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Augmented Reality Magic Mirror in the Service Sector: Experiential Consumption and the Self

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Augmented Reality Magic Mirror in the Service Sector: Experiential Consumption and the Self

Abstract

Purpose: This paper examines what the use of an augmented reality makeup mirror means to consumers, focusing on experiential consumption and the extended self.
Design/methodology/approach: We employed a multimethod approach involving netnography and semi-structured interviews with participants in India and the UK (n=30).
Findings: Two main themes emerged from the data: 1) the importance of imagination and fantasy and 2) the (in)authenticity of the self and the surrounding "reality."
Research limitations/implications: This research focuses on Augmented Reality magic makeup mirror. We call for further research on different AR contexts.
Practical implications: We provide service managers with insights on addressing gaps between the perceived service (i.e., AR contexts and the makeup consumption journey) and the conceived service (i.e., fantasies and the extended self).
Originality/value – We examine the lived fantasy experiences of AR experiential consumption. In addition, we reveal a novel understanding of the extended self as temporarily re-envisioned through the AR mirror.

Keywords: Augmented Reality Services, Experiential Consumption, Digital Extended Self, Possible Selves.

Paper type: Research paper

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1 Introduction

It is one thing to look at beauty bloggers or micro-celebrities applying makeup on their faces and quite another to try on different makeup options using a live mirror image of *self* through augmented reality (AR). Mirrors have long played a role in imagining ourselves, from Narcissus to Snow White to the Hall of Mirrors at Versailles (Pendergast, 2009). Recently, mirrors in retail service have been supplemented or replaced by Augmented Reality (AR), both in-store and via computer and mobile apps. AR is defined as a smart technology that can enhance the online service experience by mixing the digital world with the real world (Javornik, 2016a; Hilken *et al.,* 2018). Today AR integrated marketing and service strategies are thought to be vital for creating customer engagement (Buhalis *et al.,* 2019). The essence of experiential consumption envolves fantasies, feelings, fun, and memorable experiences for consumers (Hirschman and Holbrook, 1982; Pine and Gilmore, 1998). AR tools have been deployed across multiple service sectors such as furniture, apparel, jewelry, and makeup. Make-up AR tools and filters are among the most popular applications and are considered an "early technical success" (Deloitte, 2020). Consumers try out virtual products superimposed on their faces, bodies, and rooms. AR makeup tools are mainly accessed via mobile apps and social media filters. While real makeup is mostly regarded as an act of self-enhancement (Smith *et al.,* 2021), consumers use AR makeup to identify potential transformed selves (Javornik *et al.,* 2022). The AR mirror images from the makeup apps can represent an imagined version of the extended self (Belk, 1988, 2013; Schouten 1991).

Scholars have detailed the role of AR in several contexts, such as service experience (Hilken *et al.,* 2017), customer dining experience (Javornik, 2016b; Batat, 2021), and intimate self with makeup brands (Scholz and Duffy, 2018). The experience has been characterized as involving escapism (Liao and Humphreys, 2015) and imagination (Huang and Liu, 2014; Beck and Crié, 2018). However, despite the extant research in AR, the

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technology has not yet become a popular shopping medium (Liao, 2018; Qin *et al.,* 2021; Rauschnabel *et al.,* 2022). Several researchers have indicated the need for more in-depth explorations to understand the implications of consumer AR behaviors (Dacko, 2017; Chylinski *et al.,* 2020; de Ruyter *et al.,* 2020). Hence, this study attempts to understand AR experiential consumption and self-perception in the service context of AR-enabled virtual makeup. Our research is built on the recent work of Scholz and Duffy (2018) and Batat (2021) for two reasons. First, the two studies tackle AR experiential consumption. Second, Scholz and Duffy (2018) provide a good grounding to explore AR self in the makeup context. We address the following research questions: 1) What is the nature of consumer AR makeup experiences? 2) How do consumers experience their *possible selves* using an AR mirror?

We employed mixed qualitative methods by conducting thirty in-depth semi-structured interviews and a netnography in the UK and India. Emergent findings uncovered two main themes: 1) imagination and fantasy 2) the (in)authentic self. Participants felt that that the AR mirror can enhance their imaginations by allowing them to fantasize themselves as celebrities, to adopt a fantasy look, or to travel back in time. This normally led to an enjoyable lived fantasy experience. However, users also expressed concerns about the ability of AR mirrors to represent their imagined selves. They found the experience dehumanizing and preferred in-store makeup shopping and watching videos of celebrities and makeup influencers to gain a better sense of self-transformation and social acceptance.

2 Review of theory and literature

2.1 Service Consumption Experience

Today, providing memorable experiences is regarded as a key strategy for organizations vying for sustainable competitive advantage (Pine and Gilmore, 1998; Teixeira *et al.,* 2012). Service experience has recently emerged as a focal phenomenon in research and practice (Jaakkola *et al.,* 2015). Specific to the service context, Jaakkola *et al.* (2015, p. 186) define

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experience as "An actor's subjective response to or interpretation of the elements of the service, emerging during the process of purchase and/or use, or through imagination or memory." Further, according to the tenets of Service-Dominant Logic, service experience becomes the foundation of all businesses (Vargo and Lusch, 2008). Service experience has been conceptualized as a multifaceted process associated with experiential learning and an outcome of multiple situational factors (Helkkula, 2011).

According to Enrique Bigné *et al.* (2008), pleasure from the service experience is intrinsically connected to customer satisfaction and long-term loyalty. Hence, enjoyable hedonic experiences involving consumer interactions with objects, services, and contexts (Hirschman and Holbrook, 1982, Holbrook, 1999) lead to positive outcomes for both consumers and service providers. The experiential perspective highlights the relevance of fantasies, feelings, and fun in consumer behavior (Xu and Chan, 2010). Several scholars have explored consumption practices and the symbolic meanings accompanying various consumption experiences (Chaney *et al.,* 2018), including extraordinary experiences (Arnould and Price, 1993), risky leisure consumption experiences (Celsi *et al.,* 1993), nostalgic experiences (Schindler and Holbrook, 2003), passionate experiences (Belk *et al.,* 2003), ludic experiences (Seregina and Weijo, 2017), and painful experiences (Scott *et al.,* 2017).

