

Fitting to the body: The role of embodiment in beauty information seeking

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Abstract

The body has long been recognized by other disciplines as a site of meaning-making, a medium through which individuals experience the world, convey meaning to others, and act on the world. However, when it comes to searching for information, the body is often ignored, overshadowed by a focus on cognition. Studies are beginning to fill this gap, pointing to the role and potential impact the body can have on information practices, prompting further attention to the role of the body in information seeking and how it can inform the design of interactive information retrieval systems. Beauty information practices, due to their close association with the corporeal, physical, material, and symbolic nature of the body, potentially harbors significant insights for re-centering the body in information sciences and informing user-, or in this case, body-centered information retrieval systems. Our research aimed at answering the overarching question: How does 'embodiment' manifest in beauty related information seeking using digital tools? We undertake a survey through Prolific asking participants to describe a recent beauty information search task using digital tools, encompassing the type of information sought, their motivation, and its usefulness. The findings reveal the significance of the sociocultural context of users, in terms of both social pressure and user agency, and the intersection between the physicality of the body and materiality of beauty products and procedures in shaping how users search for and select useful information.

CCS Concepts

- Information systems \rightarrow Users and interactive retrieval.

Keywords

embodied information, beauty information and information seeking

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1 Introduction

The beauty industry has experienced consistent growth in recent years and now generates over 500 billion dollars annually on a

This work is licensed under a Creative Commons Attribution 4.0 International License. *CHIIR '25, Melbourne, VIC, Australia* © 2025 Copyright held by the owner/author(s). ACM ISBN 979-8-4007-1290-6/25/03 https://doi.org/10.1145/3698204.3716452 global scale [22]. The prevalent use of digital technologies, including smartphones, social media, and generative AI-based beauty tools, has made images of human beauty increasingly pervasive; beautyrelated information, services, and products have become readily accessible. Consequently, people are increasingly adopting new beauty routines, using these digital tools to enhance their physical appearance. Despite this trend, there is a gap in our understanding of how people are using these digital technologies to inform their everyday beauty practices.

Our research understands beauty to be an ongoing affective and embodied process, involving beauty work encompassing changes to the physical body to improve appearances. Beauty practices are deeply intimate; people create their external or physical self through body enhancements [39, 49], as such, people's self-concept and body experiences may mediate how they seek and use information for their beauty related practices. Additionally, beauty practices are performed on one's body [23, 43] and the body becomes the site of work on which people manipulate or apply materials, to use the acquired new information. Therefore, beauty related information is experienced in the body, i.e., experienced [6, 33] or embodied information [37]. We hypothesise that corporeal information [33] such as context specific factors and bodily interactions with the physical environment, may be the governing central modality when seeking and using information for beauty. Our research aims to investigate how the embodied nature of beauty affects how people seek or search, evaluate, and use information related to their everyday beauty practices.

Although 'beauty and style' have been identified as one of the daily procedural activities about which people search for information [58], there are limited studies investigating the interplay between beauty practices and information practices. Related research includes studies on understanding information practices of YouTube beauty and life style influencers [55], how people search for procedural information [11, 29], search for products on e-commerce sites [50, 52] and creativity [10, 67]. However, most of these studies have focused on the cognitive aspects of interacting and using information and ignore the corporeal experiences of performing such tasks. Most recently, a few studies have recognised the role of the body in people's information practices [6, 33]. For example, Lloyd and Olsson [35] studied the embodied information practices of car restorers and Munro et al. [42] for DJs. Our research aims to fill the gap in understanding of beauty information practices and contribute to the growing body of knowledge on embodied information by investigating how the embodied nature of beauty practices affects people's information practices in the context of everyday life.

To this end, we conducted an online survey through Prolific (N = 150) to investigate the embodied information practices that people engage with to find beauty related information. We asked our participants questions about what tasks and tools they use to find beauty related information and how the embodied nature of the tasks affects their information practices including how they seek, evaluate and use the information. Specifically, our study aims to answer the following research questions:

- RQ1 How does embodiment manifest in beauty related information behaviour?
- RQ2 What motivates information seeking related to beauty and (how) does embodiment shape these motivations?
- RQ3 What type of information and digital tools do people use to support their beauty tasks? Does embodiment play a role in people's preferences of tools and information format?
- RQ4 How do users assess or judge information to be useful? Does embodiment play a role and in what ways?

The remainder of the paper is structured as follows. Section 2 describes related work in the information science, psychology, human and computer interaction (HCI), marketing and information retrieval (IR) research communities. Section 3 presents the methods used to gather and analyse our data. Section 4 presents our findings. We discuss the findings and their implications in section 6 and conclude the paper in section 7.

2 Related Work

Our research is multidisciplinary, and several areas are relevant to the work presented in this paper, namely: beauty, embodied interaction, embodied information, beauty digital technologies, procedural information and information seeking, creativity and information, social media and product search. We briefly review each area.

2.1 Beauty

Beauty or physical attractiveness is an attribute that many people are actively pursuing in their daily lives. People engage in beauty activities for several reasons such as for self-expression, selfempowerment [39], and to gain advantages in social life amongst other motivations [24]. Beauty and what this means has been investigated and highly debated within and across several disciplines, including but not limited to sociology [20], feminist studies [14, 27], and anthropology [62].

Taking inspiration from recent perspectives in these disciplines, we understand beauty to be an embodied relational process encompassing beauty practices or beauty work. For Ingram [27], beauty is a situated and relational 'becoming' that is created at the intersection of affect and materiality. For Coleman and Figueroa [14], beauty is a continuous inclination towards hope, which is similarly an embodied and affective process that is situated in relation to time. However, appearances are also a way of orienting oneself to the world and are situated within socially constructed norms [20]. These perspectives move beyond common binaries that position beauty as oppressive or liberatory; pain or pleasure and divide the body from mind, and body from materiality to investigate beauty as an embodied, affective process and as a relational becoming. A perspective that situates beauty as an embodied form of becoming, that investigates the 'how' of beauty and associated practices tries to subvert common binaries by paying attention to the intersection between the body, affect, and social context [27].

Beauty work also referred to as beauty practices or body work can involve manipulating the external appearance of the body to create an external self [39, 49], for our purposes, this may include seeking information to inform or shape beauty. Significantly, an understanding of beauty as an ongoing affective and embodied relational process involving beauty work, we theorise, can enrich research on information seeking by prompting attention to how embodiment shapes information experiences associated with beauty.

2.2 Embodiment

Embodiment refers to the understanding of human beings as living sensory entities embedded within a physical environment [38]. This perspective contrasts with traditional models of cognition that emphasise abstract, computational information processing. Embodied theories focus on how our bodily interactions and lived experiences actively shape our perceptions, emotions, and thought processes [38]. Additionally, Dreyfus [17] discussed three types of embodiments: (i) physical embodiment of the human body, (ii) bodily skills and (iii) acquired knowledge - culturally relevant skills and an understanding of a particular environment. From this perspective, physical bodies are how we know but also an information source and signifier for others [35], and as such, have been labeled as sites of performativity. If bodies are central to knowing, they can help us understand the how and why of information practices. As explained by Lloyd and Olsson [35], this focus on the body is often overlooked in many research communities, which calls for a closer attention to how the field itself has been socially constructed. Embodiment positions information practices as socially situated and highlights the corporeal modality of information practices. The corporeal has been described as encompassing the perception and conveyance of information through different senses and experiences of being in one's body, including haptic or tactile experiences and sensory activities such as smells, textures, and movement [34, 35]. Embodied information practices also involve an experiential or tacit knowing through both doing and observing others, for instance, runners know when they have to slow down or when they can speed up based on familiar bodily experiences [34]. Similarly, archaeologists gain an understanding of material culture through temperature, texture, and movement [35].

Based on this background research, we understand embodiment to encompass primarily corporeal factors – such as sensory experiences of the body – smell, textures, a feeling of being in one's body (shape, abilities) and interactions with materials. However, these factors are also entangled with emotive or emotional experiences, cognitive processes, and social structures and norms. Potentially central to understanding embodiment and beauty information tasks, includes its connections to existing research on embodied interaction with systems, procedural information search, creativity search, product search, and use of social media in seeking beauty information.

2.2.1 *Embodied Interaction.* Everyday interactions of humans are embodied – we use our bodies to interact with others and the physical world. In particular, we use digital systems by interacting with them through our different senses and physical capabilities [16].

Thus, making interaction with digital systems a naturally embodied activity. In the field of HCI, three interaction paradigms have been proposed [18, 26]: (1) human factors; (2) classical cognitivism or information-processing-based; and (3) the phenomenologically situated paradigm. The third paradigm focuses on the context of use and is central to understanding embodied interaction with systems in the physical world. Additionally, theories of embodiment in HCI have been divided into two branches [38, 63]: embodied interaction and embodied cognition. Embodied interaction focuses on the physical or tangible interactions with digital artifacts while embodied cognition argues that cognitive processes and the body work together to influence how humans interact with digital systems [26]. Cognitive embodiment is the involvement of the body in thinking, rather than the brain being the central machine involved in information processing. Our work takes a unified view of embodiment and considers both perspectives in understanding how people interact with digital systems to complete beauty-related tasks.

