donations).

Marketing attributes are intangible product characteristics that may be changed in response to market changes or other factors without physically affecting the product. The attributes are used by retailers to increase product value in the consumer eyes with the ultimate goal to generate sales. Marketing attributes can be used by consumers to make inferences about overall product quality as well as reduce shopping effort and risk (Rahman, Yan, & Liu, 2009). For instance, goods produced in developing countries can be perceived to be of lower quality than those made in developed countries. Emphasising a brand's image or a retailer's social responsibility efforts (e.g. community engagement) and sustainable practices associated with the product (e.g. buy-back programme, repair service) may be strategies to increase perceived product value by retailers.

3.2.3. Functional attributes

Functional attributes (Table 2) are enabled by intrinsic attributes and are physical and physiological performance outcomes or benefits of using a product (Abraham-Murali & Littrell, 1995). To illustrate, a thicker material of a certain weave and fibre content (intrinsic attributes) can allow for a greater durability of a product or provide better protection from cold temperatures. Therefore, these functional attributes (durability and protection) are enabled by intrinsic attributes (fibre content and fabric structure). Evaluative criteria related to physical performance, quality, physiological, and other functional product characteristics identified in extant research (Table 1) were included in this dimension.

In contrast to intrinsic attributes, which are tangible outcomes of decisions made by designers or producers, functional attributes are outcomes of consumer-product interaction. While intrinsic attributes exist without consumer involvement, functional attributes can only be enabled, or activated, in the process of people interacting with products, for example, trying them on (enabling fit) or using them (enabling durability or comfort) (indicated by an arrow in Figure 1). Functional attributes of the same product might be perceived differently by different consumers. In other words, evaluation of functional attributes often vary from consumer to consumer, based on their subjective perceptions. For instance, consumers could experience garment fit differently (e.g. well-fitted vs ill-fitted).

Functional attributes can generally be tested and evaluated, using various instruments. For example, abrasion resistance or seam strength of a garment may be tested for durability. Functional attributes are important characteristics for product success, evidenced by the fact that many of these attributes may be used by retailers in advertising. For instance, an outdoor

garment's durability or the fit of a maternity top may be emphasised in advertisements. Examples of functional attributes include physical comfort, fit (body-garment relationship), durability (e.g. abrasion resistance, seam strength, colourfastness), protection (e.g. shielding from cold weather), performance (e.g. antimicrobial properties, wicking). With fast development of smart textiles and wearable technology, functional attributes might extend beyond typical performance properties. Consumers may evaluate products based on how well they assist, monitor, notify, encourage, enable, or enhance various functions of the user's body and activities.

Consumers evaluate products based on care options (e.g. washing) as well. Sustainability may also be considered by consumers in relation to the functional attributes. For example, a more durable product might be used for a prolonged period and eliminate the need for discarding products and acquiring new ones. Care options (e.g. less frequent laundry needs), product repairability, adaptability (e.g. turning a jacket into vest) or recyclability could also be considered as criteria for evaluating product sustainability.

3.2.4. Socio-communicative attributes

Socio-communicative attributes define product's symbolic and communicative characteristics and allow people to express or communicate their identities, roles, values, beliefs, and feelings in the process of social interactions (Bye & Hakala, 2005; Lamb & Kallal, 1992). These attributes include intangible criteria such as fashionability, appropriateness, uniqueness, novelty, etc. (Table 2). Socio-communicative attributes are enabled through complex interactions of intrinsic (e.g. colour or style) and marketing (e.g. brand) product attributes, and consumer-product interactions (e.g. fit), all mediated by culture (indicated by solid and dashed arrows in Figure 1). Culture represents a set of learned values, norms and symbols accepted and used by a large group of people (Yurchisin & Johnson, 2010). It acts as a filter or mediator between consumers and their perceptions of apparel products (Lamb & Kallal, 1992). Culture permeates all aspects of life in a society, including consumer perceptions of product attributes: intrinsic, marketing, and functional. Sociocommunicative dimension includes attributes that are enabled through interaction of consumer and culture.

Abraham-Murali and Littrell (1995) stated that, through mental processing, people combine tangible attributes together to form more abstract or ascribed attributes. Further, people synthesise a mix of tangible and intangible attributes into more complex attributes to make judgements and inferences about products. For example, consumers may combine tangible attributes such as colour and style with intangible attributes such as brand and make an inference about product fashionability or appropriateness for a certain occasion or an individual. Fashionability of a product is a socially-constructed attribute. People must go through complex mental processes to make inferences about product fashionability. In addition to synthesising tangible and intangible attributes, people use culturally-defined beliefs and norms to evaluate products. Sustainability may also be considered related to the socio-communicative dimension. For example, consumers may purchase a fair trade product or a product from a popular

sustainability-oriented brand to show that they care for the planet (identity) or can afford the brand (status).

4. The APE framework propositions

Law-like propositions (Hunt, 2002, 2010) for the proposed APE framework were developed to define each of the four dimensions and guide the classification of any apparel evaluative criteria into one of the four distinct and mutually exclusive dimensions. Each dimension is enabled by different-level interactions between the product, producer, retailer, consumer, and society/ culture (Figure 1). The propositions serve as the foundation of the APE framework and can be used to guide further theoretical developments in this area as well as to classify any other product attributes not discussed here.