Further, service providers have increasingly adopted digitization to provide technology-infused interactions and to enhance the overall service experience (Ha and Stoel, 2012; Holmqvist *et al.,* 2020). Studies indicate that in the case of many online shopping scenarios with self-enhancement products such as fashion, the hedonic component of experiences is becoming more vital for consumers (Ha and Stoel, 2012). Moreover, these consumption experiences are seen to offer avenues for the expression of consumer identities (Blazevic *et al.,* 2013). Such experiences allow consumers to engage virtually with the

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product and services across different stages of consumption. Digitally experienced possessions can become meaningful to the consumers within their interactions and engagement with Digital Virtual Consumption (Belk, 2013).

2.2 Augmented Reality and Service Experiences

Augmented Reality (AR) is a technology that facilitates the seamless layering of digital objects upon the real-world contexts, leading to a digitally enhanced perception of reality (Azuma, 1997), without detaching the consumers from their surroundings (Bonetti *et al.,* 2016). Consumers access AR through wearables (e.g., Microsoft HoloLens), handheld devices (e.g., mobile app-based makeup mirrors as shown in Figure 1), or fixed systems in the retail outlets. AR tools can be integrated at multiple points within customer journeys across online and offline touchpoints (Javornik, 2016a). Therefore, service providers are adopting AR as a part of their service strategies in order to enhance consumers' digital service experiences (Hilken *et al.,* 2017).

Insert Figure 1 here

In the online service scenario (e.g., online shopping), AR allows consumers to manage a virtual product with similar physical gestures to those they would use to handle the actual product, leading to a digitally embodied service experience (Hilken *et al.,* 2017; Rosa and Malter; 2003). For example, Sephora's AR app, allows consumers to try out virtual makeup via mobile apps, enabling novel service experiences. AR-based services assimilate the sensory feel of touch in the digital marketplace (Brynjolfsson *et al.,* 2013), which can be highly personalized and embedded in the environment (Chylinski *et al.,* 2020). Hence, AR offers the feeling of "presence," in which the consumer feels that the virtual object is 'actually there' (Hilken *et al.,* 2017). Marinova *et al.* (2017) argue that the inclusion of AR into the service strategy makes the online service experience more enjoyable and productive for the consumers. But to date there have been few studies that explore the actual AR

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consumption experiences. Hence, this study endeavors to explore actual AR consumption experiences by adopting the AR virtual try-on tools and the popular category of makeup.

2.3 Theoretical Foundation of AR and Self

AR beauty apps and filters influence consumers' self-concept through augmented (AR-generated) images (Javornik *et al.,* 2021; Scholz and Duffy, 2018). Consumers consider their augmented images to represent themselves, as a part of their extended selves (Belk, 1988; Scholz and Duffy, 2018). Explaining the concept of *extended self*, Belk (1988, p.139) contended that "knowingly or unknowingly, intentionally or unintentionally, we regard our possessions as parts of ourselves." He further theorized that an individual's extended self entails the mind, body, material belongings, family, friends, and environment. This conceptualization of extended self provides the foundation for exploring the role of possessions and consumption in developing, maintaining, and expressing the consumers' identity narratives (Ahuvia 2005; Bahl and Milne, 2010). Further, Belk (2013) adapted the tenets of extended self to the digitized world. As the digital era has transformed the way people live and present themselves to the external world, they develop a sense of attachment to the dematerialized and embodied possessions such as their online images, co-created with technology and peers. In the service context, as Caic, *et al.* (2018) elaborate, consumers perceive technology (e.g., a service robot) to be valuable when it merges with the extended self by truly enhancing the users' abilities.

Though the digital world has brought many changes, the unique affordances of AR tools reduce the frontiers between physical and virtual experiences. For instance, AR virtual try-on tools permit consumers to add digital wearable products (e.g., cosmetics, jewelry) to their live images and develop their *possible selves* (Huang, 2019). Consumer behavior studies have reckoned possible selves as a motivational factor for adoption and rejection consumption behaviors (Patrick *et al.,* 2002).

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According to Markus and Nurius (1986, p.954), "Possible selves represent individuals' ideas of what they might become, what they would like to become, and what they are afraid of becoming, and thus provide a conceptual link between cognition and motivation." Individuals' arsenal of possible selves represents the cognitive embodiment of their goals, desires, motives, concerns, and intimidations (Markus and Nurius, 1986). As outlined by James (1890/1950) earlier, though individuals may incorporate diverse possibilities into their self-concept, they will have to choose some of them and let go of others in the course of life (Lindemann, 2014). Consumers engage with their life futures and identities on a continuous basis through these possible selves. Hence, as the self is fluid and malleable, possible selves manifest and vanish based on specific life circumstances and motivate consumers towards specific actions (Cross and Markus, 1991; Oyserman and Fryberg, 2006). Erikson (2007) indicates that possible selves can vary from material to abstract contexts, for instance from imagining wearing a new pair of shoes to visualizing oneself as a good student (Belk, 2003). Familiar social contexts and other individuals with whom we interact significantly influence the formation of our possible selves (Oyserman and Fryberg, 2006). Schouten (1991) also explains that in transformative procedures such as plastic surgery, consumers engage in evaluating post-procedure possible selves, with the help of mirror images, mental conceptualizations, and other self-representations.

However, the digital space provides consumers with the canvas and the tools to create their personalized versions of their good selves, their wicked selves, their desired selves, their dreaded selves, their ideal selves, even their quirky selves (Jin, 2012). Thus, AR mirror functions as a lens with which consumers may explore themselves, and is closely aligned to the mirror metaphor of identity construction (Kavoori, 2011). Just as the actual mirror reflection is not exactly the person who looks into it due to the change in dimensions (three to two), image reversal, and lack of inner reflection, the AR mirror is also only a reflection of

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both possible and impossible selves. For consumers, the AR images allow visualizing their selves (aspirations, fears, dreams, and others) far beyond the reflected images (Marcengo *et al.,* 2014). AR mirrors contrast with Cooley's (1902) symbolic interactionist looking glass self. According to Cooley, individuals use other people as their mirrors and employ their judgments to ascertain how they appear to others and to modify their self-concepts accordingly. This social and judgmental context is largely absent in the private im(possible) selves generated via AR. The exception is when the person clicks a button to capture and send the AR image to someone else, thereby seeking approval and positive reinforcement more than sober judgments.