2.2.2 Embodiment and Beauty Tools. A few academic studies have evaluated embodiment in digital beauty tools [47, 56]. One study on vision impaired users' use of YouTube tutorials for procedural information, highlights the overlooked role of the body [30]. The authors, based on their findings, argue that there is social, emotive, and embodied factors associated with beauty information behaviour such as makeup practices. As a result, the authors suggest that digital tools should: cultivate a sense of community, be aware of individuals' sense of style, and the unique practices of different groups [30]. Similar to our work, Thomson investigated the information behaviours of serious beauty and lifestyle YouTubers in creating their content [53-55]. The study findings suggest that serious beauty and lifestyle YouTubers progress through six career stages that include learning while doing and routinising. Further, to create content, they engage in a ten-step creative process that encompasses ideating to generate new content ideas and evaluate the outcome. Overall, the study suggests that affect and internal sensibility, and a person's ability to use their own intuition when deciding information actions and how to carry them out, drive the whole beauty influencer creator economy ecosystem. These findings highlight how beauty practices are performative and experienced by the body [24, 43] and hint at how these corporeal experiences may shape how people seek and use beauty related information through digital tools.

2.2.3 Product Search. Product search is one of the means people engage to find and buy products online, and over 70% of online beauty products shoppers begin their purchase journey with a search engine search [51]. Prior studies on general product search have investigated user perspectives related to search behaviour and the intent of users who search for information on commercial product search engines. For example, Su et al. [52] analysed query logs from product search and survey responses to examine the intent of users in product search and found three intent categories: finding target products, decision making, and exploration. Similarly, Sondhi et al. [50] analysed query logs of users from a commercial e-commerce search engine and came up with a taxonomy of queries with four classes, each with its own associated distinct search patterns: shallow exploration, targeted purchase, major-item, minor-item, and hard-choice shopping query. Additionally, Kuzi and Malmasi [28] proposed a framework for integrating conversational Question Answering within product search. Altogether, these results suggest that people may be searching for products to decide on what to buy or just to learn about what products are there. This motivates research on how people may search for products from specific domains and for specific tasks, especially the ones in which they bring their own body into the search process such as for beauty products. Interestingly, image search of beauty products is an area that has been given a lot of attention, especially algorithms for retrieving a diverse range of beauty products [1, 31, 40, 59, 64– 66, 69]. However, there is a gap in understanding the interaction behaviour of people searching for beauty products within retrieval systems.

2.3 Procedural Search Tasks

Searching for beauty related information may involve finding information to complete a step by step process such as applying makeup. Such tasks align with procedural search tasks, where people are looking for information on how to do something [12]. Berge and Hezewijk [7] make a distinction of declarative knowledge and procedural knowledge, as between 'knowing that' and 'knowing how', and that declarative knowledge is part of procedural knowledge, i.e., declarative knowledge or 'what is knowledge' facilitates the understanding of knowing how [12]. Research on procedural search tasks suggests that users assess relevance based on factors such as familiarity, trust, specificity, credibility, simplicity, popularity, and presentation format [13, 46]. Additionally, studies have shown that people rely on different information types, including visuals, with a preference for videos in sensor-motor tasks over cognitive ones [46]. More importantly, previous analysis of Web search queries has suggested that procedural search tasks account for 2% to 3% of Web search [19, 58, 60]. Moreover, Völske et al.'s [58] analysis of questions submitted to Yandex identified 'beauty and style' as one of the categories of how-to intent questions. Further, they found that the frequency of questions in this category remained constant throughout the year while other categories, such as 'education', varied in frequency depending on the months. Therefore, beauty search tasks are prevalent, and research is required to understand how different aspects of how-to beauty tasks influence the information seeking process.

2.4 Creativity and Information

People may engage in beauty activities to create and express their own self-identity, to express their aesthetic tastes or creativity. This could be associated with engaging in creative activities in leisureoriented contexts. Prior research has examined how people seek information for creative tasks, spanning both everyday activities and professional work [10]. For example, a survey investigating what information artists use for their creative work found this to encompass inspiration, knowledge of materials and techniques, and specific visual elements [67]. Lee et al. [29] found that arts and craft hobbyists preferred information curated in digital spaces. Moreover, studies have found that the use of social media is growing as people are using digital social spaces to collect, organise, and share ideas in visual format [32].

The creative process involves multiple stages, and several studies have explored how people seek information at each of these stages. Zhang and Capra [67] investigated what tools people use for their creative tasks and found that information retrieval systems are widely used in the look-up stage of the creative process and visual information and social media platforms for the generating ideas stage. A similar study investigated how people seek information in the early stages of a design project and found that they look for inspiration to plan and generate new ideas [45]. Studies investigating the types of information people use to support their creative tasks have found procedural information, domain information, finished examples, tips/opinions/recommendations, information about specific topics, and inspiring or motivating information [68] and visual information [9] as some of the information used in creative tasks. Overall, the prevalent use of visuals and how-to information highlights the type of information that people use when they want to express themselves.

2.5 Consumer Information and Social Media

A significant portion of research on beauty and technology has been done within the frame of consumer behaviour to better inform the marketing of products and services [2, 61]. This includes the effect of digital marketing on consumer behaviour and the credibility of product and beauty information – particularly in the context of social media [48], drawing on concepts associated with impulse, intention, and consumer satisfaction.

The use of social media platforms such as Facebook, Twitter, YouTube, Instagram, and TikTok, to curate ideas has grown tremendously, through the ability to follow others and online influencers. For example, people use Facebook to connect with their families and friends [25]. Other platforms such as YouTube, Instagram, and TikTok are used for entertainment and building a personal brand [25]. Twitter (X) is mainly used for sharing opinions and getting updates on what is happening [25]. Although people can configure what content appears on their social media feed, the use of influencers, people who have accumulated a large following on social media platforms, is growing [25]. Companies are increasingly partnering with influencers to promote their products on their social media channels through influencer marketing [25]. One popular way of achieving this is product placement, where an influencer uses a product in a curated context that seems relatable to their followers to influence them to buy the product [4]. There are different types of influencers ranging from celebrity influencers with millions of influencers, mega influencers, macro influencers, midtier influencers, micro influencers to nano influencers with 1,000 to 10,000 followers [8]. Previous research has shown that the bigger the following, the greater the influence, but the authenticity and trustworthiness among the followers is lower [8, 36]. Interestingly, Instagram and YouTube remain the popular platform for influencer marketing [5]. The beauty and lifestyle sector is one of the popular areas with YouTube videos having billions of views every year [55].

In essence, literature on beauty in the context of social media platforms focuses on user experiences and issues encountered, which are created at the intersection of social and technological systems. These studies point to the relations between digital platforms and how beauty information becomes valued or framed as valuable potentially perpetuating certain norms [44], the process by which products and services become desirable in digital contexts [3], and how beauty information becomes perceived as trusted or trustworthy on digital platforms [21].

2.6 Summary

Studies at the intersection of beauty and information behaviour hint at how the body plays a role in beauty information practices, while evading its centrality which as discussed above, has been more commonly addressed in other disciplines. The absence of the body has been recognized and commented on more broadly in information behaviour research [34]. Our research addresses that gap by contextualising how the body influences information seeking for beauty.

3 Methods

To address our research questions, we used an online survey: specifically, we asked survey participants a series of open-ended questions to understand their experiences of seeking beauty information and the role of embodiment, and a series of closed questions to explore the relationship(s) between different dimensions of embodiment in relation to beauty information seeking. One motivation for using a survey method was to gather information from a large population and to identify a sample for further in-depth qualitative research on why dimensions of embodiment influence beauty information practices.

3.1 Study Participants Characteristics

We advertised the study on Prolific Academic platform and recruited a random (non-representative) sample internationally, encompassing a range of genders and ethnicity. Our inclusion criteria was anyone 18 years and above, and fluent in English. The study took about 15 minutes to complete, and participants were reimbursed with £9 per hour. A total of 150 participants completed the survey (78 female, 72 male). Participants were diverse in age and employment status. Ages were distributed as follows: 18-24 (27.33%), 25-34 (45.33%), 35-44 (16.67%), 45-54 (7.33%), 55- 64 (2.67%) and over 65 (0.67%). On occupation statuses, most of the participants were employed full-time (46.67%), followed by not currently employed (18%), employed part-time (15.33%), not in paid work including home keeping, retired and not able to work due to disability (4.67%) and other (15.33%). We used a simplified classification of ethnicity and participants ethnicity was as follows: Asian (5.53%), Black (33.33%), White (52.67%), mixed (6.67%) and Other (2%). Participants reported to be residents of countries in Africa (40.67% including Morrocco, Nigeria, Kenya and South Africa), Asia (2% including India, China and Philippines), Europe (48% including Germany, Poland, Russia, Spain and Russia), Middle East (0.67%, Saudia Arabia) North America (4% including United States and Canada), South America (4% including Mexico and Argentina), and Oceania (0.67%, Australia).

