

## RESEARCH ARTICLE



# Augmented reality filters on social media. Analyzing the drivers of playability based on uses and gratifications theory

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## Abstract

The arrival of augmented reality (AR) on social networks in the form of filters is generating new user experiences. Despite their potential as interactive marketing tools, previous research analyzing the impact of AR filters has focused mainly on shopping-based or personal-based variables. Conceiving AR filters to be entertainment products, this research follows the theory of uses and gratifications to examine the playability of AR filters, that is, the satisfaction that users derive from the experience and their making of electronic word-of-mouth recommendations. The results of two studies combining quantitative and qualitative techniques showed the key role played by perceived entertainment and, to a lesser extent, perceived interactivity, in the playability of AR filters. Perceived curiosity and compatibility also affected users' satisfaction. The findings contribute to the literature on AR filters by analyzing users' experiences from an entertainment perspective, examining a comprehensive set of hedonic, utilitarian, social and personal uses and gratifications that users might derive when interact with AR filters on social media. Practitioners should incorporate appropriate features when designing the filters so that users obtain fun and entertaining experiences, interact with others, and get fresh content. All these may foster the consumer's storytelling through images.

## KEYWORDS

AR filters, augmented reality, electronic word-of-mouth, gratifications, playability, satisfaction, social media

## 1 | INTRODUCTION

The augmented reality (AR) marketing landscape is evolving at a rapid pace (Chylinski et al., 2020; Dwivedi et al., 2021). The last decade has witnessed the emergence of hardware and software innovations that give AR the potential to disrupt the market and become a mass-market technology (Rauschnabel, 2021). Brands and social media are increasingly investing in AR-based marketing tools (Rauschnabel et al., 2019), and this investment is expected to grow at an average

annual rate of 43.8% from 2021 to 2028 (Grand View Research, 2021). In this context, brands are struggling to create new and engaging content with this technology. In fact, the lack of appealing content and satisfactory experiences, rather than the costs, appear to be the main barriers to mass adoption of immersive technologies (Deloitte, 2021; Statista, 2021). Thus, there is a need to better understand what drives users to interact with AR technologies to design effective experiences that engage consumers and help build customer-brand connections (Scholz & Smith, 2016).

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Augmented reality “filters” (or “lenses”; AR filters henceforth), are digitally based responsive interactions applied to the user's face or surroundings to extend or change what is being viewed in the actual environment (Rios et al., 2018). AR filters are increasingly implemented by brands and social networks (SNs) to sensory enrich and offer novel user experiences (Cowan et al., 2021). Previous research has focused mainly on examining AR filters as shopping tools (Hilken et al., 2017, 2021; Javornik, 2016a; Mishra et al., 2021; Scholz & Duffy, 2018; Smink et al., 2019). However, AR filters can have purposes beyond shopping. Specifically, users can open their smartphone's camera and choose an AR filter to graphically convert themselves into a Disney character ([bit.ly/30AJXOZ](https://bit.ly/30AJXOZ)) or a White Walker from Game of Thrones ([bit.ly/2OGbUCn](https://bit.ly/2OGbUCn)). This “toy” feature of AR filters (Deloitte, 2021) can be a powerful marketing tool. Brands and SNs can use AR filters to create new connections with consumers and foster consumer storytelling through images, which can trigger engagement and positive electronic word-of-mouth (eWOM) (Farace et al., 2017). A recent report by Deloitte (2021) suggested that 2.2 billion people will be frequent AR users on social media by 2022, and more than 4.5 billion AR photos and/or videos are taken daily by Snapchat users, which stresses the potential of AR filters as a communications and engagement tool.

Despite the growing use of AR filters on social media and their potential as marketing communication tools, there is a dearth of research into their users' perceptions and experiences with the technology (Dodoo & Youn, 2021). Conceiving AR filters as entertainment products, this research adopts uses and gratifications theory (Katz et al., 1973) to explore the utilitarian, hedonic, social and personal benefits (Nambisan & Baron, 2009; Verhagen et al., 2015) that users obtain when using AR filters on social media and that drive their perceptions of playability. Hennig-Thurau and Houston (2019) have defined playability as the user's satisfaction with an experience and his/her subsequent recommendation to others. Thus, the present study aims to understand the determinants of users' experiences with AR filters that lead to satisfaction and positive eWOM recommendations.

The findings contribute to the literature in several ways. First, this study shows that AR filters can be used for entertainment, which differs from previous conceptualizations as shopping or beautification tools, and stresses their importance as marketing tools for social media and brands. Second, the examination of playability, a novel concept borrowed from the entertainment science literature, can be useful for researchers and practitioners to evaluate the effects of users' actions with entertainment-based products such as AR filters. Third, the results from two empirical studies, combining quantitative and qualitative techniques, show that users employ AR filters mainly for hedonic purposes. Perceived entertainment is the main driver of the playability of AR filters. Perceived interactivity (a social gratification) also has an influence. In addition, perceived curiosity (utilitarian gratification) and compatibility (personal gratification) have an influence on the user's satisfaction with AR filters. These results help to explain why users interact with AR filters on social media and provide practical implications for the design of user experiences with

these tools. Furthermore, this research responds to the call for studies that analyze real behaviors instead of behavioral intentions (e.g., Rauschendorfer et al., 2021). The studies confirm the relationship between satisfaction with AR filters and eWOM recommendation, assessed through both self-reported measures and real behaviors.

## 2 | THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

### 2.1 | Entertainment-based AR filters

AR filters are incorporated into AR, a technology in which physical surroundings are modified by overlaying digital elements onto actual environments (Dwivedi et al., 2021; Javornik, 2016b). This virtual layer is interposed between the real environment and the user and adds different types of information (e.g., textual, visual) to the scene the user is viewing (Flavián et al., 2019). AR technologies offer valuable experiences in terms of engagement (e.g., Heller et al., 2021), imagination processes (e.g., Orús et al., 2021) and augmentation (e.g., Hilken et al., 2017).

Previous research into AR filters has focused on the study of AR-based tools used for shopping purposes (Cervantes & Franco, 2020; Hilken et al., 2017; Javornik, 2016a; Scholz & Duffy, 2018; Smink et al., 2019); these display digital versions of products (e.g., make-up, sunglasses, clothing) superimposed on parts of consumers' bodies to facilitate their purchasing decisions. The adoption of these technologies is determined by their users' perceptions of their usefulness (e.g., Gatter et al., 2021), enjoyment (e.g., Smink et al., 2019) and personal factors (e.g., Heller et al., 2019).

However, unlike these other AR tools, this research conceptualizes AR filters as entertainment products, whose main function is to amuse users through the experiences they provide (Dodoo & Youn, 2021). Table 1 shows the results of a literature review of studies which have analyzed the use of AR filters with nonspecific shopping purposes. This review reveals that previous research on AR filters has been exploratory in nature (Rios et al., 2018; Scholz & Duffy, 2018), has adopted a narrow focus (branded filters on Snapchat; Dodoo & Youn, 2021; Phua & Kim, 2018) and has analyzed personal issues related to privacy concerns and self-based variables (Cowan et al., 2021; Javornik et al., 2021). Other studies have investigated the characteristics of the AR filters that affect social media users' behavioral intentions (Farace et al., 2017; Flavián et al., 2021a). Thus, further research is needed to understand the determinants of users' experiences with AR filters on social media that generate positive outcomes for them, social media and brands.

Previous research has shown that consumers use AR filters in purely hedonic and playful situations, with no shopping goals in mind (Rauschnabel, 2021; Scholz & Duffy, 2018). In fact, obtaining joy or fun are among the top reasons for using AR filters, and many social media users state that AR filters generate entertainment value (Deloitte, 2021). McLean and Wilson (2019) also showed that almost 50% of mobile AR app users do not use them for specific tasks, for

TABLE 1 Literature review on the use AR filters with a nonspecific shopping purpose

Authors	Context	Purpose and theoretical approach	Methods	Dependent variable/s	Key findings
Farace et al. (2017)	AR filters applied on selfies	Examines how the characteristics of photos posted on social media affect the likelihood of users commenting on them.	Three experiments.	Likelihood of commenting on the photo	Selfies (vs. eiesies) portraying directed actions increase likelihood of commenting. This effect is explained by narrative transportation.
	(selfie lenses)	Visual semiotics.	Content analysis of consumer photos.		Parody-style photos (using selfie lenses) are perceived as less spontaneous and sillier than snapshots, which affects the likelihood of users commenting on the photo.
		eWOM.			
Phua and Kim (2018)	AR advertising filters	Analyzes the effects of AR advertising on users' responses toward the ad and the brand.	Online questionnaire with Snapchat's branded geofilter lens.	Brand attitude	Direct effects of self-brand congruity, self-referencing
	(geofilter ads)	Self-brand congruity.		Purchase intention	and the perceived humor of self-endorsed geofilters on brand attitude and purchase intention.
		Self-referencing.			Perceived humor has a stronger influence on attitude than self-brand congruity. Purchase intention increases when high levels of humor and self-referencing are combined in the ad.
		Humor in advertising.			
Rios et al. (2018)	AR face filters on social media (face lenses)	Explores the drivers of social media users' choice of AR face filter.	In-depth interviews with Snapchat users	Choice of AR face filter	Having a goal in mind (e.g., making friends laugh), wanting to project aspects of one's personality and a scroll-first mindset determine the user's choice of filters.
Scholz and Duffy (2018)	AR make-up try-on	Analyzes the impact of AR-based applications on customer-brand relationships beyond commercial or transactional purposes.	Ethnographic study with users of an AR make-up app	Consumer's intimate self-brand connection	Goes beyond the shopping functionality benefits of the AR app: it constitutes a hedonic space of inspiration and ideation, which fosters creativity. The AR filters of the app create a user experience that is focused on relaxation, play and entertainment.
		Customer experience.		Consumer-brand relationships	
Cowan et al. (2021)	AR face filters on social media	Analyzes AR users' privacy concerns about sharing personal (biometric) data when using AR filters on social media.	Online survey and online experiment with users of AR face filters	Intention to use	AR face filters on social media raise privacy concerns, which affect behavioral intentions through usefulness and flow. The effects are stronger when the user perceives a concrete (vs. abstract) privacy policy, but they only emerge when using highly hedonic filters.