Earlier studies on consumers' possible selves involved selves generated in reference to individuals' past experiences and social contexts OR the selves generated via computer avatars (e.g., Jin, 2012). However, in the case of AR, the possible selves have higher fidelity self-reference and embodiment (Smink *et al.,* 2019), as the virtual objects are transposed to live self-images and their fantasy images oscillate between real possibilities and impossible forms. Although the dialectic between positive and negative possible selves (Banister and Hogg, 2003), or desirable and undesirable selves (Oysterman *et al.,* 2015), has been discussed in the past, the interplay between the possibilities and impossibilities and their interconnections to the self-concept in the context of 'AR mirroring' needs further exploration. Accordingly, this study focused on the experiences from the lens of a range of AR-generated possible selves. In this context, we also bring forth the role of AR virtual try-on tools, as a 'mirror' or a 'looking glass' reflecting consumers' possible selves.

3 Methodology

The main objective of this study was to capture the perspectives of experiential consumption and the self in the service context with an emphasis on AR makeup apps. To this end, we adopted depth interviews and netnography. The semi-structured in-depth

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interviews were conducted in the UK and India. This format is flexible and can facilitate fundamental inquiries or explorations (Abdulrazak and Quoquab, 2018). The participants were selected through purposive sampling to ensure that they had some experience with AR makeup apps. Qualification criteria included cosmetic usage and experience using AR makeup apps and filters. We conducted 30 semi-structured in-depth interviews with participants living in the UK (18) and India (12). Most participants are female except one male participant who is based in the UK and two leading practitioners in the AR service sector. UK participants included different nationalities living primarily in the UK and in some cases in Europe or India as well (see Table I for participant information). Consistent with the interview protocol suggested by (Belk *et al.,* 2013), participants were asked to describe moments related to experiential consumption (e.g., fun and fantasy) and their self-perceptions when looking in AR mirrors. To further enrich the discussion, the AR apps Makeup Genius, Perfect 365, and Artistry were used during the interviews. The interviews lasted between 45 minutes to 1 hour and 45 minutes. Due to pandemic-related restrictions, interviews were conducted via a mix of face-to-face, Zoom, and Skype.

Insert Table I here

For triangulation, in the second phase, the author in India conducted a netnography a few months before conducting the interviews to broaden the understanding of the research phenomenon. Further, based on the insights from the interviews, the netnographic approach was applied to further triangulate by analyzing consumers' AR based self-expressions in the digital space. Netnography is a technique for deciphering consumer behavior and experiences by examining internet communication in consumption communities using online data (Kozinets, 2002). In the past, service researchers have adopted netnography to understand the user experiences unobstructively (Zhao *et al.,* 2015). We followed the key steps: planning, entrée, data collection, analysis, and insight generation, based on ethical guidelines

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(Kozinets, 2002). We adopted a passive and unobstructed approach (Kozinets, 2010) by analyzing consumer reviews of AR apps and their social media posts about their AR experiences. To be consistent, we chose the same apps used in the interview discussion (Perfect 365 and Artistry) which were among the top 50 popular apps as rated by App Annie in 2020. For these apps, the authors collected and analyzed 342 customer reviews in the English language from December 2019 to December 2020 with a specific length of up to 50 words (Singh, 2019). Additionally, 153 Instagram posts in English from January 2019 and December 2020 were collected and analyzed. On all of the platforms the researchers created profiles that included the role and research interests (entrée). To find AR relevant posts, keywords were searched with the tags #arfilters, #arbeautyfilters, #perfect365, #perfect365app, #perfect365apps, #artistryapp, #artistryvirtualbeautyap, #artistryvirtualbeauty. In total, 495 online reviews and posts were collected and analyzed in the netnography phase. Only publicly available data was collated, and user permission was sought before using names and pictures, adhering to ethical guidelines. Table II below summarizes the different steps in methodology design.

Insert Table II here

Since the data were collected over different periods and in different countries, the data was analyzed separately among the first two authors. To develop the overarching themes, the two researchers coded and analyzed the data using open, axial, and selective coding (Strauss and Corbin, 1998) with the help of Nvivo software. First, the data was broken down into basic code, and then ideas were connected to each other to form categories. Finally, the categories were compared and contrasted to develop relevant themes. We were guided by theories of experiential consumption (Hirschman and Holbrook, 1982) and the extended self (Belk, 1988, 2013). But the connection to the theory of extended self emerged as a “puzzle” during the analysis stage. To further explore this puzzle involving both desired and feared

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selves, we used an abductive approach using the data and literature as suggested by Belk and Sobh (2019). We held meetings among the authors to reach an agreement on the findings and the narrative discussed in the following section.

4 Findings

We unearthed two major themes: consumer digital engagement with fantasy imagined selves and concerns about the inauthenticity of augmented selves. Table III summarizes the findings of the two themes.

Insert Table III here

4.1 Fantasy and Imagination

Consumers' AR experiences are formed by an amalgam of reality, virtuality, imagination, and fantasy. Our study reveals that consumers from both India and UK have a penchant for digitally exploring their fantasies and imaginations. On many occasions, consumers were more interested in digitally creating styles based on their fantasies than in understanding what products suited them best. Such experience is known as fantasy imagery (Hirschman and Holbrook, 1982) where consumers create fantasy images which do not stem from their prior experience. For instance, Merina describes how she uses AR to try out celebrity-inspired fantasy looks:

> "See I have these curls and I often drool on the African style box braids. Not so popular here, but I am a hardcore Rihanna fan too. Some of these apps have so many celebrity looks, from specific movies and shows and I keep trying them at random for fun. But this Rihanna one, I did a search and created the look. That was something which I really wanted." (Merina)

Merina had no intentions to try this look in the real world, but she was able to reconfigure the hair on her image online to become "Rihanna's Indian twin." These AR looks

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are not only limited to celebrities but can also include themes like devils and fairies as shown in Figure 2.