3.2 Procedure and Materials

We developed our survey using Qualtrics and sought ethics approval from our institution. The survey was then advertised on Prolific and run for seven days. Participants provided informed consent, through a linked information sheet and a 'yes' or 'no' question asking if they consent to participate based on the information and conditions outlined in the information sheet. The survey consisted

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of three sections: The first section asked participants closed questions about the type of tasks, and type of information sources and tools they use to find beauty related information. The second section asked participants open-ended questions about a recent beauty related information seeking scenario using digital tools. We asked participants to describe the beauty information task and then asked follow-up questions: (1) the intent of the information seeking task; (2) online tools they used to find beauty related information; (3) the criteria they used to select information; (4) how they used the information; and (5) how the information changed the way they perform their beauty activities. The third section was a series of closed questions that asked participants to rate using a slider scale the extent to which they perceive different dimensions of embodiment as affecting their beauty information practices (See Table 1). The slider had a scale of 1 to 7, with 1 being 'not at all' and 7 'greatly'. We defined seven dimensions of embodiment based on the theories of embodiment from both psychology [16, 17] and HCI [16, 38, 63].

3.3 Data Analysis

To analyse our data, we used a mixture of inductive qualitative coding and deductive analysis, following Vaismoradi et al. [57] steps for thematic analysis. Open ended questions from the second section were analysed using grounded qualitative coding: we collated codes into categories (during the construction phase of Vaismoradi et al.'s [57] steps), and then deductively connected these to dimensions in the literature associated with embodiment. In the end, we constructed a coding book, which one of the authors used to code the whole dataset.

The data from the first and third sections were analysed using Python3 and associated libraries. We computed descriptive and inferential statistics for the ratings. To investigate the difference in ratings across the embodied dimensions, we compared the means of the ratings using one-way ANOVA and followed by a post-hoc Tukey HSD pairwise test in case of significance (p < 0.05). We also analysed the relationship between the ratings to examine the strengths of the relationship using Pearson Correlation. For data from the first section, we calculated the frequency of responses selected for each survey question item.

4 Results

We now turn to our research questions. We first address RQ1 from our data from the first section of the survey, RQ2 and RQ4 from the second part of the survey and RQ3 from the first section of the survey.

5 RQ1: Embodiment in Beauty Information Interactions

Our first research question (RQ1) asked how embodiment manifests in people's information seeking behaviour. To address RQ1, we asked participants to rate the extent to which several dimensions of embodiment influence their information-seeking activities related to beauty. We plotted boxplots to understand the distribution of the ratings as shown in Figure 1. The results show that participants rated physical body appearance and cognitive processes highly, suggesting that these dimensions had a greater influence on them to seek information on beauty. For example, physical body appearance had the highest median of 6 while physical body capabilities was rated lowly with minimum of 2 and median of 4. Social or environmental factors were rated similar to sensory awareness and materiality of products (i.e median of 5).



Figure 1: Boxplot of the embodiment dimensions ratings. Body appearance was rated highly while body capabilities was ranked lowly.

We performed a one-way ANOVA to compare the effect of an embodied dimension on participant rating. The results show a statistically significant difference in ratings between at least two dimensions (F(6, 1043) = 9.53, p = 3.25e-10). Tukey's HSD Test for multiple comparisons found that seven pairs of comparison of the means were significant. Table 2 shows the significant results. The mean rating for physical capabilities (M = 4.02, SD = 1.85) was significantly different from social and environmental (M = 4.86, SD = 1.49), materiality of artefacts (M = 4.79, SD = 1.78), physical body appearances (M = 5.21, SD = 1.67), sensory awareness (M = 4.76, SD = 1.60) and cognitive processes (M = 5.22, SD = 1.59). Affective states (M = 4.47, SD = 1.66) mean ratings were significantly different from physical body appearance and cognitive processes.

Pearson correlation coefficients were calculated to assess the linear relationships between the ratings. Overall, weak to moderate relationships were observed in the ratings of the embodied dimensions (see Table 3). A moderate relationship was observed between materiality of artefacts and cognitive processes (r(148 = .44)). Body appearance was moderately correlated with cognitive processes (r(148 = .46), and cognitive processes was moderately correlated with affective/emotional (r(148 = .48)).

To sum up, the different dimensions of embodiment manifest in peoples' information seeking activities at different degrees. Participants rated highly their body appearance, followed by cognitive processes, social, material and sensory awareness, emotional or affective states and ending with physical body capabilities. These results suggest that people's capabilities to perform beauty tasks influence them less when compared with their perception of other factors such as how they physically look, their thoughts and their surroundings.

Dimension	Description
Social and environmental	Ecological influences such as social norms, people in ones physical and
	virtual life (e.g., friends, family, online connections) and the physical environment. [17].
Physical body capabilities	Body movements and physical capabilities of the body such as skillful performance of a beauty routine. [17].
Sensory awareness	Sensory awareness of the body, which includes awareness of bodily sensations, including ones body smells and feeling of being in ones body. [17].
Physical body appearance	Appearance of the physical body including body shape, skin texture and skin colour [17].
Emotional/affective states	Emotional and affective states such as emotions, moods, and personal preferences [17].
Materiality of beauty artefacts	Interactions with materials of physical entities such as features of beauty tools, ingredients and smell of beauty products [16].
Cognitive processes	Thoughts, visualizations, and ideas about beauty ideals and styles [16, 38, 63].

Table 1: Dimensions of embodiments and their description.

Table 2: Tukey's HSD Test results for comparisons with significant results. The mean of body capabilities rating was significantly different to multiple dimensions.

Dimensions Comparisons	Mean difference	Adjusted p-value	Lower	Upper
Social/environment vs Physical body capabilities	-0.84	0.0003	-1.41	-0.27
Physical body capabilities vs Sensory awareness	0.74	0.0024	0.17	1.31
Physical body capabilities vs Physical body appearance	1.19	0.0	0.63	1.76
Physical body capabilities vs Materiality of artefacts	0.77	0.0012	0.21	1.34
Physical body capabilities vs Cognitive processes	1.2	0.0	0.63	1.77
Physical body appearance vs Emotional/affective states	-0.74	0.0024	-1.31	-0.17
Emotional/affective states vs Cognitive processes	0.75	0.0021	0.18	1.32

Table 3: Pearson correlations of the ratings across the seven dimensions of embodiment

	1	2	3	4	5	6	7
Social/environment	-						
Physical body capabilities	0.31	-					
Sensory awareness	0.16	0.37	-				
Body appearance attributes	0.20	0.33	0.46	-			
Emotional/affective states	0.23	0.28	0.39	0.44	-		
Materiality of products/devices	0.26	0.11	0.39	0.28	0.38	-	
Cognitive processes	0.23	0.25	0.39	0.46	0.48	0.44	-

5.1 RQ2 Intent: Motivation to Seek Information

RQ2 addresses what motivates people to seek beauty related information and if embodiment shapes these motivations. Participants made reference to different motivations for beauty information seeking, which we collate under three categories: (M1) To learn, (M2) to decide on a product, and (M3) to change something about their appearance or beauty routine, which are based on the clustering of similar qualitative codes. These codes enable insight into the potential relations between motivations for seeking beauty information and dimensions of embodiment. 5.1.1 (M1) Learning. When prompted to share their most recent search for beauty information using digital technologies and their motivations, participants described wanting to learn about a product or beauty service, how to use a product, or how to do a beauty task which are described in ways that evidence their entanglement with different dimensions of embodiment. When learning about products, participants sought information associated with cost, ingredients, and effects of a product including how safe its use is.

In the context of seeking information about a product, embodiment manifests in the role of the material: for instance, participants sought information on the product texture (as 'light-weight' or 'heavy'), its fragrance (mainly in relation to 'fragrance-free'/ 'slightly fragranced'), and color (for example, a specific color, colorful or based broadly on color).

Participants also wanted to learn *how to use* a product (at what stage to apply it/how to use a certain tool). Similarly, but in a slightly different way, they also wanted to learn *how to do* something: like how to care for their skin or hair. In this motivational category of learning, the physical body plays a role in participants' desire to learn how to use a product and how to undertake a certain routine/care for their skin/body. For instance, one survey participant recounted looking for sunscreens: 'I researched on various sunscreens to find a good one. I used reddit and found Asian suncreams were better and use Stylevana to secure some.' They go on to explain that they wanted to 'help preserve my skin health'. These learning motivations are closely linked to and overlap with a desire to (**M2**) decide on a product, and (**M3**) to change or maintain their appearance or routine.

5.1.2 (M2) Decide about a product. In relation to motivations for beauty information seeking, participants were also frequently motivated to purchase a product, to find a specific product (they had encountered elsewhere), and to make an informed decision about which product is best for them. These motivations overlap and are interrelated: For instance, as one participant describes they were motivated to purchase a product but wanted to first, compare and contrast products to find the right product for them: 'I was looking to buy a new flat iron. However, too many are on the market for me to make a purchase decision on a whim. So, I did some research before committing to a specific product'. Significantly, participants were keen to find products that were a 'best fit', that aligned with their style, budget but also significantly fit features of their physical body. As explained by one participant, 'A day ago I was looking for eveliners and nail polish. I used YouTube, Pinterest, and Instagram to find the best nail polish to suit my skin color.' As opposed to the materiality of products discussed above, here the physicality of the body in the sense of its own textures, color, skin and hair type influence the product search for a 'best fit' for the participant: this is further discussed in a following section on how participants assessed the usefulness of information.