(Continues)

TABLE 1 (Continued)

Authors	Context	Purpose and theoretical approach	Methods	Dependent variable/s	Key findings
		Privacy paradox.		Intention to carry out word-of-mouth	
		Construal level theory.			
Dodoo and Youn (2021)	AR advertising filters (ad lenses)	Analyzes consumers' motivations for engaging with AR advertising filters and their effects on attitudes, social media engagement and purchase motivation.	Two online questionnaires with Snapchat users	Attitude toward AR ad lens	Content-based motivations (entertainment, aesthetics, uniqueness) and individual characteristic-based motivations (brand fan, curiosity) have a positive effect on attitude toward the face filter, which affects engagement and purchase motivation.
		Uses and gratifications.		Ad engagement	
		Social media advertising engagement.		Purchase motivation	
Flavián et al. (2021a)	AR face filters on social media	Explores how the characteristics of AR filters affect the user's experiences and behavioral intentions.	Online questionnaire with social media users	Intentions to use social networks	Perceived originality, aesthetic quality and interactivity have a positive influence on usefulness and enjoyment of AR face filters. Intentions toward the brand are driven by utilitarian factors, whereas intentions toward the social network are determined by hedonic factors.
		Process theory.		Intentions toward brands	
Javornik et al. (2021)	AR mirrors (virtual make-up try-on)	Tests whether AR mirrors affect the gap between the consumer's ideal and actual self, and its potential downstream effects on self-related concepts (e.g., self-congruence) and consumption responses (e.g., variety seeking, choice confidence)	Three lab experiments and online survey	Variety seeking	AR mirrors increase the ideal-actual gap for high appearance self-esteem individuals. For these consumers, AR mirrors reduce variety-seeking, choice confidence, and mental well-being, due to lack of self-congruence.
		Self-concept.		Self-compassion	When an augmented image is casually displayed, the ideal-actual gap diminishes for low appearance self-esteem individuals.
		Augmented self.		Product choice confidence	
		Self-esteem.			
<b>This study</b>	AR filters on social media	Analyzes the utilitarian, hedonic, social and personal gratifications that users obtain when using AR filters on social media and	Two online surveys and two focus groups with users of AR filters on social media	Satisfaction with AR filter experiences	Perceived entertainment is the main driver of satisfaction with AR filters and eWOM recommendation. Perceived interactivity also

TABLE 1 (Continued)

Authors	Context	Purpose and theoretical approach	Methods	Dependent variable/s	Key findings
		their subsequent effects on perceptions of playability			affects these variables. Utilitarian (curiosity) and personal (compatibility) gratifications affect users' satisfaction.
		Uses and gratifications.		eWOM recommendation (intentions and actual behaviors)	
		Satisfaction.			
		eWOM.			

Abbreviations: AR, augmented reality; eWOM, electronic word-of-mouth.

Source: Own elaboration.

example, shopping, but for fun. In addition, AR filters differ from beauty virtual try-ons, which enhance the user's appearance by superimposing layers over his/her face and affect the self-appearance (Cowan et al., 2021; Javornik et al., 2021). Thus, the hedonic nature of AR filters profoundly differentiates them from AR filters employed for shopping or personal purposes. This research proposes that AR filters can generate playful experiences on social media.

Following this notion, it is important to consider the playability provided by entertainment products (Elberse & Eliashberg, 2003). Playability arises when consumers, after using an entertainment product, feel satisfied with the experience and, as a result, are inspired to communicate their satisfaction to others (Hennig-Thurau & Houston, 2019). Satisfaction is a psychological state resulting from the consumer's assessment that the outcomes derived from using a product are superior to his/her expectations (Oliver, 1980). If users are satisfied with the AR filters they use on social media, they will be more prone to cascade positive information through eWOM (Hennig-Thurau & Houston, 2019). eWOM is "any positive or negative statement made by potential, actual or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thurau et al., 2004; p. 39). The proliferation of eWOM through social media platforms is a key source of information for users (Al-Natour & Turetken, 2020; Ismagilova et al., 2020; Zhou et al., 2021). Thus, it is paramount to analyze the drivers that lead users to transmit eWOM (Corradini et al., 2021; Ismagilova et al., 2020). In this research context, when users provide positive feedback after their experiences with AR filters, other users may be more inclined to use these entertainment products, turning playability into a determining factor for the effective design and management of AR filters.

Thus, AR filters as entertainment-based products can be employed to enrich and generate fresh experiences on SNs (Cowan et al., 2021), and previous literature has noted their potential as communications and engagement tools (Farace et al., 2017). Despite these positive expectations, there is a need to adopt a comprehensive approach to understand how AR filters create playable experiences. Specifically, this research adopts uses and gratifications theory (Katz et al., 1973) to analyze the determinant factors that influence the playability of AR filters on social media.

## 2.2 | Determinants of the playability of AR filter experiences: Uses and gratifications

The theory of uses and gratifications emerged to understand why people engage in various forms of media-related behaviors (e.g., listening to the radio, watching TV; Katz et al., 1973; Ruggiero, 2000). With the advent of the Internet and SNs, several authors have employed the theory to analyze the drivers of online consumer behavior (e.g., Ko et al., 2005; McLean et al., 2021; Saridakis et al., 2016; Whiting & Williams, 2013). More recently, the theory has helped to understand individuals' adoption of, and behaviors with, cutting-edge technologies, for example, artificial intelligence (Lee & Cho, 2020),

virtual reality (Kim et al., 2020) and AR (Rauschnabel, 2018). Given their novelty, and the entertainment-related aspects of AR filters, the theory of uses and gratifications is a suitable framework to analyze SN users' experiences of these tools (Cowan et al., 2021).

Uses and gratifications theory proposes that users take an active role in the consumption of media based on their needs and motivations, rather than being passive receivers of the messages transmitted; that is, consumers choose the media they want to consume (Claffey & Brady, 2017; Katz et al., 1973; Lee & Cho, 2020). This view is consistent with the role that users play online, where they are not simply passive receivers of marketing messages; instead, they play active roles by selecting the information/content they wish to process (Flavián et al., 2010). Therefore, social media users are motivated to use AR filters to fulfill unsatisfied needs and obtain related gratifications (Rauschnabel, 2018). This research examines the gratifications that users obtain when using AR filters, and how these gratifications impact on AR filters' playability (i.e., satisfaction and eWOM recommendation).

Consistent with previous studies that have applied uses and gratifications theory to social media (Claffey & Brady, 2017; Saridakis et al., 2016), entertainment (Li et al., 2015; Ruggiero, 2000) and AR contexts (McLean & Wilson, 2019; Rauschnabel et al., 2017), this research analyzes the hedonic, utilitarian and social gratifications that users derive from interacting with AR filters (Cowan et al., 2021).

Hedonic gratifications are operationalized by means of perceived entertainment. In the context of AR filters being defined as entertainment products, perceived entertainment may be the main determinant of the users' experiences with these tools (Dodoo & Youn, 2021). Perceived entertainment is the extent to which users feel fun and pleasure while using a system (van der Heijden, 2004). This dimension is key in the development of customers' experiences with entertainment products (e.g., Hennig-Thurau & Houston, 2019), social networks (e.g., Basak & Calisir, 2015) and AR technologies (e.g., Rauschnabel, 2018). Specifically, when users' needs for fun and pleasure are met through their SN interactions, their levels of satisfaction with technological experiences increase (Basak & Calisir, 2015; Casaló et al., 2017). As users are looking for entertainment during their interactions with technologies (Saridakis et al., 2016; Whiting & Williams, 2013), they can become satisfied through obtaining fun and enjoyment in their experiences with AR filters. Therefore:

H<sub>1a</sub>: The perceived entertainment of augmented reality filters positively influences their users' experience satisfaction.

In addition, when entertained, users are prone to recommend their technology-based experiences (Cheung & Lee, 2012). On SNs, users recommend their experiences when they find them enjoyable, so that others can feel the same sensations (Casaló et al., 2017). As AR filters generate entertaining experiences, users may be especially motivated to recommend them with the aim of having fun with others. These other people, in turn, may share the filters to amuse others, provoking a snowball effect (Rios et al., 2018). Therefore, due to the hedonic nature of AR filters, entertainment may play a prominent role in users' experiences

(Dodoo & Youn, 2021), and may strongly determine their eWOM recommendation:

H<sub>1b</sub>: The perceived entertainment of augmented reality filters positively influences their users' eWOM recommendation.