Insert Figure 2 here

Participants also explained how they revisited the styles from a different era with the help of AR mirrors, enacting a form of 'time travel.' Shaarika fondly elaborated on her mothers' AR experiences:

> "…She [her mom] searched and found the oldies... Mommy used to have the slick waves, then there was this puffed at the top style for weddings. We had a good retro travel." (Shaarika)

Shaarika's mom was referring to Sadhana who was a popular Bollywood actress in the 1960-1980 period. She popularized the 'Sadhana cut' hairstyle inspired by the Hollywood actress Audrey Hepburn. The Sadhana cut was quite popular among young adults of that era. Like Merina, Shaarika, and Shaarika's mother, many consumers were content to only engage with their imaginary/fantasy (i.e., creating fantasy imagery; see Hirschman and Holbrook, 1982) styles in the digital AR space without adopting them or trying them out in real life. That is, AR was seen by many as a fun place to visit, but it only sustained their fantasies online. They had reservations about adopting fantasy styles in real life and doubted their skills to apply the actual makeup products to achieve the digital look. Saakshi recounted having tried several makeup styles where shades of blue predominate:

> "After imagining so much, the only bluish makeup I had was blue eyeliner, blue bindi. [Why did I never buy anything?] I am also wondering now. I think I was afraid if reality will ruin my imagination... ha (laughs for a minute). If I try to apply all these [makeup looks] in real [life], I won't be this perfect." (Saakshi)

Overall, consistent with the premises of Service Dominant-Logic (SDL) (Vargo and Lusch, 2008), participants demonstrated that they play an active role in value co-creation of

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fantasies by searching for and creating fun looks (e.g., Rhianna's look). In addition, participants enjoyed living in their fantasy worlds, but when facing the reality, they expressed concerns about the authenticity of their augmented selves, our next major finding.

4.2 (In)Authentic-Self and Reality

Consumers feel authentic when seeing themselves in ways that seem to be consistent with their self-concepts (Sloan, 2007). When they perceive a discrepancy, they experience incongruence and inauthenticity (Burke, 1991). Experiencing their AR virtual images of themselves, many participants expressed concern over the inconsistencies with their realities. Apparently, it is one thing to envision yourself with a smaller nose (Schouten, 1991), and quite another to envision yourself with black lipstick or blue hair. This is evident in participants' resistance to AR makeup looks and their reactive desire for "real" makeup shopping experiences.

4.2.1 AR versus human experience

Disembodiment and re-embodiment are important to how we extended our version of selves in the digital world (Belk, 2013). In this study, participants felt that AR technology failed to either disembody or reembody their version of selves due to the complexity of the "real" human skin. For instance, AR does not respect or understand human skin, ethnicity, or feelings when applying color on skin, particularly with luxury makeup brands. Misun and Dea had tried the AR Magic Mirror inside Charlotte Tilbury makeup store in London. They both agreed that while lips can have different colors, some AR colors look exaggerated. They are both Asian, and Misun feels shy and uncomfortable trying exaggerated AR colors and looks (e.g., dark red) which are primarily designed for Western women. Similarly, Dea believes that colors are temperamental, and makeup must complement skin colors. For this reason, AR makeup cannot be trusted because AR colors are not real and can change the

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physical look of her face in a bad way, which negatively affects her mood. The two women explained:

> "…The color really matters…our lips already has different colors itself…So I really needed to try by myself … I have Asian face and all of them [women in UK] they're Western ladies…I don't see myself look like someone with really red cheeks, red lips, very exaggerated." (Misun)
>
> "…[The] colors are more temperamental…I might have a yellow (cast) on my skin and the color you use affects how it compliments your skin…looking at the iPad [means AR], it just looks like it painted a color on her face and it's not multidimensional." (Dea)

Belk (2013) explains the importance of the aggregate-self to extend the version of the digital self. Mario is a gay male who works as a makeup artist in London and wears makeup on a regular basis. He explains the aggregate-self of makeup as a process which starts by self-acceptance because makeup for women is self-transformative and an emotional and personal experience "…It's [makeup] like the action before the feeling…the first step of the day that you know It's going right or wrong [laughing]...It can be stressful as well if you're doing something outside of your comfort zone" Mario said. In addition, Mario also believes that AR does not respect human shape or color (e.g., lip perimeters and lips sizes), because trying the product in person is a different experience. For example, darker colors can make a facial feature look smaller, and if someone who has a thin lip wants to wear dark makeup, an AR app can make their lips look very large. For this reason, AR can be unrealistic and even "childish." Further, Mario placed emphasis on the importance of 1) multisensorial experience in consumption contexts (e.g., feeling, seeing, and touching); 2) the trust element in person-to-person human interaction versus the machine (i.e., AR); and 3) the broken emotions between AR and human. Mario's opinion extends Belk's (2013) view on the aggregate-self

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by showing the importance of human emotions and senses in co-constructing the AR self as he explains:

> "…It [AR] can't give you a real perspective of the product…I'm quite sure once they [consumers] try the real thing is probably going to look really different. It's not realistic enough and it's almost childlike. Certain jobs can't be done by a machine, like a doctor, of course, the makeup is not as important [laughing]. But I still think people will trust more a person rather than an app telling them what could work for them." (Mario)

Although Belk (2013) explains that consumers accept a certain leeway in their look in the digital sphere, participants rejected that leeway and felt embarrassed when they looked at themselves in AR makeup apps. Participants were not interested in creating an ideal, possible, inspirational, or alternative selves. One reason for this is the desire for "real embodiment" and the desire to look real instead of accepting AR makeup looks and suggestions. For example, when Sophie looked at herself through L'Oréal makeup AR app, she felt a mix of shame and surprise. On the one hand, she felt ashamed that the suggestive AR makeup did not look real, and it is not how the makeup will look in reality (e.g., it does not show how to properly apply blush on the cheeks). On the other hand, she felt surprised at such a look, and she started to laugh because she believed she looked like "a clown." Similarly, during Xintian's visit to the Charlotte Tilbury store in London, she felt completely ashamed of her AR look because the AR mirror made her look "stupid" by creating a "dead" look, and she described AR as "robotley" and fake. They add:

> "…You see [surprised tone] I wouldn't buy this lipstick…let's try the eyeliner [she is laughing] it is funny…the blush on the cheeks you would apply it in a lot more natural way and it will blend in your skin so it doesn't look like that. Here it sorts of look like a clown [laughing]." (Sophie)

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"…I dislike the Magic Mirror because the look is very dead, it is like a dead look, because you can see the contour overhead and it doesn't really blend in, you can see the very sharp line overhead and that's fake, that's not real…there is a difference between look and real product...I think the Magic Mirror is very "robotley" [fake]… This thing makes me so stupid." (Xintian)

