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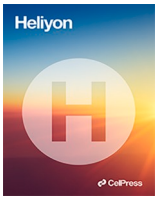

Review article

Reshaping the experience of topical skincare products: A multisensory approach for promoting loyalty and adherence

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ABSTRACT

The increasingly competitive skincare market demands more engaging consumer experiences to foster loyalty and adherence. The framework developed here analyzes the customer journey for topically applied skincare products, first, through a literature review of multisensory design and consumer behavior research, and second, by proposing the redesign of different touchpoints focusing on multisensory cues to create a cohesive product experience. This contribution offers a novel approach that distinguishes between topical pharmaceutical and cosmetic product experiences. In general, both offer distinct opportunities for hedonic and utilitarian values. Multisensory design can be adopted to prioritize clear communication of function and efficacy for pharmaceuticals, or luxurious, pleasurable experiences for cosmetics. Multisensory design can lead to higher engagement, promotion of loyalty, and treatment adherence by differentiating topical skincare product brands and enhancing customer journeys. Future research agenda draws attention toward crossmodal correspondences, digital transformations, and eco-friendly product development.

1. Introduction

The global dermatological market, projected to grow at a compound annual rate of 11.5 % from 2021 to 2030 [1], presents a compelling opportunity for innovation in topical skincare, which are products that are applied directly to the skin to promote skin barrier integrity and reduce skin susceptibility when exposed to external agents [2]. Changing self-care concerns, habits, and demographics suggest that this industry would benefit from further disruptive experiential approaches, with more engaging experiences encouraging consumer loyalty. In fact, building loyalty becomes even more crucial, as it should result in higher treatment adherence rates, which are alarmingly low for dermatological treatments [3]. Consequently, the following research question emerged: What consumer-behavior-oriented strategies can enhance engagement, thereby fomenting loyalty and treatment adherence toward topical skincare products?

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To address this question, we delve into the customer journey, which offers a roadmap for understanding how customers interact with a product by disentangling their experiences across different touchpoints [4]. To create a truly disruptive experience, we propose a multisensory perspective on key touchpoints before, during, and after product usage. Unlike stereotypical strategies that focus on single sensory modalities, multisensory strategies capitalize on the simultaneous activation of multiple senses. Embodied cognition theory suggests that cognitive processes are deeply influenced by physical experiences and sensory perceptions [5]. Therefore, touchpoints prioritizing experiences based on the integration of sensory inputs should lead to stronger effects on consumers' judgments and behaviors, such as loyalty [6].

Recent literature reviews highlight a significant research gap in multisensory design applications within both the cosmetics and pharmaceutical sectors compared to other industries, such as food and beverage [7,8]. These reviews emphasize the need for manufacturers to pay greater attention to customer sensations as well as feelings, and consequently, to the multisensory environment in which customers shop and experience their products. Such findings underscore the urgent need to consider multisensory contributions to products and packaging. Another recent review on multisensory insights into facial cosmetic product design argues that optimizing crossmodal correspondences between scent, appearance, and texture may appeal at both rational and emotional levels [9]. Crossmodal correspondence refers to the tendency of a feature or attribute (e.g., yellow color) in one sensory modality to be matched (or associated) with a sensory feature or attribute (e.g., citrus fragrances) in another [10].

Although these studies recognize the value of multisensory design and offer valuable knowledge, they fall short of providing a comprehensive framework that encompasses both pharmaceutical and cosmetic topical products within a single approach. This report aims to bridge this gap by proposing a framework that distinguishes between the two categories using the well-established hedonic (cosmetic) and utilitarian (pharmaceutical) models [11]. This framework explicitly accounts for the rational and emotional aspects of the customer experience across various touchpoints in the journey.

Our work expands the application of multisensory design beyond the product itself. Drawing on the recent literature, we examine how to optimize customer interactions throughout the customer journey to foster loyalty and treatment adherence. The following sections detail this framework and demonstrate how implementing multisensory design across touchpoints can enrich the customer journey, leading to a more effective skincare shopping and product experience.