Every entertainment product has a utilitarian component (Hennig-Thurau & Houston, 2019). In this research, we follow previous literature that has examined perceived convenience in the adoption of technologies (e.g., Ko et al., 2005; Rauschnabel, 2018). Perceived convenience has been defined as the extent to which users assess whether a technology allows them to accomplish their intended actions in a simple and intuitive way (Ko et al., 2005; Whiting & Williams, 2013). Functionality and convenience have been found to be key reasons to use mobile applications and AR technologies (Rauschnabel, 2018; Scholz & Duffy, 2018). AR filters work in a simple way: the user opens the camera on the social network and digital elements, that is, AR filters, are superimposed on his/her face or surroundings. When they can perform the actions they want, easily and conveniently, consumers develop feelings of satisfaction with these technology-based experiences (Choi et al., 2016). Thus:

H<sub>2a</sub>: The perceived convenience of augmented reality filters positively influences their users' experience satisfaction.

Furthermore, users will recommend a technology if they perceive it will help them achieve their goals in a simple way (Ozturk et al., 2016). Being able effortlessly to perform actions with a technology is essential for the success of its adoption (Ko et al., 2005). In this sense, previous research has shown that the convenience of AR technologies determines users' subsequent behavioral intentions (Chung et al., 2015). This perception can facilitate the user's desire to recommend technology-based experiences to others (Ozturk et al., 2016). Thus, we expect that the perceived convenience that users derive from using AR filters increases their eWOM recommendations:

H<sub>2b</sub>: The perceived convenience of augmented reality filters positively influences their users' eWOM recommendation.

Finally, given the social nature of AR filters, we examine whether perceived interactivity is a social gratification that affects the playability of AR filters. Previous literature has emphasized the potential of AR tools for fostering communication processes among SN users (Farace et al., 2017). Interactivity is the user's ability to stay connected and interact with others through technologies (Ko et al., 2005; Whiting & Williams, 2013). Technologies support their users in fulfilling their socialization needs (Rauschnabel, 2018). In particular, perceived interactivity can be crucial for enhancing the satisfaction of the user during technology-based experiences by facilitating communication processes (Chu & Kim, 2011). As a key aim of SNs is to foster interactions between their members (Kwon & Wen, 2010), perceived interactivity may be a strong determinant of users' satisfaction with AR filters. Thus:

H<sub>3a</sub>: The perceived interactivity of augmented reality filters positively influences their users' experience satisfaction.

Furthermore, technologies (e.g., AR filters) that support their users' communication processes are more likely to be recommended to others (Dodoo & Youn, 2021). Interactivity is the basic mechanism through which users recommend experiences to others (Chu & Kim,

2011). The interactive nature of digital media is an important factor that helps consumers provide information about their experiences (Chu & Kim, 2018). AR-based technologies provide users with advanced opportunities for transmitting eWOM (Chu & Kim, 2018), and its interactivity is key in this kind of action (Dodoo & Youn, 2021). Therefore, we propose that the perceived interactivity that users identify when using AR filters leads to eWOM recommendations:

H3b: The perceived interactivity of augmented reality filters positively influences their users' eWOM recommendation.

Finally, based on the concept of playability, we expect a positive relationship between satisfaction and eWOM recommendation (Hennig-Thurau & Houston, 2019). Satisfied users will be more willing to recommend their experiences. According to a recent meta-analysis (Ismagilova et al., 2020), satisfaction is one of the main antecedents of eWOM. Customers feel motivated to recommend their positive experiences when their expectations are exceeded (Jones & Reynolds, 2006). In the context of AR technologies, Jung et al. (2015) noted that users' satisfaction with their experiences fostered their willingness to recommend the technologies to others. This effect has been found also with SNs (Ballester et al., 2021; Casaló et al., 2021; Javornik et al., 2020). Therefore, users' satisfaction with their AR filter experiences will encourage them to recommend these tools to others:

H<sub>4</sub>: The satisfaction users obtain from using augmented reality filters positively influences their eWOM recommendation.

### 3 | OVERVIEW OF STUDIES

This research consists of two studies combining quantitative and qualitative techniques. First, we conducted an online questionnaire with a representative sample of social media users based in Europe. The users had to have had previous experiences of AR filters to answer the questionnaire. Based on previous literature, we explored specific hedonic (i.e., entertainment), utilitarian (i.e., convenience) and social (i.e., interactivity) gratifications and the effect of these gratifications on the playability of AR filters (i.e., satisfaction and eWOM recommendation intention).

We conducted a follow-up study to analyze the results of the first study. We carried out two online focus groups with young social media users. This analysis allows us to better understand the drivers of users' experiences with AR filters and broaden the spectrum of gratifications that they obtain from the interactions. Specifically, this qualitative study identified other hedonic (i.e., perceived escapism and passing time), utilitarian (i.e., perceived curiosity), social (i.e., sense of belonging) and personal gratifications (i.e., trendiness and compatibility) that may influence the user's SN-based experience with AR filters.

Taking into account the results of the studies, we conducted a scenario-based online survey. This study analyzed the impact of all the previously identified gratifications (hedonic, utilitarian, social and personal) on satisfaction and eWOM recommendation. The participants were required to have had actual experience of AR filters to

answer the questionnaire. In addition, they were able to actually recommend their experiences, which allowed us to obtain an eWOM recommendation measure based on real actions.

## 4 | STUDY 1

### 4.1 | Methodology of Study 1

We collected data from an online questionnaire conducted by a market research company. Participants were users of social media-based AR filters. First, we aimed to obtain a representative sample of European-based social media users (Datareportal, 2020). To do so, we followed a quota-based sampling procedure (Malhotra & Birks, 2007) in terms of gender, age, frequency of use of social media and number of SN profiles. The initial sample consisted of 914 participants. The questionnaire explained the AR filter concept in some detail, providing visual examples and clarifying its defining characteristics. The participants were then screened to remove those who had never used AR filters. The final valid sample consisted of 765 respondents. The participants were mostly women (58.7%), under 34 years (78%), and had undertaken higher education studies (68.2%); they reported they went on SNs between 1 and 4 h a day (72.1%) and had, on average, close to three social media profiles ( $M = 2.96$ ,  $SD = 0.93$ ). Finally, most of the participants explained that they used AR filters at least once a month (56.5%).

The questionnaire asked the participants about their experiences with AR filters. Specifically, in terms of gratifications, questions covered perceived entertainment (van der Heijden, 2004), convenience (Ko et al., 2005) and interactivity (Kwon & Wen, 2010; Rauschnabel, 2018). In terms of playability, questions were asked about satisfaction (Chi & Gursoy, 2009; Jung et al., 2015) and eWOM recommendation intention (Casaló et al., 2017). The appendix shows the measurement instruments, all based on previously validated scales. The study used 7-point Likert-type scales (1 = "strongly disagree", 7 = "strongly agree").

### 4.2 | Analysis and discussion of Study 1

We employed SmartPLS 3.3.3 (Ringle et al., 2015) software to conduct the analysis. We assessed the measurement model through an examination of the reliability and validity of the scales (Table 2). To verify reliability, we checked that all the loadings of the construct items were higher than the recommended value of 0.7 (Henseler et al., 2009). Items which did not meet this criterion were removed from the analysis. In addition, we tested construct reliability by corroborating that the composite reliabilities of the constructs were higher than the recommended value of 0.65 (Steenkamp & Geyskens, 2006) and that the Cronbach's alphas exceeded the cut-off of 0.7 (Bagozzi & Yi, 1988), proving internal consistency. To confirm convergent validity, we verified that the values of the average variances extracted (AVE) were higher than the benchmark of 0.5 (Fornell &

**TABLE 2** Descriptive data, reliability, and validity (Study 1)

Variable	Mean (SD)	Item load. range	CR	$\alpha$	AVE	(1)	(2)	(3)	(4)	(5)
Convenience (1)	5.880 (1.234)	0.748–0.943	0.889	0.889	0.729	<b>0.854</b>	0.462	0.167	0.327	0.264
Entertainment (2)	5.009 (1.402)	0.852–0.899	0.926	0.925	0.755	0.462	<b>0.869</b>	0.463	0.782	0.675
Interactivity (3)	3.186 (1.558)	0.803–0.893	0.902	0.902	0.697	0.167	0.463	<b>0.835</b>	0.529	0.586
Satisfaction (4)	4.279 (1.378)	0.813–0.902	0.916	0.917	0.734	0.327	0.782	0.529	<b>0.857</b>	0.725
eWOM recomm. Int. (5)	3.743 (1.716)	0.854–0.926	0.919	0.919	0.791	0.264	0.675	0.586	0.725	<b>0.890</b>

Note:  $\alpha$  = Cronbach's alpha. The bold numbers on the diagonal show the square roots of the AVEs. Construct correlations are shown below the diagonal, while numbers above the diagonal represent the HTMT ratios.

Abbreviations: AVE, average variance extracted; CR, composite reliability; HTMT, heterotrait-monotrait.

Larcker, 1981). Finally, we tested discriminant validity by confirming that the values of the square roots of the AVEs were higher than the inter-construct correlations (Fornell & Larcker, 1981), and that the values of the heterotrait-monotrait (HTMT) ratios (Henseler et al., 2015) were lower than 0.90 (Gold et al., 2001).