4.2.2 Resisting AR reality and the desire for real experience

Digital devices can disembody and reembody our visual self-presentation online via videos, photos, and avatars where consumers accept the psycho-physiological changes of their looks (Belk, 2013). Although the use of an avatar can represent a different version of the self (e.g., ideal, possible, aspirational, and alternative selves), participants in this study resisted their AR extended selves. Unlike Belk's (2013) views on reembodiment, participants did not feel a sense of attachment to their avatar self, and did not experience an avatar proteus effect or multiple characters. In fact, our data shows a sense disconnection between skin, body, and eyes which we call "AR Disembodiment." For Natalia, the issues with AR disembodiment are the inconsistency of the makeup color and the shape of her lips. When one researcher opened the L'Oréal app with Natalia she expressed concerns about her lips size showing on the app and said she prefers to try the real product in-store "…I'll never buy things from L'Oréal [AR app] [laughing] until I go to the store and try on my skin…it's still not believable. Like you see my lips doesn't look like the AR app [referring to the L'Oréal app]." Similarly, Maria also expressed her love for in-store makeup shopping and described it as "Disneyland" as she continues:

"…I find it [in-store shopping] like Disneyland for me…I don't find it [AR makeup] trustworthy because every person skin is different, it will look different with the lighting. So, no, I wouldn't use it [AR makeup]. … Maybe you are using a very nice color that makes your eyes cry…makes your skin look very dry…you're too

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bright…it's something that you will not know in an iPad screen it's impossible to know… A painter will tell you the same…every same color can look totally different on your skin." (Maria)

As Maria explains, makeup is a complex tool that can simultaneously connect the body, skin, and eyes. Therefore, she was not convinced that she could trust AR for makeup because human skins are different, and the same color from two different brands will produce different looks. So, it is almost impossible to figure out the difference unless she tries the product in person. Learning the subtle differences is a skill both a painter and a makeup artist would understand. Another important element for Maria is whether a woman's body is allergic to certain chemical products; she usually tries to use the makeup for a couple of days to ensure no allergic reaction, which is impossible to know online.

4.2.3 Self-acceptance versus social acceptance

Here we see the interplay between the co-construction of self (Belk, 2013) and service co-creation (Vargo and Lusch, 2008). As online app reviews indicated, consumers resist AR attempts to suggest looks (i.e., construct their look) and expressed a desire for greater control over their look (i.e., co-creation of the look). One online review says "I have a distinct mole on my face and now every time I upload my picture, it automatically edits it out completely before applying the makeup!! I'd like to have to choose to color my face how I want to" (Online review from Google Play Store).

Unlike the importance of sharing to extend the version of self (Belk, 2013), we witnessed that participants did not share the images they created with just anyone. Although participants expressed enjoyment of their new AR looks, they also feared a lack of social acceptance, embarrassment, and shameful surprise. Their AR photos were shared "*privately*" with very close friends and relatives in some cases, and only a small fraction of pictures made it to social media channels. For instance, although Merina felt excited about her "different but

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beautiful" "glam glam" new AR look, it took her some time to accept and believe that she could look that beautiful. She did not want to share the picture with anyone, even though it was a "glam glam" picture. She managed to share it with her mom but did *not* dare to share it with her friends because they would think she is crazy:

> "…Took me some time to first digest that this glam glam girl is actually me ha ha…first shared the AR photos with mom, she was like what did you do to yourself!! Then she was like, ah this seems good…but the radically different ones, I don't share with anyone. They will think I am crazy." (Merina)

Here, we can see a different view of the aggregate-self (Belk, 2013). Merina accepts her AR image, but she feels unsure that her new image is so radically different. This can fall under the 'latitude of rejection' of her peers just as it falls in her own latitude of rejection in terms of social judgment theory (Sherif 1963). Hence, the images are most likely to be shared or adopted based on her perception of their acceptability or unacceptability to different people.

4.2.4 Makeup as a journey (reflexivity) and self-appreciation

Building on the idea that the consumer journey is self-reflexive in nature (Schau and Akaka, 2021), participants suggested that makeup is an emotional and reflexive self-appreciation journey. Dea believes makeup is an emotional experience which can empower how women feel about themselves, and mask their "ugliness" if the woman is experiencing a bad day that affects the state of their skin. Such feeling cannot be replaced by AR makeup, especially if the makeup is for a luxury brand. Consumers visit luxury makeup stores for the experience (i.e., enjoying the luxury product and interacting with the staff). Dea says:

> "…As women, we know what an emotional process it is to find the right makeup, it's a journey…it is a very emotional process [laughing]…I don't think AR will ever replace the emotional experience of buying luxury makeup like CT because you're

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investing so much money, you want to go you want to see the packaging, you want to sit down you want the sales[person] to be nice to you, it's the experience." (Dea)

Fernanda has constantly expressed her self-appreciation towards her "face" and how she and her face enjoy a strong intimate relationship. She values her face and how she looks and enjoys the feel of wearing makeup on her face inside the store and seeing the combined effects of products as she explains:

"…It's my face. I want it. I want to feel it. I want to try it [makeup products] on. I want to see the consistency…with something like makeup it's not something that I can trust any kind of virtual augmented anything for a decision like what I'm putting on my face." (Fernanda)

4.2.5 Authentic self and proxy-self

Belk (2013) discusses how the aggregate-self is used to co-construct the version of self. In this study, we found that when consumers search for makeup, they search for their authentic self via the proxy-self process. Proxy-self means watching people who do not necessarily share the same look, but rather share similarities in their look, body shape, and skin type. This is not only limited to watching celebrities, but it can also include photos of friends and different type of makeup influencers on different social media platforms. William is the founder of a renowned AR agency which created the magic mirror for Charlotte Tilbury. During the interview, he implicitly suggested the "heuristic customer journey" which is a concept that has emerged during his conversation with the head of digital at Coty makeup. Due to the rise of social media influencers and celebrities on social media, the consumer journey in cosmetics has become far more complex than just looking for makeup. The complexity of the journey lies in the fact that women might not be looking for makeup specifically but are instead flicking through photos of friends, influencers, or celebrities. So, in return, women might like the outfit of the person in the photo or a specific makeup look