Law-Like Propositions for Intrinsic Attributes

- P1. Intrinsic attributes define inherent, physical characteristics of products.
- P2. Intrinsic attributes are tangible.
- P3. Changing an intrinsic attribute will change the product itself.
- P4. Intrinsic attributes determine product appearance, composition, and structure.
- P5. Intrinsic attributes can be evaluated (measured) directly through human senses.
- P6. Intrinsic attributes are determined (enabled) by producers during product development and manufacturing.

Law-Like Propositions for Marketing Attributes

- P1. Marketing attributes are intangible.
- P2. Changing marketing attributes will not change the product itself.
- P3. Marketing attributes of a product can be directly assessed (e.g. price, brand).
- P4. Marketing attributes are determined or added to products by producers and retailers to aid in promotion and sale of products.
- P5. To attract consumers, producers and retailers create added value by controlling and modifying marketing attributes, which might be based on intrinsic attributes of a product (e.g. material characteristics).

Law-Like Propositions for Functional Attributes

- P1. Functional attributes are intangible.
- P2. Functional attributes are enabled by intrinsic attributes (e.g. thick material leads to warmer product).
- P3. Functional attributes are physical and physiological outcomes or benefits of using a product.

- P4. Functional attributes are activated in the process of product use by a consumer.
- P5. Objectively, functional attributes can be assessed (measured) by experts through testing product in a lab, utilising specialised equipment.
- P6. Consumers might perceive and experience functional attributes of the same product differently (e.g. fit or comfort), using subjective assessment.

Law-Like Propositions for Socio-Communicative Attributes

- P1. Socio-communicative attributes are intangible.
- P2. Socio-communicative attributes are enabled by consumer through complex inferences about tangible and intangible product attributes; the inference process is mediated by culture and societal norms.
- P3. Socio-communicative attributes are social and psychological outcomes and benefits of using a product.
- P4. Socio-communicative attributes are higher-level attributes that reflect ascribed meaning or symbol to a product within a culture/society.
- P5. Socio-communicative attributes are primarily defined by culture and societal norms (not by producer/retailer or individual consumer).
- P6. Socio-communicative attributes are complex abstract concepts that are difficult to measure directly and objectively; in research, they are often self-reported by consumers.

5. Conclusions

Apparel Product Evaluation (APE) framework integrates apparel evaluative criteria into a unified framework with clearly defined, mutually exclusive categories and dimensions. APE, consisting of two categories (tangible and intangible) and four dimensions (intrinsic, marketing, functional, and socio-communicative), was developed based on a systematic review of extant literature on evaluative criteria and delineating law-like generalisations, or propositions to define categories and dimensions and the terms for classification. A unique strength of the framework is that, in addition to graphical representation, these accompanying set of propositions allow to systematically and exclusively classify any clothing attributes or evaluative criteria. In addition, the framework explicates the roles of designers, producers, retailers, consumers and society overall in defining and activating attributes in each of the four dimensions. It also explicitly integrates sustainability and illustrates examples of related product attributes or evaluative criteria within each dimension of the framework. The framework provides integration and systematic classification of elements of a phenomenon (apparel evaluative criteria) and helps in advancing the knowledge in the textile and apparel discipline and serves as a stepping stone for future theory development and practical applications (Hunt, 2010).

APE framework explains how consumers evaluate products when purchasing and using them. The framework can also be helpful in identifying gaps between consumer needs and

desired product characteristics, which can serve as the bases for product improvement or new product development. This would ultimately lead to providing products that better fit consumer needs. Businesses can use the framework for new product development and evaluation. To develop successful products, it is important to understand how consumers evaluate them, what criteria they use in the process, and how these criteria are enabled and measured. Researchers can use the framework to study consumer evaluation and purchase decisions of apparel products by building from the more straightforward intrinsic and marketing attributes to more complex functional and, finally, to socio-communicative attributes defined by cultural and societal norms.

It's important to note that the framework does not present an exhaustive list of evaluative attributes or criteria discussed within each dimension (Table 2). Instead, the framework

- presents a logical multi-level classification system with well-defined and mutually-exclusive categories and dimensions (Figure 1), and
- classifies major apparel evaluative criteria from previous research for illustration purposes (Table 2).

While the two main categories (tangible and intangible) and the four dimensions in the framework are exhaustive, following Hunt's principles (2010), individual attributes can be added to each dimension based on specific product types and development of new technologies and product features. The developed propositions can be utilised to correctly classify any and all product attributes into appropriate category and dimension.

APE framework was tested and found to be useful in evaluating an innovative sustainable apparel product (Ghalachyan, 2018). The framework's dimensions and attributes served as the foundation for developing a semi-structured focus group interview guide. The four dimensions also served as priori coding categories for qualitative data analysis. This allowed for identifying important product attributes in need of reconsideration and improvement as well as beneficial and positive product attributes that could be emphasised when marketing the product.

This study illustrates the process of developing a systematic classification scheme and theoretical propositions for conceptualising a complex phenomenon, apparel evaluative criteria, building on a large area of extant research and applying the steps and principles of classification and theory development proposed by Hunt (2002, 2010). Development of theoretical foundations is a critical requirement for any discipline as it allows for organising, formalising and advancing of knowledge creation. Pedersen (2007) emphasised the importance of defining and organising concepts and phenomena and intentional theory development, which leads to growth of our field and advanced understanding of textiles and apparel. This study might inspire and be a useful example for future theoretical developments in the textile and apparel field.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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