Following this validation of the measurement instruments, we estimated the main effects proposed in  $H_{1-4}$  using a bootstrap analysis with 5000 iterations (Ringle et al., 2015). Figure 1 displays the results. First, perceived entertainment positively affected satisfaction with AR filter experiences and eWOM recommendation intention (support for  $H_1$ ). In fact, entertainment had the strongest impact on users' satisfaction with their experiences with AR filters, and it also had an important influence on eWOM recommendation intentions. These results highlight the hedonic nature of AR filters, as obtaining enjoyable experiences was the main determinant of their playability. Users were more satisfied with their experiences with AR filters, and more willing to recommend them, as the entertainment they obtained when using the filters increased. This is in line with the notion that AR filters are entertainment products, whose goal is to amuse and entertain their users (Dodoo & Youn, 2021; Scholz & Duffy, 2018).

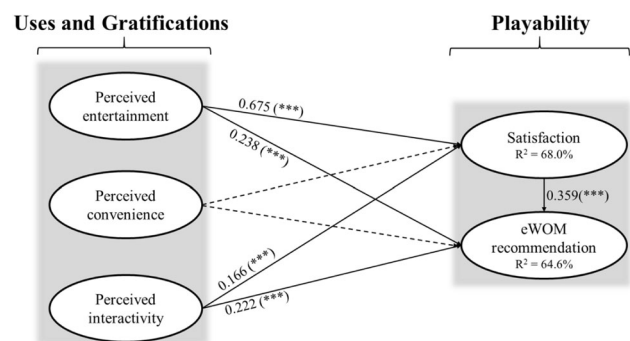
Second, the analysis did not identify any significant effects of perceived convenience on satisfaction ( $coeff. = -0.007, p = 0.84$ ) and eWOM recommendation intention ( $coeff. = -0.026, p = 0.44$ ), rejecting  $H_{2a}$  and  $H_{2b}$ , respectively. Although previous studies have consistently found that the perceived convenience of a technology positively affects the user's experience (e.g., Ling et al., 2021), our results indicated that this utilitarian gratification did not affect the users' levels of satisfaction with their AR filter experiences, nor their eWOM recommendation intentions. Thus, while the use of AR filters may be convenient and require little effort, these factors do not contribute to their playability.

Third, the analysis showed a noteworthy effect of perceived interactivity on users' satisfaction with their experiences with AR filters; in the case of eWOM recommendation intention, this direct effect was significant and comparable to that produced by perceived entertainment (Figure 1). These results support  $H_{3a}$  and  $H_{3b}$ . Thus, the perceived interactivity of the AR filter experiences influenced the users' views on their playability. Staying connected to others on social media is very important for their users. As to the impact of AR

filters on SNs, Dodoo and Youn (2021) found that they help their users keep in touch and interact, which increases their satisfaction, and that their users recommend them because they help them stay connected. By incorporating the social dimension, these results extend previous research into AR technologies, which has hitherto mostly analyzed utilitarian and hedonic dimensions (Javornik, 2016a; McLean & Wilson, 2019; Rauschnabel et al., 2019; Scholz & Duffy, 2018). The results showed that the social aspect may be important for AR filters, and this should be taken into account to better understand users' experiences with these tools.

Finally, the relationship between satisfaction and eWOM recommendation intention was strong and significant (Figure 1), supporting  $H_4$ . In line with previous studies, the satisfaction generated in a technological experience affects users' recommendation intentions (Ballester et al., 2021; Casaló et al., 2017, 2021). The results also revealed significant indirect effects on eWOM recommendation intention through satisfaction for perceived entertainment ( $coeff. = 0.243, p < 0.001$ ) and interactivity ( $coeff. = 0.060, p < 0.01$ ). As the effect for entertainment was stronger than for perceived interactivity, this reinforces the hedonic nature of AR filters and the importance of creating enjoyable experiences to generate cascades of eWOM.

The results of this study shed light on the hedonic, utilitarian and social gratifications that users obtain from their experiences with AR filters on social media, a novel format through which users enjoy



**FIGURE 1** Results of the structural model. Note: → Significant effects ---> Nonsignificant effects; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$



sensory enriched experiences (Flavián et al., 2021b), and through which firms might establish new ways to communicate and interact with consumers (Dwivedi et al., 2021; Scholz & Duffy, 2018). However, this study considered only one specific hedonic (i.e., entertainment), utilitarian (i.e., convenience) and social (i.e., interactivity) gratification. Previous studies have acknowledged the multi-dimensional nature of uses and gratifications when interacting with media (e.g., Nanda & Banerjee, 2020), social media (e.g., Li et al., 2015; Verhagen et al., 2015) and AR technologies (e.g., Hamari et al., 2019). In addition, previous literature has argued that consumers can derive personal gratifications from their experiences with AR filters (Cowan et al., 2021; Javornik et al., 2021).

In addition, this study asked the participants about their experiences with AR filters in general, but did not control for potential extraneous effects, such as how recent their last experience was, or its context. Furthermore, the study examined eWOM recommendation intention, not actual recommendation behaviors. To address these limitations, we carried out a follow-up analysis to delve into the results of the study and to serve as the basis for developing Study 2.

### 4.3 | Follow-up analysis of Study 1

We conducted two online focus groups to obtain a deep understanding of consumers' perceptions of, and motivations for using, AR filters (Pera et al., 2020). The participants were young social media users recruited through a snowball sampling procedure (Malhotra & Birks, 2007). Taking into account the results of Study 1, 15 participants aged between 18 and 31 years took part in the sessions, with more women than men (session 1: 5 women and 3 men; session 2: 5 women and 2 men). They declared they used social media intensively (at least 1 h per day), and that they had had experiences with AR filters in the prior week. The samples consisted of undergraduate students and young workers. Taking into account the research context and that the situation prevented us from conducting in-person activities, we conducted synchronous online focus groups (Stewart & Shamdasani, 2017) through Google Meet. The approximate duration of each session was 75 min. The sessions were audio-video recorded. Before the data analysis, the research team checked the transcripts for accuracy. Three experts in marketing, sociology and new technologies conducted the content analysis using ATLAS.ti v6.2 software.

The discussion guide revolved on three key themes. After the initial introduction and ice-breaking activities, the first theme consisted of exploring the participants' behaviors and experiences with AR filters. The goal was to understand how the participants defined and perceived these tools. In this way, the participants declared a low-frequent interaction with AR filters. Most participants had experiences with the filters monthly, while some exhibited more intense behaviors (*"I like to use them when sharing my stories on Instagram"*; participant 3, session 1, male). Instagram was the preferred platform for experiencing the AR filters, as it was the main SN the participants used. When defining the AR filters, the participants clearly identified

three types depending on purpose: (1) entertainment (*"I use them to have fun with my friends"*; participant 2, session 2, female), (2) appearance (*"sometimes I used the filters to look prettier, although I don't feel right about it"*; participant 7, session 1, female), and (3) shopping (*"some cosmetics brands offer filters to see how the make-up looks like on your face"*; participant 4, session 1, female). These results reinforce our proposal that AR filters can be defined as entertainment products with a strong hedonic component.

Focusing the discussion on AR filters as a means of entertainment, the second theme aimed at exploring the uses and gratifications obtained from the users' interactions with the filters. The goal was to identify additional dimensions of hedonic, utilitarian and social gratifications that could affect the playability of the AR filters. Table 3 lists the dimensions identified, with a brief description and, to illustrate the concept, examples of the participants' statements. Although all the participants indicated that fun and enjoyment were the main benefits of using AR filters, it was possible to identify three hedonic gratifications (entertainment, escapism, passing time), two utilitarian gratifications (convenience, curiosity), two social gratifications (interactivity, sense of belonging) and two personal gratifications (trendiness, compatibility). These results extend the scope of the dimensions considered in Study 1, and revealed that personal gratifications (Nambisan & Baron, 2009) can also be derived from using AR filters on social media.

Finally, the focus groups addressed the participants' eWOM behaviors with AR filters. The participants reported they used the filters in a rather private way. They never used the filters to build social relationships, make new friends or expand their social network; previous research has found these socializing gratifications (e.g., Hamari et al., 2019; Kim et al., 2020). In a similar vein, the participants did not share their experiences with the filters to make an impression or increase their popularity (e.g., Nambisan & Baron, 2009; Verhagen et al., 2015). The main purpose of sharing their experiences was to connect with others and be amused (Table 3). Thus, in line with previous research that has distinguished AR usage in private and public contexts (Rauschnabel, 2018), and that has shown that users of AR filters have privacy concerns (Cowan et al., 2021), the participants in the focus groups indicated that they used the filters mainly in private contexts, and they shared their experiences only with people they trust, such as friends or family (*"I only share my experiences with the people I want. Sometimes I do it privately in a message and sometimes I choose from the list of my Instagram friends and share the story for a limited time"*; participant 1, session 1, female; *"I would never share an experience with an AR filter publicly! You never know where this story may eventually end..."*; participant 5, session 2, male). To them, sharing and recommending were synonyms (*"When I share my face with a filter with a group of friends, then all of them use the filter and share their pictures; I don't need to tell them anything, because, obviously, I am recommending it"*; participant 2, session 1, female).