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which will trigger the need to try or search for a similar item to the one they saw in the photo. This process might be called the search for a proxy-self, possible self as he explains:

> "…the ex-head of digital from Coti was saying that no one is going to buy a Max factor or *Cover Girl* lipstick, by going onto Google, typing in lipstick, finding the *Cover Girl* website, going onto the *Cover Girl* website, looking through various products, then buying a product. They're going to be flicking through Instagram. They're going to see an image that they like. It may be nothing to do with lipstick whatsoever…could just be a neighbor or a friend or Kim Kardashian coming out of a nightclub or just an image of someone, but you go, I really like that look, or I like what they're wearing, or I like that lipstick, you'll click on that. Go straight to a *Cover Girl* page where you can see the same type of products, try that on just as a kind of what do I look like? 'Yeah, I look quite good' or 'Well, no, I don't look good." (William, founder of AR agency)

Building on William's view, Dea explained how she searches for her proxy-self online before buying instore "…I would personally go online and say I need a red lipstick for Asian skin color see what other people have used blogger, reviewers, magazines, and then I would go to the store and try it on myself" Dea said. In addition, Natalia explained that when she buys makeup, she goes on Instagram first, checks bloggers' profiles, and reads reviews. In the meantime, she acknowledges her ambivalence and the discrepancy between the look of makeup influencers online versus *their* look in real life. However, her aim is not to look like one of the makeup online influencers, but instead, is to find a proxy for her real look coupled with positive word of mouth for the product from both influencers and followers. Even then, she will not necessarily buy the product but will buy something closer to her skin tone, which will suit her better. For this reason, she strongly believes that online influencers outperform AR technology as she explains:

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> "…I'm like Instagram addict so I believe in word of mouth. If three people I'm following talking this specific product, I then would want to go and buy it…that's why I'll never actually download an app to try it [AR app]. I think Instagram bloggers really outperform AR because it is easier than going through all these efforts of the L'Oréal app, VR, AR whatever, it doesn't really portray how it looks. It gives you the shape, it gives you the color, but everything is going to be different in real life." (Natalia)

In contrast to Natalia, Amina's attitude toward the use of AR is positive within her proxy-self search. Her attitude toward online color delusions is negative. She even finds trying real makeup on her hands to check the color is not helpful because her real undertone color does not show unless she puts the makeup on her face. Amina also relies on male and female makeup influencers when buying makeup products to compliment her AR trials. Like Natalia, Amina does not aspire to look like an online makeup influencer but rather wants to find a proxy for her face shade, skin color, and skin tone. For example, she follows a black woman makeup influencer (Jackie Aina) and a white British male makeup influencer (Robert Welsh) because they share similar oily skin, face shape, and proportions. She trusts these influencers' recommendations because she believes what works for their skin will work for her. She explains:

> "…I follow professional makeup like Jackie Aina. There is a man his name is Robert Welsh...I follow Robert because Robert and I have a very similar skin type, like some of the proportions of his face are dry so I also have dry bits there as well and my skin is oily as his so I know if that product works for him, it will probably work for me. Jackie as well got a very oily skin like me so I know that the products she is wearing will help me." (Amina)

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Overall, our findings show strong emotions when we are dealing with the self. Our body, face, and eyes are some of the most central features of the extended self (Belk 1987, 1988). When we change makeup, we change the self, and we are no longer the same person. In addition, the findings show that consumers are active in co-creating fun experiences with AR apps. However, consumers (in)authentic-selves show the importance of the co-creation gap between the service provider and consumer. Therefore, we urge putting consumers at the forefront of service co-creation as suggested by Vargo and Lusch (2008) to improve future AR experiences.

5 Discussion and Theoretical Contribution

Our research explores experiential consumption and the extended self in the context of AR for makeup, in response to recent calls for research on the experiential aspects of AR (Chylinski *et al.,* 2020; Hilken *et al.,* 2018; Javornik, 2016a) and the perception of self when using AR for makeup (Javornik *et al.,* 2021). We have introduced two main themes: imagination and fantasy; and (in)authentic self and reality. These two themes show that, as much as consumers enjoyed the virtual makeup try-on and considered it "fun," they also expressed major concerns about the authenticity of their selves generated through AR.

Other participants in recent AR research also emphasized the importance of imagination and fantasy when using AR technology (Dacko, 2017; Olsson *et al.,* 2013; Scholz and Duffy, 2018). Although we knew AR media are rich and enhance fantasies (Javornik, 2016), our findings provide an in-depth understanding of imagination and fantasy when using AR for makeup. For example, when participants tried celebrity makeup looks (e.g., Rihanna's look), they experienced a high level of imaginative fantasy, and to a certain extent, they believed they shared celebrities' looks. In other words, AR imagination created a sense of "a dream come true" which led to a strong desire to possess the celebrity's look. The concept of desire in consumer research means an intense feeling or passion for acquiring

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something (Belk *et al.,* 2003). Our participants disclosed their wishes to share celebrities' looks. Such feelings of pleasure are consistent with AR food experiences (Batat, 2021; Kozinets, *et al.,* 2017) when participants enjoy the multisensory and pleasurable affective experience in an AR restaurant setting. In addition, fantasy can also be extended to the travel back in time, triggering a sense of nostalgia (e.g., Shaarika and her mother). Other participants acknowledged that AR looks are fun and they also wanted to believe that these AR looks are real. That is, they wanted their lived fantasy experience (Thompson *et al.,* 1989) of the AR makeup look to become a reality. Overall, our findings for imagination and fantasy extend findings (e.g., Scholz and Duffy, 2018) and go beyond connecting the self to the image. They show a brand relationship that includes self-imagination of being celebrities, nostalgia for the past, and the desire for an extended fantasy experience.

The second theme of the (in)authentic self draws attention to an under-researched area in AR makeup: authenticity of self-representation. Our participants expressed concerns about the importance of human-to-human experience, inauthentic AR, and appetite for real in-store makeup experience. Christ-Brendemühl and Schaarschmidt (2021) compared AR to actual in-store trials and found that AR generates lower engagement. The in-store co-construction of a new self is only a start. The next step is social acceptance, which is an imagined constraint on possible selves. In this makeup-centered reflexive journey of self-appreciation, we ultimately face the looking glass of others' reactions (Cooley 1902).