5.1.3 (M3) Changing appearance or beauty routine. : Finally, the last category of motivations encompasses participants who are looking to make a change to their appearance: to fix a problem, improve their appearance, be healthier, achieve a look, be inspired, or to enact/replicate a new routine. In relation to improving appearance, participants generally wanted to enact a positive change to their body – framed as an improvement to their appearance: 'By gathering the latest tips and product recommendations, I aimed to improve my overall skin health and achieve a more radiant complexion'. Or simply to 'Make myself beautiful'. As another participant explained, 'I wanted to know what equipment is best to use to maintain the proper beard length and what cosmetics to use to keep the beard *looking good*.

In a similar way, they wanted to change something/or achieve a style not explicitly framed as improving appearance: 'around 2 weeks ago, I wanted to find a specific undercut hairstyle with a matching beard grooming, found it on Instagram so I could show it to my barber'. Another participant, similarly, explained, 'I tried using the same steps in the tutorial to *achieve the same look* as the person in the video.' Alternatively, in opposition to a change, and pushing improvement to the extreme, some changes were framed as 'fixing something', in which an aspect of the body is framed as problematic: 'I had a skin problem and I want to find out a solution'. Another participant was similarly motivated, 'To *correct* the Hyperpigmentation on my face. and my inner thighs'. While another participant suggest, 'I wanted to get information to help me *correct* that situation of Acne because its uncomfortable and makes one loose self-confidence.'

Another motivation was related to upkeeping health and wellbeing, in some case removing toxic ingredients: 'I was trying to improve the health of my hair and prevent hair loss', 'Make my beard look better and feel healthier.' Another suggested they wanted 'Help preserv[ing] my skin health'.

Finally, some participants were motivated to search for beauty related information in order to replicate a makeup, hair, or other beauty routine: For example, as one participant explained they '[wanted to] Learn how to trim a beard and apply that knowledge in practice.' Regarding a hair care routine, one participant suggested: 'I wanted to learn how to do my own hair at home, I wanted information on products to use and the steps l have to take when doing the hair'. Participants also wanted not only to replicate a routine, but also sometimes incorporate products into existing routines: 'I wanted to refine my skincare routine by finding products that would be gentle on my sensitive skin'... someone else similarly described their search to incorporate products as, 'I wanted to use them and start incorporating them into my daily life.'

In this motivational category of changing appearances or beauty routine, the sub-codes mentioned above reflect a type of embodiment related to tug and pulls between social context/social pressure and participant agency, and how it is tied to feeling in one's physical body. In this category, participants demonstrate how the body and its appearance conveys meaning: they feel the need to 'improve' something or even 'fix' something that they see as problematic. For example, one participant even explained, 'I wanted to know if I should start retinol at my age already (I should) and which one I should get, so I can start using it.' Simultaneously, the desire to simply change appearance or find inspiration for a style, speaks to agency in using the body as a communicative tool or symbol and potentially a process of finding an authentic self. On the other hand, replicating a routine requires the body to play a significant role in processing procedural information, further discussed in the section on assessing the usefulness of information.

5.2 RQ3 Information Source/Format

Besides motivation, we are interested in the type of information and digital tools people use to support their beauty tasks. Additionally, we examined if embodiment plays a role in people's preferences of tools and information format. All participants reported to have different levels of interests in beauty and fashion: strongly agree (50%), somewhat agree (35.83%), neither agree or disagree (3.33%), strongly disagree (3.38%), somewhat disagree (7.43%) and strongly

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disagree (3.38%). We also asked participants to indicate if they follow beauty social media influencers: all of the time (22.97%), often (18.24%), sometimes (32.43%), rarely (20.95%) and never (5.4%).

Participants reported to use online resources and tools to find beauty related information in varying levels of frequency for general and how-to information (see Figure 2). Participants reported to seek information on different types of beauty related activities (see Figure 3).

We also asked participants to indicate what tools and information sources they use to find information on their beauty related tasks. The results in Figure 4 suggest that people widely use social media as an information source followed by people in their lives. This suggests that the social and environmental dimension of embodiment plays a critical role in their information seeking. Additionally, the use of visual information is predominant in the selecting of tools and sources. This suggests that embodiment manifests in people's information seeking activities by seeking information from people around them and using information that visually demonstrates what they are looking for.

Finally, we asked participants to indicate what tools and sources they use for their how-to beauty related information and the results suggest that social media is widely used to find how-to information on beauty (see Figure 2). Additionally, we asked participants to indicate what social media platforms they use to find how-to beauty information. YouTube, Instagram, and TikTok were the top three platforms and the common feature in them is the presence of visuals in form of images and videos (see Figure 5). This suggests that people predominantly use visual information to complete their how-to beauty tasks. Because users are looking for information for performative beauty tasks, embodied information in the form of visual information is preferred. Overall, social media is used widely, especially platforms that have a lot of images and videos such as Instagram and YouTube.

5.3 RQ4 Embodied Information Assessment

To address RQ3, we asked participants to provide information on how they evaluate information when they seek information on beauty. In our analysis of their responses to questions in the second section of the survey, we identified 4 main themes related to the criteria. Across all questionnaire items in section two, participants referenced a broad range of criteria related to **(C1)** fitness of the information to their own body, **(C2)** lived experience of others, **(C3)** materiality of described information , and **(C4)** information representation. We discuss below each theme and its associated criteria.

5.3.1 **(C1)** Criteria in relation to how well information is fitting to their body. Participants discussed how they used their physical body features to select information. This includes selecting information based on their body features such as their skin conditions, skin texture, or body size. The theme goes beyond physical body appearance, and encompasses deep bodily experiences that ranged from similarity to self as a person to conditions related to participants' body features. With regards to the embodied dimensions discussed in our research, this theme relates to the physical body appearance dimension.

Self-resemblance: One criterion that was used within this category was self-resemblance. Our participants discussed the extent to which they selected or used information based on how similar in appearance it was to themselves. For example, one participant sought information based on their ethnicity: "How to improve my semi oil-dry skin in the Asian beauty subreddit Find products targeted to my ethic and find reviews of those products I went to the megathread of the subreddit, see what they are actually recommending and searching for reviews of those products on the same subreddit and on the internet". In another example, one participant discussed their searching and evaluation criteria for selecting beauty information as follows: "I searched on Pinterest, for the picture look. Then I went on TikTok to find a tutorial for that specific hairstyle. The information was useful, but only because when I was searching, I had to add "black women" at the end, so the search results could be more accurate for me as a black woman. This was on Pinterest and Google... The similarities between what I was seeing on a particular person and myself". Another example talked about a similar criteria: "To correct the Hyperpigmentation on my face and my inner thighs, I used the search function on TikTok, Pinterest, Facebook, and YouTube and searched for the best results for Pigmentation on black skins. I went through the links and ... I wanted the videos... TikTok was the best because the people showing results were people from the same country as me and the same climate. More importantly, it was Black people." This criterion suggests that people prefer content or information that visually mirrors their own appearance, especially ethnicity.

Corporeal Similarity: Participants reported that they sought information based on the similarity of their physical tangible body features such as skin texture, body size, shape, and physical features. For instance, one participant discussed how they selected information based on their skin-tone: "I was specific in the areas of skin tone and I came across videos that feature people that have my skin tone and saw what worked for them that may work for me as well... Some of the hits lead me to YouTube and from there I watched various videos and that reassured me of the exact number and colour of the lipstick and from there I went to my Pinterest app to see where I could buy the lipstick". Another participant indicated that they preferred or selected information based on skin-tone:" I wanted to buy a foundation that suit my uneven tone skin. I went to Google for uneven tone foundations and the one I wanted or the one that seemed to match is found in Foschini Store". Another participant discussed how they selected information based on their hair type:" I googled which shampoo brand fits best with my hair type and read a blog about it. Overall, participants engaged in information seeking to find beauty related information that they evaluated based on their body physical features".

Condition Similarity: Participants discussed selecting their beauty related information based on the condition of some of their body features. Examples of such conditions included age, skin, or hair. For example, one participant discussed how their selected information based on the maturity of their skin said:" I searched up "eye look for mature skin" on YouTube and watch the first couple videos that popped up... the information was very useful, especially a [YouTube] short video from an older lady. I was able to see her technique on actual mature skin and see the results". Another participant discussed how they sought information about

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Figure 2: How often participants used different tools for different beauty related tasks.