In sum, the results of the follow-up analysis allowed us to confirm the hedonic nature of AR filters. Besides self-related (e.g., Javornik et al., 2021; Rios et al., 2018) and shopping-related (e.g., Hilken et al., 2017) purposes, the participants indicated that they use

TABLE 3 AR filter gratifications identified in the focus groups

Gratification	Description	Examples of participants' statements
<b>Hedonic</b>		
Entertainment	Social media users engage in experiences with AR filters to obtain fun and enjoyment; playful and humorous elements are the mostly appreciated features.	<p>"I burst out laughing every time I use these filters. The funnier and sillier the filter, the better, they're so hilarious!" (P4, S2, female)</p> <p>"I only use the filters to enjoy myself and have fun," (P1, S1, female)</p>
Escapism	When using AR filters, users can escape from reality or routine, or distract their attention away from problems.	<p>"When I had a bad day, I lay down on the couch and browse the AR filters to forget about things" (P2, S2, female)</p> <p>"Sometimes I use these filters to disconnect from my routine" (P7, S1, female)</p>
Passing time	AR filters allow users to occupy their time when they have nothing else to do; the filters can help alleviate boredom.	<p>"Honestly, I have used the filters only when I had nothing else to do on Instagram" (P5, S1, male)</p> <p>"I only remember to use these filters when I'm bored out of my mind" (P5, S2, female)</p>
<b>Utilitarian</b>		
Convenience	Using AR filters is easy and simple; users can get what they want anytime and anywhere, with little mental effort.	<p>"I find it quite easy to interact with AR filters. You just open your camera and... void! The filters are just over you" (P1, S2, female)</p> <p>"It doesn't take a genius to figure out how these filters work, they are quite intuitive" (P4, S1, female)</p>
Curiosity	Users of AR filters like exploring the novel contents that are available on social media. They show interest in seeing how they look with the filters.	<p>"From time to time, maybe once a week, I like spending a while exploring new filters and trying them on" (P3, S1, male)</p> <p>"I love exploring and discovering novel stuff on social media; the filters are also changing constantly" (P4, S2, female)</p>
<b>Social</b>		
Interactivity	AR filters offer opportunities for social media users to stay connected with their friends; conversations do not center on the filters but can be a way to start a conversation.	<p>"When I find a very funny filter, I usually send it to my friends to share laughs! Then we talk about life" (P2, S1, female)</p> <p>"Usually, in my group of best friends we send each other photos with these filters. [...] They serve as a conversation kickoff" (P7, S2, male)</p>
Sense of belonging	Users share their experiences with AR filters to strengthen bonds with their close contacts, rather than with strangers or to meet new people.	<p>"If some friend sends me his face filtered, I feel the need to do the same; then we have laughs together." (P6, S2, male)</p> <p>"I tend to share photos of these filters with people who are very special to me... never to make new friends" (P6, S1, female)</p>
<b>Personal</b>		
Trendiness	The novelty of the AR filters allows social media users to see themselves as cool or stylish.	<p>"When AR filters appeared on Snapchat, everyone downloaded the app and start interacting with them. They were absolutely in!" (P3, S2, female)</p> <p>"It's cool to use these filters, they let me look very stylish to my followers!" (P8, S1, female)</p>
Compatibility	Users interact with AR filters on SNs because they fit well with their casual and relaxed lifestyles.	<p>"I think that using filters is not for everyone. I feel comfortable with them because I am a lighthearted person who laughs at everything and at everyone" (P4, S1, female)</p>

Note: P = participant; S = session.

Abbreviation: AR, augmented reality.

the filters to have fun and obtain pleasurable experiences. In addition, the analysis revealed further hedonic, utilitarian, social and personal gratifications (Nambisan & Baron, 2009) that users might derive when they interact with AR filters on social media. Finally, eWOM recommendations take place in a rather private space, where users share their experiences in a close, trusting environment. All these issues are taken into consideration in Study 2, which tries to overcome the limitations of Study 1 and to gain a deeper understanding of the benefits that users obtain when interacting with AR filters on social media.

## 5 | STUDY 2

Study 2 expands the dimensions and the number of gratifications considered in previous literature. Specifically, we followed previous research by examining utilitarian, hedonic, social and personal gratifications (e.g., Kim et al., 2020; Nambisan & Baron, 2009; Verhagen et al., 2015). The study also goes a step further in the analysis of eWOM recommendations by examining users' actual behaviors, instead of their behavioral intentions (e.g., Rauschendorfer et al., 2021).

Regarding hedonic gratifications, the results of the focus group discussions revealed dimensions, other than perceived entertainment, that may influence the playability (satisfaction and eWOM recommendation) of AR filters (Table 3). Specifically, escapism is a diversion of the mind from the self, that usually involves psychological and physiological processes, with the aim of escaping from reality or routine (McLean et al., 2021; Nanda & Banerjee, 2020). In the context of AR, escapism refers to a desire on the part of the user to momentarily forget where (s)he is and become immersed in the AR experience (Sung et al., 2021). Previous research has verified that the use of AR technologies can help customers disconnect from reality, which increases their satisfaction (Komarac & Ozretić Došen, 2021). Thus, we expect that the perceived escapism provided by interactions with AR filters contributes to the user's satisfaction:

H<sub>5a</sub>: The perceived escapism of augmented reality filters positively influences their users' experience satisfaction.

Perceived escapism is a key element in AR marketing, and it leads users to share their experiences with other social groups (Sung et al., 2021). As users can fulfill their desire to temporarily disconnect from reality while interacting with AR filters, they may be willing to recommend them to others who could have similar motivations. Consequently, we propose that users' perceptions of the escapism provided by AR filters increases their eWOM recommendation:

H<sub>5b</sub>: The perceived escapism of augmented reality filters positively influences their users' eWOM recommendation.

Passing time refers to the perception that using a tool that does not demand cognitive resources helps to occupy time and/or alleviate boredom (Haridakis & Hanson, 2009; Nanda & Banerjee, 2020). This hedonic gratification of AR filters was noted by the focus group participants (Table 3). Previous research has revealed that passing time is a passive motive, or need, that individuals fulfill by watching television (Nanda & Banerjee, 2020) or YouTube videos (Haridakis &

Hanson, 2009). Similarly, using social media to kill time can be one of the main gratifications obtained by users during their experiences, which increases their satisfaction (e.g., Quan-Haase & Young, 2010; Whiting & Williams, 2013). Therefore, we expect that users' satisfaction with AR filters is affected positively to the extent that these tools help them pass time or mitigate boredom:

H<sub>6a</sub>: The perceived passing of time of augmented reality filters positively influences their experience satisfaction.

Previous authors have suggested that obtaining recreational pastime is one of users' main motives for engaging in social media (Riskos et al., 2021) and generating eWOM (Okazaki & Taylor, 2013). Haridakis and Hanson (2009) found that the motivation to pass time contributed to explaining why people share YouTube videos. The ability of an entertainment product to fulfill its users' passing time needs may be as crucial as its ability to entertain or provide useful information (Riskos et al., 2021). Thus, users may be more prone to recommend their experiences with AR filters if these tools give them something to occupy their time when they have nothing else/better to do:

H<sub>6b</sub>: The perceived passing of time of augmented reality filters positively influences their users' eWOM recommendations.

In addition to convenience, the results derived from the focus group exercise revealed that users may engage with AR filters to fulfill their utilitarian need for exploration (Table 3). Perceived curiosity is an intrinsic desire which involves showing interest in, and paying attention to, novel perceptual stimulations (Collins et al., 2004). Previous research has acknowledged curiosity as a gratification derived from consumers' use of AR filters (Dodoo & Youn, 2021). If customers (or users) meet their curiosity needs through a specific action (e.g., going shopping, browsing websites), this action can provide them with satisfaction (Loewenstein, 1994). In this sense, when users experience curiosity using a technology, their cognitive expectations may be met, which will result in enhanced levels of satisfaction:

H<sub>7a</sub>: The perceived curiosity of augmented reality filters positively influences their users' experience satisfaction.

Furthermore, if users perceive that a technology arouses their interest and curiosity, they may want to recommend it to others potentially with similar interests (Zhou et al., 2020). Perceived curiosity can engage users to interact more with a technology, which favors the generation of positive eWOM (Shoham & Pesämaa, 2013). Therefore, we expect that the curiosity needs fulfilled by experiences with AR filters leads to eWOM recommendation behaviors:

H<sub>7b</sub>: The perceived curiosity of augmented reality filters positively influences their users' eWOM recommendation.

As for the social dimension, the focus group participants stated that the sense of belonging gratification might potentially influence the playability of their experiences with AR filters (Table 3). Belongingness refers to the individual's sensation of being part of a community (e.g., group of friends, family) with which (s)he shares affective bonds (Baumeister & Leary, 1995). Some technologies (e.g., instant messaging apps) can strengthen the relationship between users and their communities (Cui, 2016). Consequently, users will be

satisfied if they perceive that AR filters help them boost their relationships with their families and friends:

H<sub>8a</sub>: The perceived sense of belonging of augmented reality filters positively influences their users' experience satisfaction.

In addition, users may be more prone to recommend a technology if they believe it strengthens their relationships with others (Ismagilova et al., 2020). Users from the same group tend to carry out beneficial actions for other group members, so they might use AR filters to reinforce their affective bonds (Cheung & Lee, 2012). Therefore, if users perceive that sharing their experiences with AR filters might strengthen their relationships within their social group, they will recommend them on social media:

H<sub>8b</sub>: The perceived sense of belonging of augmented reality filters positively influences their users' eWOM recommendations.