2. Pharmaceuticals *versus* cosmetics

Topical skincare products usually encompass two distinct sectors within personal care: pharmaceuticals and cosmetics. While both are applied topically, they serve different purposes, have distinct formulations, and are regulated separately. According to Directive 2001/83/EC, medicines include substances or compositions designed to treat or prevent disease and its symptoms with a view to making a medical diagnosis or restoring, correcting, or modifying physiological functions [12]. Therefore, topical pharmaceuticals require medical supervision because of their therapeutic potential, with strict regulatory oversight to ensure the long-term safety and efficacy of the active ingredients. These products are most often used on diseased skin, which is much more permeable and reactive [13]. According to Regulation (EC) 1223/2009, a cosmetic product is any substance or mixture intended for application to the external parts of the body or the teeth and oral mucous, with the purpose of cleaning, perfuming, protecting, maintaining, or improving their appearance, or correcting body odors [14]. Thus, topical cosmetics primarily focus on enhancing and maintaining the appearance of healthy skin immediately after application, with an emphasis on an enjoyable user experience.

From a consumer behavior perspective, topical pharmaceuticals and cosmetics offer distinct hedonic/utilitarian values and experiences. The first align with utilitarian values due to their functional role in healthcare and treatment, addressing specific health concerns and fulfilling functional needs, such as alleviating skin conditions or providing therapeutic benefits (e.g., healthcare patient satisfaction mainly relies on utilitarian values [15]). The second are linked to hedonic values, usually emphasizing sensory pleasure and emotional gratification. Cosmetic consumers generally seek sensory pleasure, social validation, the enhancement of personal attractiveness, and observable well-being. Therefore, the distinction between these two categories highlights the distinct motivations underlying their purchase and usage, drawing on the hedonic/utilitarian paradigm [16].

3. Multisensory touchpoints during the topical skincare product customer journey

Topical skincare products are a path to self-care, aiming for short- or long-term results, beauty, and well-being. Consumers' desire to engage in experiences requires a deeper understanding of their preferences throughout their journey [6]. Therefore, we propose

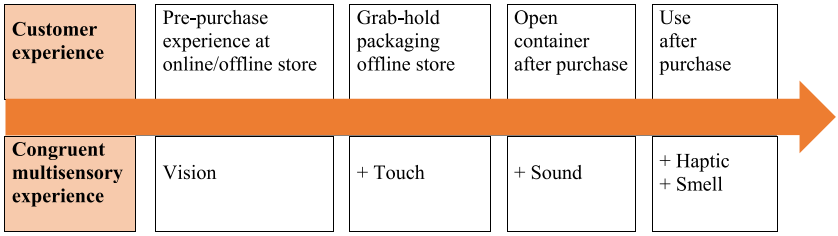

Fig. 1. Example of the customer journey for topical skincare products involving multisensory touchpoints (original figure).

transforming a product's goal into a more engaging and profound experience by incorporating a multisensory approach.

Fig. 1 illustrates an example of weaving visual, haptic, auditory, and olfactory cues to emphasize touchpoints throughout the customer journey. Following this path, a blue color subtly suggests the calming benefits of a low-viscosity gel, while the sound of piano instrumentation and the fresh scent of peppermint can collectively enhance the sense of well-being during and after application [7, 17–19]. A multisensory approach to touchpoints has the potential to significantly enhance consumer perception and satisfaction, leading to increased loyalty while facilitating treatment adherence [6].

Table 1 provides an overview of how different sensory elements present in shopping, packaging, and product experiences can be aligned to positively contribute to multisensory topical skincare products. These elements are further developed in the following paragraphs, specifically focusing on how they differentiate pharmaceuticals from cosmetics within a hedonic/utilitarian framework.

Regarding topical cosmetics, consumers seek personalized hedonic and engaging experiences during shopping and usage. Thus, the industry should leverage greater freedom and respond with a broader sensory palette (*versus* topical pharmaceuticals prioritizing functionality and facing stricter regulations). This freedom allows companies to tailor the customer journeys from the beginning. Free samples, in-store "try-me" options, and interactions with cosmetologists demonstrating product applications could create a more tangible experience while shopping (all of this accompanied, for instance, by audiovisual atmospherics congruent with brand identity). By leveraging the power of multisensory design from the pre-purchase stage (awareness and consideration), cosmetic companies can boost purchase intention and customer loyalty.

Compared to cosmetics, topical pharmaceuticals face stricter regulations and a greater need for clear medical communication, presenting restrictions when designing multisensory product experiences. Nevertheless, leveraging all senses to communicate the product's ability to address skin concerns remains paramount. Research shows that even utilitarian products can benefit from a multisensory approach. Mishra et al. [20] indicated that engaging multiple senses beyond sight leads to increased purchase intent of utilitarian products. Additionally, multisensory communication can be a powerful tool for mitigating confusion among topical pharmaceuticals, which seems to be a prevalent issue [7]. Immersing users in a multisensory experience fosters greater satisfaction and reduces monotony [21], potentially boosting loyalty while encouraging treatment adherence.