Figure 3: Beauty related activities

their facial hair problem: "I googled my inquiry then searched in forums, YouTube and Reddit. I found good comments of people describing how they get around their problem and some videos about good trimming... What stuff applies the most to my personal case not any others. "

5.3.2 (C2) Criteria in relation to lived experiences of others. Participants evaluated whether they should access or use a source based on the lived experiences of the people providing the information. Participants sought information that was based on how detailed the information was, how relatable, familiar, realistic and credible, popular, unpopular, and authentic the source was. Some participants gave more credibility to influencers and experts. They chose information from influencers they know (familiarity) or information which had higher views and upvotes (popularity). This information came mainly from social media platforms such as Tik-Tok and YouTube. Others preferred information coming from less popular people or people who had experience with the product or beauty routine. Such information came as comments, or photos of attempted replication of a style or routine or trends in discussion forums such as Reddit and Facebook. For example, one participant discussed how they sought information about a product: "I first opened [YouTube] and searched for that product's review. I watched a few videos of influencers trying it and expressing their opinions. Then, I searched for that product on Google, and look at the reviews.

.., because it allowed me to better understand how the product was build and how it worked on my type of skin, based on the experiences of other people". Another participant discussed that they seek and use information from a professional:" I was about to trim my beard for the first time and used Google search to find a [YouTube] video made by a professional barber explaining the basic principles and techniques". Expressing their preference for real people with experiences, another participant discussed how they found information about their beauty task:" I searched on TikTok first because it is mostly people's real life where there were no sponsors on that video". With reference to the embodied dimensions discussed in this paper, this theme was related to the physical body appearance aspects of embodiment and social and environmental dimension.

5.3.3 (C3) Criteria in relation to the format or representation of information. We identified the format or representation of information as a value or criterion participants used to select beauty information. Visual representation was the central criterion for selecting information. For example, one participant discussed how they used different platforms for distinct purposes: "I needed to bleach my hair for the specific hair dye, ... browse TikTok looking for inspiration and the dyes to use, then YouTube on how to apply, TikTok ... showed me various colour combinations". Aesthetics also played a role in people's selection process as one participant discussed:" if it looked pretty, if it went along with my personal style". Similarly, another participant referring to how they select nails to view said: "whether they looked good, prices and how long they lasted". Others wanted the information to be easier to follow: "I opened TikTok and went to the search bar. I typed in " how to put on makeup without foundation". After looking through the video options, I picked one that looked the easiest to follow". Other participants preferred going though reviews or discussions of products:" I read through various threads on reddit. Whether it received much traction and support from others agreeing". With reference to the embodied dimensions discussed in this paper, this theme was related to the physical appearance aspects of embodiment and social and environmental dimension.

5.3.4 **(C4)** Criteria in relation to the materiality of the beauty products and objects. We identified the materiality of beauty products and objects as a key criterion that participants used when they wanted to buy a product or decide about a beauty tool, service or

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Figure 4: Sources and tools for finding information for general and how-to beauty related tasks

Pinterest	Instagram	YouTube		
48	99	104		
Twitter(X)	Facebook	Tiktok		
37	62	94		
Never 5 Other 5				

Figure 5: Social media platforms for beauty

routine. Participants discussed how they searched for or checked ingredients in beauty products effectiveness: "I watched YouTube videos from dermatologists and influencers, checked ingredient lists, and compared products before making a final decision and purchase. I selected information based on relevance to sensitive skin, credibility of sources (like dermatologists and reputable beauty sites), positive user feedback, safe ingredients (fragrance-free, no alcohol), and expert opinions". Similarly, another participant discussed how they checked ingredients for safety to their skin condition: "I checked out some blogs, forums, and YouTube reviews to figure out the best ingredients and products to avoid irritation". Others used specialised tools to find information about ingredients: "Think dirty is a good app showing which ingredients are the nasty ones. I was looking for a product that was easily available at a good price and had a low score on think dirty". This theme is related to the materiality and cognitive embodied dimensions discussed in this paper.

6 Discussion

Through our research questions, we aimed to investigate a historically overlooked area in research on information practices (potentially due to its trivialization as women's concerns): embodiment and its manifestation in everyday beauty information practices. We will discuss the significance of the findings from each question in turn, highlighting how they inform our understanding of how the embodied nature of beauty shapes related information practices. Subsequently, we discuss the implications for designing interactive information retrieval systems.

6.1 Reflections on Findings

The first research question (RQ1) investigates how embodiment manifests itself in people's beauty-related information seeking tasks. Our findings indicate that embodiment plays a central role throughout these interactions, influencing not only the motivation and selection of information but also the ways in which information is evaluated. Below, we discuss how embodiment affects each of these activities in the context of beauty information.

Our second research question (RQ2) investigated why people search for beauty information. There were three main motivations identified: (M1) Learning about a product or how to do a certain task; (M2) Deciding about a product; (M3) Changing appearance or beauty routine. Across these motivations, different dimensions of embodiment played various roles.

Participants were motivated to search for information to decide about a product, based on whether it could align with their own physical body and appearance, in relation to their skin color, style, or health needs. This indicates the importance of experiential bodily experiences not only for situated practices as reflected in Lloyd and Olsson [35] research, but also for informing beauty information search. The materiality of products also played a role in shaping the motivation for product search, such as textures, weight, fragrance and sheen, which speaks to the corporeal dimension of information [33]. In addition, some participants were motivated to change their appearance, which was framed in ways that reflects the physical appearance dimension of embodiment but also the social environment of beauty work. For example, such changes were associated with health and well-being, improving appearances, but also a need to fix something. This reflects the complexity of social pressures that can motivate beauty information seeking and simultaneously

personal interest and agency [27]. These findings signify that participants' physical appearances (skin tone, style, etc.) and materiality of products may motivate and shape how to/procedural search and product search - which is overlooked in previous related research. The social environment in terms of what counts as beauty may also be a significant factor in motivating people to search for information to change their beauty work. This reflects the relevance of embodiment for motivating information practices that include but also go beyond situated practices [35] or procedural tasks [58], to also encompass learning, making decisions about products, and changing appearances.

Our third research question (RQ3) addressed what digital tools people use for their beauty information tasks and if/how embodiment shapes these choices. Based on the popularity of social media and visual-based tools, we suggest that the social and environmental dimension of embodiment plays a critical role in the choice of tools for beauty information seeking. This is in alignment with previous research on the formation of communities around beauty practices [30] and the preference of visual information for procedural tasks [46] – highlighting the need for further attention and research.

Our fourth research question addressed (RQ4) how people evaluate information for their beauty-related tasks. To address this research question, we identified four themes related to criteria for evaluating beauty information: (1) fitting to the body, (2) lived experiences, (3) information format or representation, and (4) materiality. Our results suggest that people select or look for information based on how it best suits their physical appearance, aligns with their identity, is perceived as credible, and if the information presented is aesthetic, easy to understand, and visual - rooted in different dimensions of embodiment. The centrality of physicality in theme 1 (fitting to the body) resonates with previous research findings on embodied information[33-35]. Our findings add the specific ways bodily experiences are used in evaluating information, such as through self-resemblance, similarity to body features, or the perceived safety of product ingredients for their body. Similarly, in theme 2 (lived experiences), the findings reflect how the social environment of social media impacts the perceived credibility of beauty information - associated with how big a following the creator/content has, aligning with market research, but also if the information was felt by users to be relatable to them and true to life. These results have implications for how interactive information retrieval systems may recommend content to users based on different network-based features of the user and the influencer. The type of information used for beauty information practices, as revealed by our findings is also evaluated based on such aspects as aesthetics/visuality. Visuality was central to how-to tasks: This finding is similar to studies that examined the criteria that people use to judge relevance of procedural or how-to information for different domains [11, 12, 46]. These forms of evaluation, may intersect with where credible creators/influencers are perceived to be and shape participants' decisions around tools to use.

Embodiment manifested in various and sometimes complex ways in the beauty information seeking process but predominantly through physical and cognitive manifestations. Participants rated highly how their physical appearance triggered them to seek beauty related information which as reflected here, may overlap with additional dimensions of embodiment. Our findings contribute to interactive information retrieval research by providing insights into how the body manifests in beauty search tasks. In particular, we argue that the understanding of the search for information which is 'fit for the body' may be used to optimise search systems to support people who are engaging in beauty tasks. This could be done by providing them with system features that make the physical embodied beauty activities easier. We provide the implications of our findings in Section 6.2.

6.2 Implications

Our findings have both theoretical and practical implications on interactive information retrieval systems research and design respectively. These implications are discussed below.

6.2.1 Theoretical Implications. The findings of our study make us think about a new search paradigm that incorporates embodied interactions with information and as well as interactive information retrieval systems. Embodied search is a paradigm shift that moves beyond information request submission to involvement of search through interaction with the whole body, interacting with meaningful information by incorporating multisensory dimensions and physicality. The exploration of embodied theories for search would explore multimodal experience in search. The HCI community has explored the type of theories that would support such interaction, and the Interactive Information Retrieval community can use that as a reference point [38, 63]. As a concept, embodied search may contribute to efforts of building theories for interactive information retrieval, especially combining digital information search with bodily actions. Additionally, the prevalent use of similarity to the physical body in selecting information for beauty may be explored further in relation to similarity-effect theories [15] in general contexts, to understand how people select information for tasks that involve their bodies.