The results from the focus groups revealed that personal gratifications also influence users' experiences with AR filters (Table 3), which is in line with previous literature (Kim et al., 2020; Nambisan & Baron, 2009; Verhagen et al., 2015). Specifically, we examine the potential impacts of two personal gratifications, that is, perceived trendiness and compatibility, on the playability of AR filter experiences. Perceived trendiness is the degree to which the user perceives that acquaintances, and others, consider that the use of a technology is stylish and fashionable (Hamari et al., 2019). This way of self-expression is linked to the social image associated with the use of a particular technology (Lee & Cho, 2020). In the case of cutting-edge technologies, the trendiness that users gain from using them leads them to become highly satisfied with the experience (Ameen et al., 2021). Therefore, we expect that the users' perception that using AR filters is cool or trendy increases the satisfaction derived from using these tools:

H<sub>9a</sub>: The perceived trendiness of augmented reality filters positively influences their users' experience satisfaction.

In the same way, this social recognition can increase users' willingness to recommend AR filters, in an attempt to transmit and enhance their own trendy images, and to help others achieve this fashionable image (Liang et al., 2013). If users perceive that using AR filters is trendy, they may take the initiative to share them with peers and engage in discussions (Cheung et al., 2020). Thus, we propose that perceived trendiness has a direct impact on users' eWOM recommendation behaviors:

H<sub>9b</sub>: The perceived trendiness of augmented reality filters positively influences their users' eWOM recommendation.

Finally, perceived compatibility refers to the extent to which an innovation is consistent with, or fits, consumers' values, lifestyles and past experiences (Chiang, 2013). This personal gratification is in line with congruity theory (Heider, 1946), which posits that individuals prefer consistency in their thoughts and ideas. Thus, users will tend to use a technology with which they are compatible to try to achieve harmony in their thoughts. If users employ technologies which suit their personal beliefs and values, they will be more satisfied with their experiences (Luna-Cortés et al., 2019). Therefore, we expect that the compatibility they perceive when using AR filters on social media increases users' satisfaction with these tools:

H<sub>10a</sub>: The perceived compatibility of augmented reality filters positively influences their users' experience satisfaction.

Previous research has found that the perceived compatibility of a technology can foster users' desire to share information about it with others (Kaur et al., 2020). Thus, when users believe that interacting with AR filters suits their personal lifestyles, and that they might provide benefits to others, they may be inclined to post eWOM messages. Therefore, we propose that the perceived compatibility between users and their AR filter experiences has a positive influence on their users' eWOM recommendations:

H<sub>10b</sub>: The perceived compatibility of augmented reality filters positively influences their users' eWOM recommendation.

## 5.1 | Methodology of Study 2

We carried out a scenario-based online survey out to test the hypotheses. Taking into account the results of Study 1, only participants belonging to the younger population (from 16 to 34 years) who operated an Instagram account were qualified to take part in the survey. The questionnaire was targeted at social media users who had previous experience with AR filters. After initial screening, the participants read to the following situation:

*"Imagine that you have finished all your chores, so you lie down on the couch to disconnect for a while. You take your phone and open your Instagram account. You open the stories camera and start browsing the AR filters. After trying several filters, you choose one and spend some time with it".*

Then, we asked the participants to follow a specific process, that is, access Instagram, browse the AR filters and choose one with which to interact. After selecting the filter, we required them to upload a screenshot of themselves with that filter, and then they answered the second part of the questionnaire, which included the gratifications entertainment, escapism, passing time, convenience, curiosity, interactivity, sense of belonging, trendiness and compatibility, and satisfaction (see the Appendix). The next step required the participants to consider sharing their experiences with the AR filters. Taking into account the focus group results, and previous research which examined the differences in usage of AR technologies in private and public contexts (Rauschnabel, 2018), the questionnaire proposed four options: (1) not to share the experience; (2) to share it with only one person (e.g., a couple, a friend); (3) to share it with a small group of people (e.g., best friends, WhatsApp group); or (4) share it publicly (e.g., Instagram stories). Regardless of their answers, all the participants indicated the extent to which sharing contents on SNs is similar to recommending them. Three items were developed based on a 7-point Likert-type scale: (1) "when I share something I like on SNs, I am recommending it", (2) "in general, sharing and recommending content on social media are similar actions", (3) "the best way of

recommending something on social media is to share it"; ( $\alpha = 0.89$ ;  $M = 4.955$ ;  $SD = 1.390$ ).<sup>1</sup>

If the participants chose to share the experience, they accessed to a new screen so to do. Specifically, we created an online wall (padlet.com) to allow the participants to comment on their experiences with the AR filters and upload their pictures. Finally, the questionnaire gathered socio-demographic and personal information (as in Study 1).

The initial study sample consisted of 293 participants. After screening out those who had never used AR filters, were not Instagram users, did not agree to share their personal screenshot after the AR filter experience carried out with the research team (for control purposes), or gave incomplete responses, the final valid sample consisted of 251 respondents. As for Study 1, the sample included more women (56.2%), individuals under 24 years old (57%), with higher education studies (72.9%), who went on SNs between 1 and 4 h a day (74.5%), and who used AR filters at least once a month (69.0%).

## 5.2 | Analysis and discussion of Study 2

As for Study 1, we employed SmartPLS 3.3.3 (Ringle et al., 2015) to conduct the analysis. We followed the same procedure to verify the reliability and the validity of the scales. Table 4 displays the measurements of the items and construct reliability, and the convergent validity indicator; Table 5 shows the criteria used to verify discriminant validity.

After the validation of the measurement instruments, we performed a bootstrap analysis with 5000 iterations to test the main effects (Ringle et al., 2015). Figure 2 presents the results of the model. For the sake of simplicity, we only display the significant effects. Among the hedonic gratifications, perceived entertainment had a significant effect on both satisfaction and eWOM recommendation, supporting  $H_{1a}$  and  $H_{1b}$ . The indirect effect of entertainment on eWOM recommendation through satisfaction was also significant ( $coeff. = 0.110$ ,  $p < 0.01$ ). These results highlight again that perceived entertainment is the main gratification derived from using AR filters on SNs. As with other technologies (e.g., social media), users who fulfill their entertainment needs will be satisfied with their technological experiences and will recommend the technologies to others (Basak & Calisir, 2015; Cheung & Lee, 2012). For AR filters, the fit between product type and the benefits obtained (i.e., entertainment) mainly determines the user's satisfaction and eWOM recommendation behaviors.

On the other hand, the other hedonic dimensions (perceived escapism and passing time) had no significant effects on the playability of AR filters (escapism-satisfaction:  $coeff. = -0.079$ ,  $p = 0.24$ ; escapism-eWOM recommendation:  $coeff. = -0.119$ ,  $p = 0.09$ ; passing time-satisfaction:  $coeff. = 0.044$ ,  $p = 0.95$ ; passing time-eWOM

recommendation:  $coeff. = -0.023$ ,  $p = 0.75$ ). Thus, hypotheses  $H_{5a}$ ,  $H_{5b}$ ,  $H_{6a}$ , and  $H_{6b}$  must be rejected. In line with previous research, perceived escapism can lead to feelings of guilt and frustration due to the user's perceptions of wasting time using an app (McLean et al., 2021). In our case, escapism did not produce any positive consequences for users' experiences with the AR filters. In addition, AR tools may be used to pass time, but this does not necessarily translate into positive experiential outcomes; they should also induce feelings such as pleasure and fun (Dodoo & Youn, 2021; Rios et al., 2018).

As for the utilitarian gratifications, as with the results of Study 1, convenience did not have a significant effect on satisfaction ( $coeff. = -0.073$ ,  $p = 0.17$ ) and eWOM recommendation ( $coeff. = -0.044$ ,  $p = 0.48$ ) (no support for  $H_{2a}$  and  $H_{2b}$ ). The participants' ratings suggested that users may consider that AR filters are easy to use and allow them to achieve what they want (i.e., to be entertained) with little effort. Thus, it seems that convenience is seen by users to be a standard feature of this type of experience, and they expect AR filters to be intuitive to use, but this does not enhance their perceptions about the experiences or lead them to carry out eWOM actions.

However, the effect of perceived curiosity on satisfaction was positive and significant (Figure 2), which supports  $H_{7a}$ . The direct effect of perceived curiosity on eWOM recommendation was non-significant ( $coeff. = -0.017$ ,  $p = 0.78$ ). Although we did not find support for  $H_{7b}$ , the indirect effect through the satisfaction derived from the experience with the AR filter was significant ( $coeff. = 0.070$ ,  $p < 0.01$ ). These results shed light on the impact of a specific utilitarian gratification on users' satisfaction with their AR filter experiences, which may subsequently affect eWOM recommendation behaviors. This is in line with Dodoo and Youn (2021), who showed that curiosity had a positive impact on attitude toward an ad that employed AR filters, and extends this finding to include a positive effect of curiosity on users' experiences. As users fulfill their cognitive needs for interest and exploration while using AR filters, they experience satisfaction. In addition, if users perceive that the use of a technology arouses their curiosity, this may induce them to recommend it to other users who may potentially be interested (Zhou et al., 2020).