3.1. *Multisensory topical skincare product packaging experience*

Packaging transcends its role as a mere container; it is a crucial communication tool for topical skincare products [22]. Throughout the customer journey, the package captures attention at first glance. After a closer look, it conveys details, such as formulation, storage conditions, active ingredients, medical benefits, usage instructions, and safety precautions. In addition to explicit information, a cohesive multisensory packaging experience can convey implicit perceptions about product attributes and effectiveness.

The impact of packaging elements on topical product consumer engagement is somewhat complex, with both positive and negative effects on overall liking [23]. Particularly, cosmetics with appealing designs, French origin, and globally recognized brands can increase their liking [23]. Sustainability cues, such as information about eco-friendly production (e.g., the use of natural biopolymers or natural pigments), might predict positive attitudes and purchase intentions toward cosmetics [24]. Here, green-organic cosmetics can be associated with luxury and high prices. While yellow tends to be linked to skin medicines [7], further color combinations are crucial for brand communication and differentiation [25]. For example, color can highlight dosages or subtly convey the potential benefits of a particular medication: red and yellow evoke alertness, whereas blue and white are associated with calmness [7]. Therefore, the multisensory design of packaging elements can elicit both hedonic and utilitarian features.

Transparent containers promote functional values (i.e., trust and quality), while vertically elongated shapes usually convey slimness and elegance, suggesting more content and a higher price [22,26]. Beyond visuals, brands can create a unique and

Table 1
Sensory elements that can be redesigned and aligned during the customer journey for topical skincare products from a multisensory perspective (original table).

Touchpoint	Visual	Tactile	Olfactory	Auditory	Luxury
Packaging	- Color combinations. - Transparency. - Vertical-elongated shapes.	-Shapes. -Textures (soft *versus* rough). -Weight. -Temperature variations.	-Scented packaging can evoke positive emotions.	-Spraying sound. -Closing sound. -Brand name sound symbolism.	-Sustainability cues. -Vertical-elongated shapes. -Closing sound. -Strategic brand name selection. -Luxurious packaging enhances perceived absorption, elegance, and comfort.
Formulation	-Dull versus shiny. -Color.	-Viscosity. -After-feel sensations.	-Fragrance congruence with texture. -Specific scents influencing perceptions.		-Thick textures. -Low oiliness and stickiness after-feel.
Technology-enhanced	-Visual representation in online shopping.	-Haptic feedback (controllers, touchscreens, wearable devices).	-Olfactory cues (customized headsets, smart packaging).	-Soundscapes (smart packaging) -Digital sound tailored to evoke scent.	

recognizable tactile experience by incorporating distinct shapes (e.g., Coca-Cola/Heinz bottles), textures (e.g., soft *versus* rough), weights, and even temperature variations into the packaging material [25,27], facilitating the communication of product benefits and appeal.

While scented packaging can evoke sensations that augment perceived healing and well-being, topical skincare products can also consider user inclusivity. Consumers, especially those with partial or complete loss of smell, may benefit from complementary sound packaging cues [28], as sounds produced during packaging interactions can influence users' perceptions. For example, attenuating sound level or just the high-frequency sounds in the 2–20 kHz range in spraying sounds may increase hedonic ratings but might also reduce forcefulness perception [29]. Additionally, consumers can distinguish between different closing sounds in topical cosmetic packaging, with some sounds being perceived as long, complex, and rubbing, while others evoke straightforward, discrete, and simple perceptions [30]. These findings on sonic packaging design can be valuable for pharmaceutical companies seeking to reinforce functional associations as well as for cosmetic companies aiming for a more pleasurable experience.

Building on the established importance of brand names in packaging [31], multisensory design also emphasizes the power of sound symbolism in the consumer experience. Research suggests that brand names for topical pharmaceuticals can benefit from voiced consonants (e.g., v, b) as they are linked to perceptions of higher efficacy and longer duration of action [32], aligning with the utilitarian values of pharmaceutical products. For topical medications targeting severe illnesses like cancer, however, voiceless consonants may convey a more tolerable impression [33]. Meanwhile, brand names for topical cosmetics are better suited to voiceless consonants to evoke cleanliness and pretty perceptions [34]. High-frequency sounds like "i," "v," "f," and "s" can further increase the luxury appeal [35]. By strategically selecting brand names with these sounds, companies can subtly influence consumers' perceptions of either utilitarian or hedonic experiences.