6.2.2 Practical Implications. The beauty technology industry is one of the vibrant sectors that has been creative in incorporating new emerging technology in beauty digital tools such as the use of generative AI and Augmented Reality (AR) in providing body tailored recommendations. Within that line, we outline below the practical implications of our findings towards the design of embodied interactive information retrieval systems to support people to engage with beauty search tasks more meaningfully.

Physicality in embodied interactive information retrieval systems: First, the findings of our study reflect the centrality of the body in selecting and using information, and has implications for interactions in digital ecosystems, encompassing interactions with both the virtual and physical world. In thinking about embodied systems in our findings, visuality of information was one of the common themes in both selecting and using information for beauty. Therefore, interactive information retrieval systems may support users by making search results more visual and interactive. Recent developments in AR and generative AI is breaking ground in this area, where users may see results in three-dimension and in the context of beauty product search, providing features such as virtual try ons. Extending these capabilities, involves embedding digital elements in beauty artefacts such beauty tools, which then can intergrate information seeking (e.g., searching for information using physical objects in the world such as face physical attributes), selecting (e.g., vitually trying on products) and use (e.g. using digitised beauty tools that are able to provide feedback to the user). Additionally, the outcome of our study indicates that people select information based on how the information is fitting to their physical body features. Thus, physical body features such as hair texture, may be implicitly elicited from user submitted information requests or through conversational search, and used as features for search results ranking or recommending products to users.

Search and materiality of products and tools: Second, materiality of products such as smoothness, or the affordances of beauty tools guide bodily actions. The consideration of safety and sustainability [41] of product ingredients was one of the prominent themes in materiality. Product search, therefore, would explore ways of making all the ingredients of products visible such that users should be able to select products easier. This could be in the form of filtering products based on ingredients or integrating external resources about ingredients to provide interactive safety information to the user. In line with this, interactive information retrieval systems may extract embodied related information from user reviews such as information about the texture and fragrances in beauty products, to be used for ranking or recommending products to users.

Supporting embodiment in procedural beauty tasks: Finally, procedural beauty tasks are action oriented, and the outcomes of our study suggest that people use diverse digital tools to complete their tasks. Interactive information retrieval systems should support embodied elements of procedural search tasks by providing multimodal interaction with information to support users to find and interact with information in the format that they prefer. This would involve the integration of generative AI tools to generate preferred mode of search results as well as tailoring the information based on user context.

6.3 Limitations of the study

The main limitation of our study is that participants were asked to recall information on their beauty information seeking practice. Recall can be problematic as participants may have trouble remembering the steps taken and motivations for their information tasks or recall these falsely. In our case, we had some answers that were poorly articulated which could have been due to this limitation. However, using recall allowed us to gather information from participants' everyday life experiences without controlling the environment. Additionally, using a survey allowed us to get information from a diverse population around the world.

7 Conclusion

Embodiment as a core experience of humans living in their bodies shapes beauty processes. We conducted an online survey study to investigate how embodiment manifests in people's lives, and the motivations, tools and how they evaluate beauty information in relation to embodiment. Our results indicate that people's physical appearance is the predominant factor prompting people to seek information. We found that people look for beauty related information to learn to do something, to make a decision about a product, change appearances, or improve health. With regard to tools, we found that people widely use social media to find beauty related information. Moreover, visual information is widely used to inform people's beauty tasks. In terms of information evaluation, our findings suggest that people evaluate information based on how-best it suits their body, employing criteria such as self-resemblance and condition similarity. People also evaluate information based on the lived experiences of others using criteria such as credibility, popularity, and relatability. Our findings provide new insights on how bodily activities, physical features, and the environment influence information seeking, especially for beauty tasks. These findings have implications for the design of interactive information retrieval systems, especially in providing features that fully embrace the embodied nature of beauty tasks. Correspondingly, new embodied interaction paradigms and theories of interactive information retrieval are required to fully develop embodied search systems.

References

- [1] Prabhat Agarwal, Minhazul Islam SK, Nikil Pancha, Kurchi Subhra Hazra, Jiajing Xu, and Chuck Rosenberg. 2024. OmniSearchSage: Multi-Task Multi-Entity Embeddings for Pinterest Search. In Companion Proceedings of the ACM Web Conference 2024 (Singapore, Singapore) (WWW '24). Association for Computing Machinery, New York, NY, USA, 121–130. doi:10.1145/3589335.3648309
- [2] I Almira and R Nazhar. 2019. Marketing Communication of Beauty Products Using Information Technology. IOP Conference Series: Materials Science and Engineering 662 (11 2019), 032068. doi:10.1088/1757-899X/662/3/032068
- [3] Almuntsrbellah Almudimeegh, Eman Almukhadeb, Khalid Nabil Nagshabandi, Omar Aldosari, Ibrahim Aldakhil, Zyad Aldosari, Mohammed Alhuqbani, and Khalid Alkhani. 2024. The influence of social media on public attitudes and behaviors towards cosmetic dermatologic procedures and skin care practices: A study in Saudi Arabia. Journal of Cosmetic Dermatology 23, 8 (2024), 2686–2696. doi:10. 1111/jocd.16324 arXiv:https://onlinelibrary.wiley.com/doi/pdf/10.1111/jocd.16324
- [4] Alice Audrezet, Gwarlann de Kerviler, and Julie Guidry Moulard. 2020. Authenticity under threat: When social media influencers need to go beyond selfpresentation. *Journal of Business Research* 117 (2020), 557–569. doi:10.1016/j. jbusres.2018.07.008
- [5] Rochelle Bailis. 2019. Influencer Marketing Statistics. https://www.bigcommerce. com/blog/influencer-marketing-statistics/
- [6] Marcia J. Bates. 2018. Concepts for the Study of Information Embodiment. Library Trends 66, 3 (2018), 239–266. doi:10.1353/lib.2018.0002
- [7] Timon Ten Berge and Rene Van Hezewijk. 1999. Procedural and Declarative Knowledge: An Evolutionary Perspective. *Theory & Psychology* 9, 5 (1999), 605–624. doi:10.1177/0959354399095002 arXiv:https://doi.org/10.1177/0959354399095002
- [8] Colin Campbell and Justine Rapp Farrell. 2020. More than meets the eye: The functional components underlying influencer marketing. *Business Horizons* 63, 4 (2020), 469–479. doi:10.1016/j.bushor.2020.03.003
- [9] Catherine Chavula, Yujin Choi, and Soo Young Rieh. 2022. Understanding Creative Thinking Processes in Searching for New Ideas. In Proceedings of the 2022 Conference on Human Information Interaction and Retrieval (Regensburg, Germany) (CHIIR '22). Association for Computing Machinery, New York, NY, USA, 321–326. doi:10.1145/3498366.3505783
- [10] Catherine Chavula, Yujin Choi, and Soo Young Rieh. 2024. Searching for creativity: How people search to generate new ideas. *Journal of the Association for Information Science and Technology* 75, 4 (2024), 438–453. doi:10.1002/asi.24857 arXiv:https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/asi.24857
- [11] Bogeum Choi, Jaime Arguello, and Robert Capra. 2023. Understanding Procedural Search Tasks "in the Wild". In Proceedings of the 2023 Conference on Human Information Interaction and Retrieval (Austin, TX, USA) (CHIIR '23). Association for Computing Machinery, New York, NY, USA, 24–33. doi:10.1145/3576840. 3578302
- [12] Bogeum Choi, Sarah Casteel, Jaime Arguello, and Robert Capra. 2023. Better Understanding Procedural Search Tasks: Perceptions, Behaviors, and Challenges. ACM Trans. Inf. Syst. 42, 3, Article 65 (Dec. 2023), 32 pages. doi:10.1145/3630004
- [13] Bogeum Choi, Sarah Casteel, Robert Capra, and Jaime Arguello. 2022. Procedural Knowledge Search by Intelligence Analysts. In Proceedings of the 2022 Conference on Human Information Interaction and Retrieval (Regensburg, Germany) (CHIIR '22). Association for Computing Machinery, New York, NY, USA, 169–179. doi:10. 1145/3498366.3505810
- [14] Rebecca Coleman and Mónica Moreno Figueroa. 2010. Past and Future Perfect? Beauty, Affect and Hope. Journal for Cultural Research 14, 4 (2010), 357–373.