Regarding social gratifications, perceived interactivity positively affected satisfaction and eWOM recommendation (Figure 2), supporting  $H_{3a}$  and  $H_{3b}$ . The indirect effect of perceived interactivity on eWOM recommendation through satisfaction was also significant ( $coeff. = 0.062$ ,  $p < 0.05$ ). These results are similar to those obtained in Study 1. However, the analysis did not support the direct effects proposed for the other social dimension, sense of belonging, on satisfaction ( $coeff. = 0.032$ ,  $p = 0.66$ ) and eWOM recommendation ( $coeff. = -0.021$ ,  $p = 0.76$ ). Thus,  $H_{8a}$  and  $H_{8b}$  must be rejected. The interactivity that social media users derived from using AR filters, rather than a reinforced sense of belonging, was the social gratification that contributed to their satisfaction with the filters and their eWOM recommendation behaviors. There is no consensus in the previous literature as to whether interactivity improves users' experiences with AR filters. Whereas Dodoo and Youn (2021) found

<sup>1</sup>This value was significantly above the midpoint of the scale (4), according to a one samples T test:  $t_{(250)} = 10.883$ ;  $p < 0.001$ .

Variable	Mean (SD)	Item loadings range	CR	$\alpha$	AVE
Entertainment	5.548 (1.267)	0.819–0.961	0.951	0.931	0.831
Escapism	2.616 (1.604)	0.942–0.963	0.967	0.949	0.907
Passing time	4.392 (1.571)	0.809–0.914	0.889	0.814	0.728
Convenience	4.663 (1.323)	0.904–0.954	0.954	0.929	0.874
Curiosity	4.807 (1.502)	0.944–0.954	0.948	0.890	0.901
Interactivity	3.782 (1.485)	0.917–0.922	0.943	0.909	0.845
Sense of belonging	3.153 (1.571)	0.929–0.957	0.961	0.939	0.891
Trendiness	2.798 (1.777)	0.952–0.962	0.969	0.952	0.913
Compatibility	2.923 (1.541)	0.945–0.957	0.970	0.953	0.914
Satisfaction	4.787 (1.384)	0.868–0.945	0.957	0.940	0.848

Note: One item for perceived curiosity was removed from the analysis as it did not meet the criterion (loading >0.7).  $\alpha$  = Cronbach's alpha.

Abbreviations: AVE, average variance extracted; CR, composite reliability.

**TABLE 5** Discriminant validity of the scales (Study 2)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Entertainment (1)	<b>0.911</b>	0.291	0.545	0.363	0.457	0.489	0.344	0.247	0.279	0.574	0.490
Escapism (2)	0.269	<b>0.952</b>	0.654	0.210	0.389	0.356	0.333	0.516	0.442	0.286	0.053
Passing time (3)	0.479	0.566	<b>0.853</b>	0.366	0.542	0.493	0.347	0.426	0.507	0.469	0.220
Convenience (4)	0.338	0.205	0.321	<b>0.935</b>	0.280	0.247	0.104	0.200	0.300	0.229	0.099
Curiosity (5)	0.414	0.360	0.468	0.263	<b>0.949</b>	0.441	0.269	0.278	0.355	0.521	0.262
Interactivity (6)	0.447	0.331	0.425	0.232	0.397	<b>0.919</b>	0.528	0.443	0.465	0.527	0.374
Sense of belonging (7)	0.320	0.313	0.298	0.098	0.248	0.487	<b>0.944</b>	0.501	0.398	0.375	0.181
Trendiness (8)	0.229	0.492	0.370	0.194	0.259	0.413	0.474	<b>0.955</b>	0.593	0.361	0.087
Compatibility (9)	0.259	0.421	0.440	0.286	0.329	0.434	0.098	0.565	<b>0.956</b>	0.471	0.137
Satisfaction (10)	0.143	0.269	0.416	0.217	0.477	0.487	0.350	0.339	0.445	<b>0.921</b>	0.509
eWOM recom. (11)	0.477	0.052	0.208	0.097	0.248	0.358	0.176	0.085	0.133	0.494	<b>1.000</b>

Note: The **bold** numbers on the diagonal show the square roots of the AVEs. Construct correlations are shown below the diagonal, while numbers above the diagonal represent the HTMT ratios.

Abbreviations: AVE, average variance extracted; HTMT, heterotrait-monotrait.

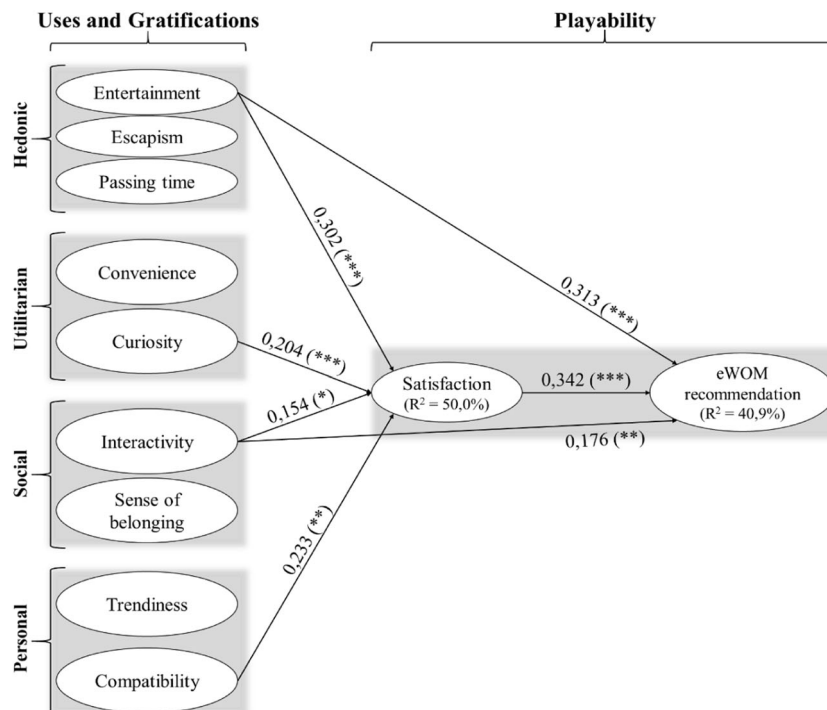
that social interaction does not affect attitudes toward AR ad lenses, Flavián et al. (2021a) emphasized the interactive nature of AR filters and their capacity to enhance communication processes. The results of the present study are consistent with the latter approach in that they show that perceived interactivity has significant effects on both satisfaction and eWOM recommendation.

The study included personal gratifications to delve into the drivers of users' experiences with AR filters. The analysis showed that perceived trendiness did not affect satisfaction ( $coeff. = 0.004$ ,  $p = 0.95$ ) or eWOM recommendation ( $coeff. = -0.057$ ,  $p = 0.49$ ), thus rejecting  $H_{9a}$  and  $H_{9b}$ . AR filters may no longer be seen as novel tools as they have been available to users for several years. The descriptive data (see Table 4) confirms this view. In line with the diffusion of innovations theory (Rogers, 2010), as technological innovations

spread and become adopted by users, the newness effect of the technology dissipates. Therefore, as users become accustomed to employing AR filters, the wow effect may dissipate (Hinsch et al., 2020), and thus trendiness may not produce satisfaction or foster eWOM recommendation behaviors.

Nevertheless, the impact of perceived compatibility on satisfaction was positive and significant (Figure 2), supporting  $H_{10a}$ . Although compatibility did not significantly affect eWOM recommendation ( $coeff. = -0.058$ ,  $p = 0.45$ ), which fails to support  $H_{10b}$ , the indirect effect through satisfaction was significant ( $coeff. = 0.080$ ,  $p < 0.01$ ). Previous research has found that the compatibility of a technology with users' lifestyles has a positive effect on the diffusion of that technology (Kim et al., 2020). Our results extend previous research by showing that a positive relationship exists between perceived

**FIGURE 2** Results of the structural model (Study 2). Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$



compatibility and satisfaction with AR filter experiences, which has not been previously demonstrated. The fit between AR filters and users' lifestyles and values is important for exceeding their expectations, which leads to satisfaction with experiences (Heider, 1946). This satisfaction may eventually translate into eWOM recommendation behaviors.

Finally, the analysis revealed that satisfaction had a significant direct effect on eWOM recommendations (Figure 2), supporting H<sub>4</sub>. This result empirically validates the previous theoretical proposal about playability, i.e. the satisfaction obtained through the use of entertainment products that subsequently leads to the making of eWOM recommendations (Hennig-Thurau & Houston, 2019).

## 6 | GENERAL DISCUSSION

Table 6 summarizes the results of the empirical studies. The findings stress that perceived entertainment is the main driver of users' satisfaction with AR filters and eWOM recommendations. In line with our propositions, obtaining fun and pleasure is the most important determinant of users' experiences with AR filters. Other hedonic gratifications (perceived escapism and passing time) do not affect the playability of the filters. McLean et al. (2021) suggested that users may feel guilty and frustrated because of the time they waste using a technology. Our results indicated that these negative effects did exist, but they were not significant. This may be due to the scenario proposed in Study 2, where the participants imagined that they were idle and, thus, feelings of wasted time may not have been aroused. If users employ AR filters to

escape from reality or alleviate boredom, this does not translate into positive experiential outcomes.