Multisensory cues can collectively contribute to perceived differences in value, enhancing the perception of luxury packaging. Luxurious visual packaging enhances perceived attributes like comfort, absorption, and overall elegance, compared to a neutral design, regardless of the product's price point [36]. Additionally, closing sound characteristics may be associated with luxury [37]. These elevated perceptions can lead to increased usage and, consequently, treatment adherence. Given that luxury consumers seek experiences transcending mere functionality, topical skincare products, especially cosmetics, might need to adopt a multisensory packaging approach to engage consumer segments effectively.

Brands can create a more engaging touchpoint by strategically integrating congruent multisensory cues on the package alongside clear and concise technical/medical information. This will undoubtedly contribute to adherence and strengthen the recognition of product effectiveness.

3.2. *Multisensory topical skincare formulations*

Topical skincare formulations are more than just functionality. They could be understood as multisensory experiences catering to both consumers' practical needs and desires for enjoyment [9]. The moment of application becomes a crucial touchpoint where sensory stimuli should be aligned (Fig. 1). Consider how creams, gels, lotions, and ointments vary in composition (oil-water balance), effectiveness, perceived texture, appearance, scent, and sound upon application. High-water formulations (e.g., gels) feel light and cool, vanishing quickly with a refreshing aqueous sensation. High-oil formulations (e.g., ointments) leave a heavier, protective layer, often accompanied by a subtler scent. Therefore, topical formulations offer a wide range of opportunities for multisensory design.

Texture perception varies significantly depending on viscosity. High viscosity relates to oiliness, opacity, moistness, and a slight transpiration feeling. In contrast, low viscosity evokes freshness [38]. Texture thus becomes a key player in the product's sensory dialogue across utilitarian and hedonic values.

There is evidence of a preference for light over oily topical products, usually perceived as more humid and easier to apply [39]. However, this preference might depend on where products are applied. High viscosity is preferred for hand use, whereas low viscosity is preferred when applied on the face and is principally associated with a sense of well-being [38]. Preferences also lean toward thick over thin textures, perceived as higher quality [17]. These findings on texture and user preferences are particularly relevant to the cosmetics industry, where formulations are commonly designed to create a pleasurable and luxurious experience.

After-feel sensations evolve beyond the initial application. For instance, skincare creams, initially perceived as less oily before and during application, can become stickier after a few minutes. The lasting sensation on the skin, especially on the face, seems more important than the initial texture perception, potentially affecting treatment adherence. High-quality skincare products with low oiliness and stickiness after-feel tend to garner consumer interest, satisfaction, and relaxation [40].

Fragrance is another well-studied sensory attribute of topical products, interacting with tactile sensations and influencing overall perceptions and emotions [39]. The positive hedonic response is highest when the texture type is perceived as congruent with the fragrance [18]. Products with properly added fragrances are likely to increase the sense of well-being, texture perception, and overall liking, strongly determining product acceptance. Fruity, citrus, and floral scents can enhance the perception of functional attributes, such as smoothness and softness, while leafy and camphor scents evoke stickiness and lack of creaminess, potentially reducing liking (*versus* citrus and rose jasmine scents [41]). Within fruity fragrances, apple is associated with freshness, while vanilla boosts perceived thickness and ease of application [17].

Appearance also plays a crucial role in utilitarian and hedonic perceptions. Dull or opaque products are perceived as smoother than off-white ones, which creates a shiny finish perception on the skin [39]. Color also influences consumer perception, with yellow being perceived as warmer and thicker than green [17].

In summary, current studies mostly highlight how physicochemical product attributes interact with consumer perceptions of topical skincare product features, benefits, and enjoyment. The distinction between the consumer values driving the pharmaceutical

and cosmetic industries is crucial for successful product development and engaging customer journeys. By embracing a multisensory approach catering to distinct value sets, brands can create products that resonate with pharmaceutical and cosmetic consumers. Such a tailored approach enhances user satisfaction, boosting loyalty and treatment adherence.

3.3. Technology-enhanced topical skincare product experiences

The rise of online cosmetics shopping has created an intriguing challenge: How can brands build trust and deliver a product's complete experience when customers cannot physically interact with it during decision-making tasks? Customers are often concerned about product quality, reputation, and ingredients, leading to lower online satisfaction and purchase intent [42]. Studies show that when shopping for cosmetics online, emotional trust outweighs cognitive trust in influencing purchasing decisions [43]. While visuals can help accurately reflect product attributes, a gap remains in replicating physical in-store experiences.