Fitting to the body: The role of embodiment in beauty information seeking

doi:10.1080/14797581003765317 arXiv:https://doi.org/10.1080/14797581003765317

- [15] Brian Collisson and Jennifer L. Howell. 2014. The Liking-Similarity Effect: Perceptions of Similarity as a Function of Liking. *The Journal of Social Psychology* 154, 5 (2014), 384–400. doi:10.1080/00224545.2014.914882 arXiv:https://doi.org/10.1080/00224545.2014.914882 PMID: 25175989.
- [16] Paul Dourish. 2001. Where the Action Is: The Foundations of Embodied Interaction. The MIT Press, Cambridge, Massachusetts. doi:10.7551/mitpress/7221.001.0001
- [17] Hubert L. Dreyfus. 1996. The Current Relevance of Merleau-Ponty's Phenomenology of Embodiment. *Electronic Journal of Analytic Philosophy* 4, Spring (1996). https://ejap.louisiana.edu/ejap/1996.spring/dreyfus.1996.spring.html
- [18] Emanuel Felipe Duarte and M. Cecília C. Baranauskas. 2016. Revisiting the Three HCI Waves: A Preliminary Discussion on Philosophy of Science and Research Paradigms. In Proceedings of the 15th Brazilian Symposium on Human Factors in Computing Systems (São Paulo, Brazil) (IHC '16). Association for Computing Machinery, New York, NY, USA, Article 38, 4 pages. doi:10.1145/3033701.3033740
- [19] Carsten Eickhoff, Jaime Teevan, Ryen White, and Susan Dumais. 2014. Lessons from the journey: a query log analysis of within-session learning. In *Proceedings* of the 7th ACM International Conference on Web Search and Data Mining (New York, New York, USA) (WSDM '14). Association for Computing Machinery, New York, NY, USA, 223–232. doi:10.1145/2556195.2556217
- [20] Joanne Entwistle. 2000. Fashion and the Fleshy Body: Dress as Embodied Practice. Fashion Theory 4, 3 (2000), 323–347. doi:10.2752/136270400778995471 arXiv:https://doi.org/10.2752/136270400778995471
- [21] Mukta Garg and Apurva Bakshi. 2024. Exploring the impact of beauty vloggers' credible attributes, parasocial interaction, and trust on consumer purchase intention in influencer marketing. *Humanities and Social Sciences Communications* 11 (02 2024). doi:10.1057/s41599-024-02760-9
- [22] Emily Gerstell, Sophie Marchessou, Jennifer Schmidt, and Emma Spagnuolo. 2020. How COVID-19 is changing the world of beauty. https://www.mckinsey.com/industries/consumer-packaged-goods/ourinsights/how-covid-19-is-changing-the-world-of-beauty Accessed: 2024-10-22.
- [23] Debra Gimlin. 2007. What Is 'Body Work'? A Review of the Literature. Sociology Compass 1, 1 (2007), 353–370. doi:10.1111/j.1751-9020.2007. 00015.x arXiv:https://compass.onlinelibrary.wiley.com/doi/pdf/10.1111/j.1751-9020.2007.00015.x
- [24] Debra L. Gimlin. 2002. Body Work: Beauty and Self-Image in American Culture. University of California Press, Berkeley, CA. http://www.jstor.org/stable/10. 1525/j.ctt1ppv9p
- [25] Michael Haenlein, Ertan Anadol, Tyler Farnsworth, Harry Hugo, Jess Hunichen, and Diana Welte. 2020. Navigating the New Era of Influencer Marketing: How to be Successful on Instagram, TikTok, & Co. California Management Review 63, 1 (2020), 5-25. doi:10.1177/0008125620958166 arXiv:https://doi.org/10.1177/0008125620958166
- [26] Steve Harrison, Deborah Tatar, and Phoebe Sengers. 2007. The three paradigms of HCL. In CHI 2007, April 28 – May 3, 2007, San Jose, USA. Association for Computing Machinery, USA, 18. https://people.cs.vt.edu/srh/Downloads/ TheThreeParadigmsofHCLpdf
- [27] Toni Ingram. 2022. 'I feel pretty': beauty as an affective-material process. Feminist Theory 23, 2 (2022), 285–300. doi:10.1177/14647001211000015 arXiv:https://doi.org/10.1177/14647001211000015
- [28] Saar Kuzi and Shervin Malmasi. 2024. Bridging the Gap Between Information Seeking and Product Search Systems: Q&A Recommendation for E-Commerce. *SIGIR Forum* 58, 1 (Aug. 2024), 1–10. doi:10.1145/3687273.3687293
- [29] Lo Lee, Melissa G. Ocepek, Stephann Makri, George Buchanan, and Dana McKay. 2019. Getting creative in everyday life: Investigating arts and crafts hobbyists' information behavior. Proceedings of the Association for Information Science and Technology 56, 1 (2019), 703–705. doi:10.1002/pra2.141 arXiv:https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/pra2.141
- [30] Franklin Mingzhe Li, Franchesca Spektor, Meng Xia, Mina Huh, Peter Cederberg, Yuqi Gong, Kristen Shinohara, and Patrick Carrington. 2022. "It Feels Like Taking a Gamble": Exploring Perceptions, Practices, and Challenges of Using Makeup and Cosmetics for People with Visual Impairments. In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (New Orleans, LA, USA) (CHI '22). Association for Computing Machinery, New York, NY, USA, Article 266, 15 pages. doi:10.1145/3491102.3517490
- [31] Zehang Lin, Zhenguo Yang, Feitao Huang, and Junhong Chen. 2018. Regional Maximum Activations of Convolutions with Attention for Cross-domain Beauty and Personal Care Product Retrieval. In *Proceedings of the 26th ACM International Conference on Multimedia* (Seoul, Republic of Korea) (*MM '18*). Association for Computing Machinery, New York, NY, USA, 2073–2077. doi:10.1145/3240508. 3266436
- [32] Rhema Linder, Clair Snodgrass, and Andruid Kerne. 2014. Everyday ideation: all of my ideas are on pinterest. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Toronto, Ontario, Canada) (*CHI '14*). Association for Computing Machinery, New York, NY, USA, 2411–2420. doi:10.1145/2556288. 2557273
- [33] Annemaree Lloyd. 2010. Corporeality and practice theory: exploring emerging research agendas for information literacy. *Information Research* 15, 3 (2010).

http://InformationR.net/ir/15-3/colis7/colis704.html

- [34] Annemaree Lloyd. 2014. Informed Bodies: Does the Corporeal Experience Matter to Information Literacy Practice? *Library and Information Science* 9 (08 2014), 85–99. doi:10.1108/S1876-056220140000010003
- [35] Annemaree Lloyd and Michael Olsson. 2019. Enacting and capturing embodied knowledge in the practices of enthusiast car restorers: Emerging themes. *Journal* of Librarianship and Information Science 51, 4 (2019), 1033–1040. doi:10.1177/ 0961000618769979
- [36] Veroline Cauberghe Marijke De Veirman and Liselot Hudders. 2017. Marketing through Instagram influencers: the impact of number of followers and product divergence on brand attitude. *International Journal* of Advertising 36, 5 (2017), 798–828. doi:10.1080/02650487.2017.1348035 arXiv:https://doi.org/10.1080/02650487.2017.1348035
- [37] Renée Marlin-Bennett. 2013. Embodied Information, Knowing Bodies, and Power. Millennium: Journal of International Studies 41, 3 (2013), 601–622. doi:10.1177/ 0305829813486413
- [38] Paul Marshall and Eva Hornecker. 2013. Theories of Embodiment in HCI. In The SAGE Handbook of Digital Technology Research, Sara Price, Carey Jewitt, and Barry Brown (Eds.). SAGE Publications, United States, 144–158. https://researchinformation.bris.ac.uk/en/publications/theories-of-embodiment-in-hci
- [39] Maryann McCabe, Timothy de Waal Malefyt, and Antonella Fabri. 2020. Women, makeup, and authenticity: Negotiating embodiment and discourses of beauty. *Journal of Consumer Culture* 20, 4 (2020), 656–677. doi:10.1177/1469540517736558 arXiv:https://doi.org/10.1177/1469540517736558
- [40] Ali Montazeralghaem and James Allan. 2022. Learning Relevant Questions for Conversational Product Search using Deep Reinforcement Learning. In Proceedings of the Fifteenth ACM International Conference on Web Search and Data Mining (Virtual Event, AZ, USA) (WSDM '22). Association for Computing Machinery, New York, NY, USA, 746–754. doi:10.1145/3488560.3498526
- [41] Anupreet Mukendi, Ian Davies, Sarah Glozer, and Pierre McDonagh. 2020. Sustainable fashion: current and future research directions. *European Journal of Marketing* 54, 11 (2020), 2873–2909. doi:10.1108/EJM-02-2019-0132
- [42] Keith Munro, Ian Ruthven, and Perla Innocenti. 2023. Can you feel it? The information behaviour of creative DJs. Journal of Documentation 79, 4 (2023), 830–846. doi:10.1108/JD-05-2022-0106
- [43] Dennis P. Nickson, Christopher Warhurst, Anne Witz, and Anne Marie Cullen. 2001. The importance of being aesthetic: work, employment and service organization. Palgrave, Basingstoke, UK, 170–190.
- [44] Daisy O'Neill, Max V. Birk, and Regan L Mandryk. 2024. Unpacking Norms, Narratives, and Nourishment: A Feminist HCI Critique on Food Tracking Technologies. In Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (Honolulu, HI, USA) (CHI '24). Association for Computing Machinery, New York, NY, USA, Article 514, 20 pages. doi:10.1145/3613904.3642600
- [45] Srishti Palani, Zijian Ding, Stephen MacNeil, and Steven P. Dow. 2021. The "Active Search" Hypothesis: How Search Strategies Relate to Creative Learning. In Proceedings of the 2021 Conference on Human Information Interaction and Retrieval (Canberra ACT, Australia) (CHIIR '21). Association for Computing Machinery, New York, NY, USA, 325–329. doi:10.1145/3406522.3446046
- [46] Georg Pardi, Yvonne Kammerer, and Peter Gerjets. 2019. Search and Justification Behavior During Multimedia Web Search for Procedural Knowledge. In Companion Publication of the 10th ACM Conference on Web Science (Boston, Massachusetts, USA) (WebSci '19). Association for Computing Machinery, New York, NY, USA, 17–20. doi:10.1145/3328413.3329405
- [47] Chuhan Shi, Zhihan Jiang, Xiaojuan Ma, and Qiong Luo. 2022. A Personalized Visual Aid for Selections of Appearance Building Products with Long-term Effects. In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (New Orleans, LA, USA) (CHI '22). Association for Computing Machinery, New York, NY, USA, Article 74, 18 pages. doi:10.1145/3491102.3517659
- [48] Rui Shi, Minghao Wang, Tongjia Qiao, and Junchen Shang. 2024. The Effects of Live Streamer's Facial Attractiveness and Product Type on Consumer Purchase Intention: An Exploratory Study with Eye Tracking Technology. *Behavioral Sciences* 14, 5 (04 2024), 375. doi:10.3390/bs14050375
- [49] Rosanna K Smith, Michelle R vanDellen, and Lan Anh N Ton. 2021. Makeup Who You Are: Self-Expression Enhances the Perceived Authenticity and Public Promotion of Beauty Work. *Journal of Consumer Research* 48, 1 (01 2021), 102–122. doi:10.1093/jcr/ucaa066 arXiv:https://academic.oup.com/jcr/articlepdf/48/1/102/38934527/ucaa066.pdf
- [50] Parikshit Sondhi, Mohit Sharma, Pranam Kolari, and ChengXiang Zhai. 2018. A Taxonomy of Queries for E-commerce Search. In The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval (Ann Arbor, MI, USA) (SIGIR '18). Association for Computing Machinery, New York, NY, USA, 1245–1248. doi:10.1145/3209978.3210152
- [51] Space 48. 2023. Beauty, Grooming & Cosmetics Online Shopping Consumer Survey Findings 2023. Technical Report. Space 48. https://www.space48.com/wpcontent/uploads/2023/01/Beauty-Grooming-Cosmetics-Online-Shopping-Consumer-Survey-findings-2023-1.pdf Accessed: 2025-01-29.
- [52] Ning Su, Jiyin He, Yiqun Liu, Min Zhang, and Shaoping Ma. 2018. User Intent, Behaviour, and Perceived Satisfaction in Product Search. In Proceedings of the