In addition, the perceived convenience of the AR filters was not a significant antecedent of playability. Although Dodoo and Youn (2021) proposed ease of use and simplicity as motives for using AR filters, the perceived mental effort exerted in a task may have both positive and negative affective outcomes (Flavián-Blanco et al., 2011). When consumers are motivated to maximize the output of an experience, they might not consider convenience as a positive outcome of that experience (Flavián et al., 2020). Our findings revealed that users may consider convenience to be a standard feature, so they did not derive greater satisfaction or develop positive eWOM recommendation. However, as with other technologies (e.g., social media; Thomas & Vinuales, 2017), this research showed that users can be satisfied when AR filters arouse their curiosity and interest. Taking into account that every entertainment product has a utilitarian component (Hennig-Thurau & Houston, 2019), this research identifies curiosity as the cognitive need that can be fulfilled with the use of AR filters.

Regarding social gratifications, the results of this research revealed that users do not employ AR filters to strengthen their bonds within their social circles, or to expand these circles or make new friends. Instead, AR filters allow them to connect and interact with others. These results are in line with previous research which stressed that interaction is a critical factor for enhancing users' experiences with new technologies (e.g., Chu & Kim, 2011). In summary, these results are consistent with the viewpoint that AR filters are ephemeral in nature (Flavián et al., 2021a), and are associated more with peers' short-term reactions than with creating or reinforcing long-term commitments.

TABLE 6 Summary of results

	Hypothesis support	
	Study 1	Study 2
H <sub>1a</sub> : Entertainment → (+) Satisfaction	Yes	Yes
H <sub>1b</sub> : Entertainment → (+) eWOM recommendation	Yes	Yes
H <sub>2a</sub> : Convenience → (+) Satisfaction	No	No
H <sub>2b</sub> : Convenience → (+) eWOM recommendation	No	No
H <sub>3a</sub> : Interactivity → (+) Satisfaction	Yes	Yes
H <sub>3b</sub> : Interactivity → (+) eWOM recommendation	Yes	Yes
H <sub>4</sub> : Satisfaction → (+) eWOM recommendation	Yes	Yes
H <sub>5a</sub> : Escapism → (+) Satisfaction	-	No
H <sub>5b</sub> : Escapism → (+) eWOM recommendation	-	No
H <sub>6a</sub> : Passing time → (+) Satisfaction	-	No
H <sub>6b</sub> : Passing time → (+) eWOM recommendation	-	No
H <sub>7a</sub> : Curiosity → (+) Satisfaction	-	Yes
H <sub>7b</sub> : Curiosity → (+) eWOM recommendation	-	No
H <sub>8a</sub> : Sense of belonging → (+) Satisfaction	-	No
H <sub>8b</sub> : Sense of belonging → (+) eWOM recommendation	-	No
H <sub>9a</sub> : Trendiness → (+) Satisfaction	-	No
H <sub>9b</sub> : Trendiness → (+) eWOM recommendation	-	No
H <sub>10a</sub> : Compatibility → (+) Satisfaction	-	Yes
H <sub>10b</sub> : Compatibility → (+) eWOM recommendation	-	No

Finally, this research included personal gratifications in the analysis of users' experiences with AR technologies, which extends the previous literature that has focused mainly on utilitarian, hedonic and social gratifications (Cowan et al., 2021; Dodoo & Youn, 2021). Our findings confirm that, as technologies get adopted by a large part of the population, the so-called wow effect dissipates (Hinsch et al., 2020), limiting the perceived trendiness derived from using AR filters and the effects of this gratification on playability. Nonetheless, if users perceive that interacting with AR filters aligns with their lifestyles and values, their satisfaction with these tools may increase, which may subsequently affect their eWOM recommendation behaviors. In contrast to utilitarian contexts where satisfaction with a technology may not lead to eWOM behaviors (Javornik et al., 2020), in hedonic contexts, such as using AR filters, the playability relationship (i.e., satisfaction and eWOM recommendations) seems to be significant and robust.

## 6.1 | Theoretical implications

Although AR filters have been available for some years, their potential as engaging marketing tools is not yet fully understood by researchers and companies (Dodoo & Youn, 2021; Rios et al., 2018). The present study contributes to the specialized AR-technology user literature in several ways. First, this research has conceptually differentiated AR filters from other tools used for shopping or to modify one's appearance. Specifically, the present study conceives AR filters as entertainment products used with no instrumental purpose in mind. Grounded in media entertainment science, this research stresses that playability (i.e., satisfaction and eWOM recommendation; Hennig-Thurau & Houston, 2019) is a key construct to analyze the effectiveness of SN-based AR filters.

Second, previous research has relied on technology acceptance models to investigate customers' experiences with AR-based technologies (e.g., Chung et al., 2015; Gatter et al., 2021; McLean & Wilson, 2019; Rauschnabel et al., 2019). This may be useful when the tools are used to accomplish a particular task. However, when users seek entertainment or hedonic experiences, other models might be more suitable. This study confirms that the theory of uses and gratifications, which has traditionally been used to analyze the consumption of media and entertainment products (Katz et al., 1973; Ruggiero, 2000), is appropriate for understanding users' experiences with SN-based AR filters.

Third, this research examined a comprehensive set of uses and gratifications of SN-based AR filters by including nine gratifications, divided into hedonic, utilitarian, social and personal categories. The findings from two empirical studies, combining quantitative and qualitative techniques, offer a complete picture of the user's experiences with AR filters: perceived entertainment and, to a lesser extent, perceived interactivity, are the main drivers of the playability of AR filters. Other hedonic (escapism and passing time) and social (sense of belonging) gratifications appear to have no influence; finally, perceived curiosity, rather than convenience, and compatibility, rather than trendiness, have an influence on satisfaction with AR filters.

Fourth, this research expands the concept of playability by empirically confirming that a positive relationship exists between satisfaction and the making of eWOM recommendations, measured here by both self-reported measures and real behaviors (Rauschendorfer et al., 2021).

## 6.2 | Managerial implications

This research makes recommendations for content marketing managers to foster consumers' storytelling through images, a promising area for consumer engagement (Farace et al., 2017). In addition, given that AR filters can be created by a wide variety of agents (e.g., brands, social networks, influencers; Flavián et al., 2021a), our results can help creators to design effective AR filter-based experiences. First and foremost, when creating AR filters, designers should keep in mind that their primary purpose is to provide fun and entertaining



experiences. Thus, they should incorporate appropriate features when designing the filters. For instance, they could use effects to deform or animate users' faces (e.g., the user's tongue being represented as a rainbow-colored waterfall) or use humor as a very effective resource. Applying filters to disguise users' faces (e.g., a superhero mask) might also entertain them.

The findings also highlighted the importance of interactivity in the playability of filters. Therefore, a key takeaway for AR filter designers is the need to improve the social aspect of these tools. For example, companies might generate gamification experiences in which users control game elements with their faces and play with other users; companies might also encourage users to share AR filter-based selfies on their profiles in contests or "challenges".

The curiosity generated using AR filters can create satisfactory experiences, which may lead users to eventually share or recommend them. Fresh stimuli may evoke curiosity. Thus, creators are encouraged to expand the variety of their filters and periodically change the filters available for use. Finally, it is important to bear in mind that the fit between the filters and their users creates satisfactory experiences. Managers should attempt to identify what kind of filters are more compatible with their target audience's lifestyles. This task may be challenging, as users appear to share their AR filter experiences with only a small, private circle. Thus, instead of conducting observational studies with big data based on users' behaviors on social media, research using traditional declarative techniques (e.g., surveys, in-depth interviews) might help managers identify what features of the filters are compatible with their target users.

### 6.3 | Limitations and future research lines

This research has a series of limitations that might be addressed in future research. First, conducting online questionnaires and using qualitative techniques may help researchers to comprehend users' overall experiences with AR filters on social media. Nonetheless, future research should conduct experimental studies in which the features of AR filters (e.g., hedonic vs. social filters) are manipulated to observe specific consumer responses (e.g., engagement).

Second, the focus groups revealed that AR filters provide hedonic, utilitarian, social and personal gratifications. Although previous research has identified these dimensions (e.g., Nambisan & Baron, 2009), other authors have suggested additional types of gratification (e.g., symbolic; Rauschnabel, 2021), and have classified gratifications based on the technology applied, content and the users' perspectives (Ling et al., 2021; Nanda & Banerjee, 2020). It would be interesting if future research could examine the roles of other types of gratification to better understand the playability of AR filters. In addition, Study 2 used an online interactive wall (<https://padlet.com/>) to measure the participants' eWOM behaviors on SNs. However, future research might examine users' real behaviors (e.g., sharing experiences with the AR filters publicly using a hashtag).

Finally, this research examined the social media users' overall experiences with AR filters used for entertainment purposes. In

shopping contexts, previous studies have found that AR technologies have positive effects on brand attitude (Rauschnabel et al., 2019; Smink et al., 2019) and user-brand engagement (McLean & Wilson, 2019; Scholz & Smith, 2016). Thus, it would be interesting to analyze whether entertainment-focused AR filters also produce positive brand responses. In addition, future studies should analyze the possible negative impact of AR filters on brands (e.g., perceived intrusiveness) and consumers (e.g., privacy concerns).

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### CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

### DATA AVAILABILITY STATEMENT

Data availability statement: Data available from the corresponding author upon reasonable request.

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Additional supporting information may be found in the online version of the article at the publisher's website.

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