Beyond traditional audiovisual information, advancements in human-computer interaction suggest exciting possibilities. For example, haptic feedback (through controllers, touchscreens, or even wearable devices) and olfactory cues (*via* customized headsets) offer new forms of digital interaction with topical skincare products [5]. These technologies would go beyond audiovisual stimuli, engaging consumers on a more emotional level through touch and smell. Incorporating these sensory modalities could also communicate product features more effectively. By accelerating immersive and compelling online shopping experiences through multisensory approaches, perceived trust can be increased, leading to higher purchase intent.

After purchasing, sensory-enabling technologies can play a vital role in the product application experience, further enhancing the perceived benefits of topical skincare products. Smart packaging, for example, could use a combination of soundscapes, scent diffusion, and even haptic feedback to promote a more hedonic experience. Imagine packaging that adjusts the intensity of a refreshing soundscape based on sniffing rates, with timbres tailored to complement the perceived pleasantness of the scent [28]. These sounds could boost desired olfactory sensations while conveying functional brand attributes [19]. By leveraging multisensory digital design throughout the customer journey, brands can bridge the gap between physical and digital experiences, fostering trust, emotional connection, and ultimately, customer loyalty as well as treatment adherence.

4. Conclusions and future research agenda

Due to important differences in regulation, the design of the touchpoints of a customer journey for topical pharmaceuticals and cosmetics must be approached differently. Pharmaceuticals operate under strict regulations, where packaging and communication must prioritize the formula's preservation, safety, and effectiveness. Conversely, cosmetics can rely more freely on sensations and emotions to enhance the product experience. Therefore, both categories may require a different multisensory approach depending on consumers' values for desired utilitarian or hedonic outcomes (Fig. 2). Multisensory stimuli for topical pharmaceutical strategies should mainly inform customers about product usage, functions, and results regarding medical information and efficacy. Stimuli design for topical cosmetics can principally focus on pleasant and luxury experiences.

This report proposes a novel and promising research agenda in the topical pharmaceutical and cosmetic categories for distinguishing brands through multisensory design encompassing coherent visual, haptic, auditory, and olfactory cues. We propose framing this research within the context of utilitarian and hedonic consumer values to provide beneficial insights for brands to tailor multisensory approaches. First, novel empirical research is needed to map cutting edge crossmodal correspondences applied to topical skincare product experiences, with particular attention paid to the unknown relationships between soundscapes/packaging sounds and texture/scent. Second, exploring how digital transformations can further engage customers throughout the journey with these products offers exciting possibilities. Third, eco-friendly topical skincare products appear to be underexplored in the literature, making them an excellent area for further development. This would also be welcomed by the literature about the United Nations Sustainable Development Goals.

This holistic approach bridges the gap between the differentiation of pharmaceuticals and cosmetics, providing a comprehensive view of customer experience that encompasses both rational and emotional aspects across the entire journey. Adopting these consumer-behavior-oriented strategies while navigating skincare and dermatological customer journeys brings novelty to the market. This report innovates by accounting for multisensory cues to foster customer engagement before, during, and after product use (Fig. 1). Multisensory touchpoints allow a more accurate consideration of consumer values for personalized effectiveness and pleasure/joy (Fig. 2). Like this, the purchase and application of topical skincare products would be accompanied by sensations/emotions aligned with product attributes and benefits, providing further room for engaging experiences that enhance involvement, which in turn encourages loyalty and treatment adherence.

Category	Consumer values	Sensory experience
Topical pharmaceuticals	Utilitarian: effective cure/control skin condition	Added value through multisensory customer journey
Topical cosmetics	Hedonic: pleasure	

Fig. 2. Utilitarian/hedonic topical products' multisensory touchpoints during the customer journey (original figure).

CRediT authorship contribution statement

Brayan Rodríguez: Writing – original draft, Investigation, Conceptualization. **Ana Arboleda:** Writing – original draft, Visualization, Investigation, Conceptualization. **Felipe Reinoso-Carvalho:** Writing – original draft, Investigation, Conceptualization.

Data and code availability

No data was used for the research described in the article.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: The three authors report article publishing charges as provided by their corresponding universities. They also declare that they have no knownledge about financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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