Although prior research over the last decade shows that early adopters expect that AR technology is likely to play a key role in their everyday lives (Dacko, 2017; Liao and Humphreys, 2015; Olsson *et al.,* 2013), we show that AR technology is still underperforming. Participants in Scholz and Duffy's (2018) and Batat's (2021) studies hinted at potential areas of a clash between the inauthentic self and reality. For instance, Diana in Scholz and Duffy (2018) expressed concerns about her inauthentic look "this is so fake…it

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does not look realistic," whereas Maddison expressed a feeling of relief when using AR makeup at home because it can take away the pressure of how people will think of her. Similarly, one participant in Batat's (2021) study explained how her AR look in-store made her feel "…it made me feel sick, I was literally sick." These studies reported the feeling of inauthentic self as a matter of quality issues, but our study provides a deeper explanation of such feelings. Our participants expressed concerns about how AR can create a sense of broken emotions when using AR for holograms. Similar findings were portrayed in Batat's (2021) finding that AR sound and music experiences in a restaurant setting should enhance the interplay between guests and staff. Furthermore, Javornik *et al.* (2021) identified consumers' self-esteem, the importance of physical appearance, and self-awareness as important factors limiting acceptance of AR for makeup. Our study further elaborates on these factors and emphasizes the importance of human-to-human experience, social acceptance, and how makeup is a journey of self-appreciation. Our key insights contribute to understanding the reflexive consumption journey (Schau and Akaka, 2021) by showing that applying makeup in real life cannot be easily replaced by AR technology. Further, our findings agree with Denegri-Knott and Molesworth (2010), who found that AR apps can facilitate certain facets of actual consumer experiences. However, the unique affordances of AR (simultaneous reality and virtuality) and the try-on apps implicate the perception of self as the central point, much more than other forms of digital virtual consumption such as video games or digital Avatars.

Over two decades ago, Azuma *et al.* (2001) pointed out that one of AR's primary challenges is social acceptance. Our findings show that social acceptance is still a challenging issue for AR, but self-acceptance is also a challenging emergent area in AR. Although Belk (2013) anticipated that new technology could extend our version of self, our findings show that consumers resist extending their version of self for several reasons. First, consumers

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should be able to co-construct and share their version of self and their memories through the aggregate self and thereby seek affirmation (Belk, 2013). However, our findings show that participants are hesitant to share most of their AR makeup looks online because of their fears of social rejection and their very conscious perceptions of their look. Here, we also see the application of social judgment theory. Before sharing, consumers evaluate if the image will be within the latitude of acceptance or rejection not only for them but also for others. Even the pictures that the consumers like may not be shared with others. Second, as Belk (2013) empathizes, the co-construction of self requires an effort of collaborative-self-building. Our participants show that their acceptance of AR makeup looks is dependent on online makeup influencers as a "makeup glass" (Zhao, 2005). Furthermore, there is a cycle between online makeup influencers and offline store visits. Third, re-embodiment is an important element of the extended online self (Belk, 2013). However, our participants constantly expressed their preference for humanized experience and were not highly optimistic about the digital makeup experience becoming part of their reflective-self journey involving possible makeup-enhanced selves (Markus and Nurius 1986; Schau and Akaka, 2021). Nevertheless, they did enjoy some components, involving fun and imagination. Overall, despite recent research on AR and recent calls for further research (Chylinski *et al.,* 2020; de Ruyter *et al.,* 2020), we still know little about AR. It remains an innovation whose potential is difficult to achieve with current technology.

Based on the literature of consumer culture theory (CCT), and the service experience literature, our findings contribute to understanding experiential consumption (Bolton *et al.*, 2014; Hirschman and Holbrook, 1982) and the extended self in digital service contexts (Belk, 2013). This further supports the synthesis and alliance between CCT research and service-dominant logic (SDL) research (Vargo and Lusch, 2017). Further, we extend the recent AR work of Batat (2021) by showing the importance of the lived fantasy experience when using

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AR mirrors. We also show that AR images are perceived to connect to a potential self (Markus and Nurius, 1986; Scholz and Duffy, 2018), but they can also create a feeling of inauthenticity.

6 Managerial Implications

AR was described by the Ex-Chief Marketing Officer at the AR agency as "…crap…it is crap…it's crap." This expletive can shed light on the complexity of virtual makeup in the service sector and shows that as much as technology can enhance the service sector, it can also act as a negative disruptor for the consumer (Keating *et al.,* 2018). For a long time, managers have used AR solely as a sales tool (i.e., branding, inspiring, convincing, and keeping consumers) instead of adding value for consumers. In fact, AR implementation lacks strategic planning regarding consumer journeys over the long run (Rauschnabel *et al.,* 2022). As managers do not possess sufficient knowledge about AR and how to use it effectively (Rauschnabel *et al.,* 2022), the findings of this study can guide service providers to design efficient AR service experience in several ways. At the service level, the findings show the service design gap between the service provider (agencies and companies) and consumers. More specifically, there is a problem in the way AR service providers design and manage the gap between expected *and* the perceived service by consumers. Thus, we provide three different directions for service providers. First, it is important for the service providers to balance the fun factor while enabling a realistic service experience. Second, we urge service providers to involve consumers in the co-creation process of the AR service experience from the very beginning to facilitate the creation of more authentic AR self-images. Third, we draw attention to the need for inclusive technology features to cover individual differences which can cater for consumers with varying physical characteristics (e.g., Asian versus western women).

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In summary, we urge managers to 1) better plan AR service design; 2) understand the makeup consumption journey of the consumer-self; and 3) consider the expected versus perceived service experience.

7 Conclusion

Contrary to prior work, we found obstacles and challenges to cosmetic AR use in its perceived authenticity, color inaccuracy, and fear of social rejection. Despite the strong experiential role of AR, these challenges may reduce the impact of AR experiential aspects and limit AR success in the service sector. Our study attempted to explore access to possible selves through the tenets of experiential consumption and extended self. Possible selves are only tentatively cathected as part of extended self until 1) the proxy or AR self is experienced, preferably in-store, and 2) the newly tangibilized possible self is accepted by others. Thus, by authenticity of AR makeup look, our participants mean something closer to plausibility. They want the self that others know or a variant of that self that they will at least find to be a plausible facsimile, like the proxy selves they try to find in magazines and blogs. In this sense, they want their AR-inspired makeup-enhanced possible self to cohere with the authentic self (Belk 2013).