Eleventh ACM International Conference on Web Search and Data Mining (Marina Del Rey, CA, USA) (WSDM '18). Association for Computing Machinery, New York, NY, USA, 547–555. doi:10.1145/3159652.3159714

- [53] Leslie Thomson. 2017. "In my humble opinion...": Serious YouTubers' selfpresentations, roles, and authority. Proceedings of the Association for Information Science and Technology 54, 1 (2017), 811–813. doi:10.1002/pra2.2017.14505401167 arXiv:https://asistdl.onlinelibrary.wiley.com/doi/pdf10.1002/pra2.2017.14505401167
- [54] Leslie Thomson, Nadia Caidi, Kyong Yoon, Eric Forcier, Alice N. Kim, and Niel Chah. 2018. The YouTube formula: Information work and communitybuilding in a visual era. Proceedings of the Association for Information Science and Technology 55, 1 (2018), 736–739. doi:10.1002/pra2.2018.14505501096 arXiv:https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/pra2.2018.14505501096
- [55] Leslie Elizabeth Anne Thomson. 2019. 'Doing' YouTube: Information creating in the context of serious beauty and lifestyle YouTube. Ph. D. Dissertation. University of North Carolina at Chapel Hill. doi:10.17615/kk5z-mg37
- [56] Bantita Treepong, Hironori Mitake, and Shoichi Hasegawa. 2018. Makeup Creativity Enhancement with an Augmented Reality Face Makeup System. Comput. Entertain. 16, 4, Article 6 (Nov. 2018), 17 pages. doi:10.1145/3277452
- [57] Mojtaba Vaismoradi, Helvi Jones, Hannele Turunen, and Sherrill Snelgrove. 2016. Theme development in qualitative content analysis and thematic analysis. *Journal* of Nursing Education and Practice 6, 5 (2016), 100–110. doi:10.5430/jnep.v6n5p100
- [58] Michael Völske, Pavel Braslavski, Matthias Hagen, Galina Lezina, and Benno Stein. 2015. What Users Ask a Search Engine: Analyzing One Billion Russian Question Queries. In Proceedings of the 24th ACM International on Conference on Information and Knowledge Management (Melbourne, Australia) (CIKM '15). Association for Computing Machinery, New York, NY, USA, 1571–1580. doi:10. 1145/2806416.2806457
- [59] Qi Wang, Jingxiang Lai, Kai Xu, Wenyin Liu, and Liang Lei. 2018. Beauty Product Image Retrieval Based on Multi-Feature Fusion and Feature Aggregation. In Proceedings of the 26th ACM International Conference on Multimedia (Seoul, Republic of Korea) (MM '18). Association for Computing Machinery, New York, NY, USA, 2063–2067. doi:10.1145/3240508.3266431
- [60] Ingmar Weber, Antti Ukkonen, and Aris Gionis. 2012. Answers, not links: extracting tips from yahoo! answers to address how-to web queries. In *Proceedings* of the Fifth ACM International Conference on Web Search and Data Mining (Seattle, Washington, USA) (WSDM '12). Association for Computing Machinery, New York, NY, USA, 613–622. doi:10.1145/2124295.2124369
- [61] Chen Wen-Kuo, Hung Pei-Chu, Chen Cheng-Kun, and Pan Hua-Sheng. 2020. Understanding Consumers' Post-Purchase Dissonance by Online Impulse Buying-Beauty Product. In Proceedings of the 7th International Conference on Management

of E-Commerce and e-Government (Jeju, Island, Republic of Korea) (ICMECG '20). Association for Computing Machinery, New York, NY, USA, 46–51. doi:10.1145/ 3409891.3409910

- [62] Steven Van Wolputte. 2004. Hang on to Your Self: Of Bodies, Embodiment, and Selves. Annual Review of Anthropology 33, Volume 33, 2004 (2004), 251–269. doi:10.1146/annurev.anthro.33.070203.143749
- [63] Anna Xambó, Carey Jewitt, and Sara Price. 2014. Towards an integrated methodological framework for understanding embodiment in HCI. In CHI '14 Extended Abstracts on Human Factors in Computing Systems (Toronto, Ontario, Canada) (CHI EA '14). Association for Computing Machinery, New York, NY, USA, 1411–1416. doi:10.1145/2559206.2581276
- [64] Runming Yan, Yongchun Lin, Zhichao Deng, Liang Lei, and Chudong Xu. 2020. Multi-Feature Fusion Method Based on Salient Object Detection for Beauty Product Retrieval. In Proceedings of the 28th ACM International Conference on Multimedia (Seattle, WA, USA) (MM '20). Association for Computing Machinery, New York, NY, USA, 4713–4717. doi:10.1145/3394171.3416272
- [65] Jun Yu, Guochen Xie, Mengyan Li, Haonian Xie, Xinlong Hao, Fang Gao, and Feng Shuang. 2020. Attention Based Beauty Product Retrieval Using Global and Local Descriptors. In Proceedings of the 28th ACM International Conference on Multimedia (Seattle, WA, USA) (MM '20). Association for Computing Machinery, New York, NY, USA, 4708–4712. doi:10.1145/3394171.3416289
- [66] Jun Yu, Guochen Xie, Mengyan Li, Haonian Xie, and Lingyun Yu. 2019. Beauty Product Retrieval Based on Regional Maximum Activation of Convolutions with Generalized Attention. In Proceedings of the 27th ACM International Conference on Multimedia (Nice, France) (MM '19). Association for Computing Machinery, New York, NY, USA, 2553–2557. doi:10.1145/3343031.3356065
- [67] Yinglong Zhang and Robert Capra. 2019. Understanding How People use Search to Support their Everyday Creative Tasks. In Proceedings of the 2019 Conference on Human Information Interaction and Retrieval (Glasgow, Scotland UK) (CHIIR '19). Association for Computing Machinery, New York, NY, USA, 153–162. doi:10. 1145/3295750.3298936
- [68] Yinglong Zhang, Rob Capra, and Yuan Li. 2020. An In-situ Study of Information Needs in Design-related Creative Projects. In *Proceedings of the 2020 Conference* on Human Information Interaction and Retrieval (Vancouver BC, Canada) (CHIIR '20). Association for Computing Machinery, New York, NY, USA, 113–123. doi:10. 1145/3343413.3377973
- [69] Yi Zhang, Linzi Qu, Lihuo He, Wen Lu, and Xinbo Gao. 2019. Beauty Aware Network: An Unsupervised Method for Makeup Product Retrieval. In Proceedings of the 27th ACM International Conference on Multimedia (Nice, France) (MM '19). Association for Computing Machinery, New York, NY, USA, 2558–2562. doi:10.1145/3343031.3356075