Jacques Lacan (1966/2006, pp. 75-81) maintains that in the "mirror stage" the infant sees a self-image in a mirror and misrecognizes it as being a whole ideal self rather than the actual floundering infant. According to Lacan, in this mirror stage (which is likely to be digital these days), the infant first realizes a unique self-identity apart from the mother. If the results of the mirror stage are largely positive for the child, we must conclude that, apart from play, in terms of self-concept and self-confidence, the Magic Makeup Mirror experience is largely negative. Like the infant in the mirror stage, our participants misrecognize their face in the mirror as an ideal independent authentic self. But there are two problems with this misrecognition as we have emphasized. First, the ideal image in the mirror is a fantasy that

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may be fun to play with but cannot be achieved in real life. Second, even if something like the image in the mirror could be achieved, they fear that their friends and relatives would not accept it as being an authentic self. It is a bridge too far, a look that they cannot pull off as being genuine. And going back to the earlier looking glass metaphor of Charles Cooley (1902), we find that friends, relatives, and colleagues are the real mirror with which we see ourselves.

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Figure 1. AR Makeup

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Figure 2. AR Makeup (Fantasy) Instagram Post

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Table I. Participants Information

No	Name (Pseudonym)	Age	Gender	Profession	Nationality/Country of Residence
1.	Amina	20	F	Student	British/UK
2.	Xintian	27	F	Student	Chinese/UK
3.	Misun	30	F	Student	Chinese/UK
4.	Mario	23	M	Sales Assistant	Italian/UK
5.	Maria	29	F	Investor Analyst	Spanish/Spain
6.	Fernanda	30	F	Performance Analyst	Portuguese/UK
7.	Natalia	29	F	Student	Russian/UK
8.	Antonella	27	F	Sales Representative	Italian/Ireland
9.	Dea	35	F	Events Manager	British/UK
10.	Sophie	20	F	Student	German/UK
11.	Fiona	33	F	Business Development Manager	British/UK
12.	Melanie	31	F	Work Coach	Italian/UK
13	Melissa	48	F	Student	British/UK
14.	Maryna	33	F	Student	Iranian/UK
15.	Laura	31	F	Teacher	Italian/Italy
16.	Sarah	35	F	Teacher	British/France
17.	William	50	M	Founder of AR Agency	British/UK
18.	Haci	55	M	Ex-CMO at AR Agency	British/UK
19.	Merina	21	F	Student	Indian/India
20.	Shaarika	24	F	Research Executive	Indian/India

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21.	Saakshi	26	F	Marketer	Indian/India
22.	Damini	19	F	Student	Indian/India
23.	Nadira	27	F	Engineer	Indian/India
24.	Sulakshana	19	F	Student	Indian/India
25.	Venya	21	F	Student	Indian/India
26.	Maryam	28	F	Research Executive	Indian/India
27.	Ananya	28	F	Home Maker	Indian/India
28.	Aneeta	21	F	Student	Indian/India
29.	Diya	30	F	Home Maker	Indian/India
30.	Sargam	24	F	Freelancer	Indian/India

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Table II Summary of Research Design and Data Collection

Method	Country	Period	Data volume	AR familiarity	AR makeup platforms
Interviews	UK	November 2019 – November 2020	18 interviews	Light to heavy	Makeup mirror at Charlotte Tilbury Makeup Genuius app by L'Oréal
Netnography	India	December 2019 – December 2020	495 reviews (Instagram and app store)	Light to heavy	Perfect 365 and Artistry
Interviews	India	June 2020 – April 2021	12 interviews	Light to heavy	Perfect 365 and Artistry

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Table III. Findings Summary

Theme	Code	Description	Example
Imagination and Fantasy	Magic Fantasy Memory Dream Illusion	Consumers describe how their AR images enhanced their fantasy and imagination	"…I got to try the box curls with Rihanna's entire mint-ish green look from that British award show. I really felt like Rihanna's Indian twin, dream come true really, though minus the music haha." "…Mom tells me about styles popular in 80s, that [had] Sadhana bangs and all. I got mom to try 80s looks and she was like wowieee.... so many past memories came up."
(In)Authentic Self and Reality	AR versus human experience	Strong desire for real human experience and the call for humanised AR	"…I don't think anybody in store would use it [the AR mirror] because if you're going to the store, you're already going there for the human interaction…that's definitely what is missing that human aspect…with makeup, with woman is so important. It's so emotional."

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			"…oh you see this is what I was talking about [in a funny laughing tone] oh my god, look I would never wear this [very surprised], it doesn't look real, does it look real? Do you think I will go out like this? [we are both laughing]."
	Resisting AR reality and the desire for real experience	In-store shopping experience is unique and difficult to replace using AR to achieve makeup consistency	"…I don't think I would use it no, no, I wouldn't use it. I'm sure I like buying Cosmetics… Cosmetics is something that I enjoy, I enjoy walking in and trying stuff." "…it's also not only how it looks to me it's also consistency of a product. For example, if it's a lipstick, there's different sort of lipsticks like a lip gloss mad lipstick. It's the consistency of the product that this app can't tell me what it is."
	Self-acceptance versus social acceptance	Resisiting AR suggestions and the fear of social rejection when sharing AR makeup photos	"what the hell ya doing every time by whitening my face. I am dusky and I wanna know what is

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			matching my face. Can someone be realistic here for God's sake!!!" "…I did not share the pics with anyone but saved them on my phone. I looked so different, though beautiful."
	Authentic-self and proxy-self	Online makeup influencers outperform AR where consumers seek a proxy-self in social media platforms and online reviews.	"…I said people on Instagram look like the same as they look in real life, it's not, so; it's the same with AR, it's doesn't look the same in the real life like it looks on the app. … I'm going to pick up the same color the influencer has, it's probably going to look different on me because we're all different." "…I usually go on YouTube…first see what it looks like on them [influencers] and then I'll go and try those specific colors on myself…Because someone might say oh, this is a very nice deep red, but my skin tone is different to theirs…I don't believe that it [AR]

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			takes into account your undertone, what your skin tone does, or the tone of your lips.”

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