

A Systematic Literature Review for Proposal of Therapeutic Possibilities of AR Beauty Apps

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Abstract The purpose of this study is to review the proposals and possibilities for social sustainability through systematic literature review on AR beauty apps, and to suggest development directions. In a related previous study, the main driver and response of consumers who experienced AR beauty apps were identified. In addition, by examining the mechanism in the field of psychotherapy, three mechanisms were identified: repeated exposure, cognitive change, and encouragement that can be borrowed from the AR beauty apps. Three co-authors extracted 20 articles using the PRISMA method, classified and analyzed major variables, and identified variables that could be borrowed and expanded as therapeutic variables. As a results, the drives such as interests, escapeness, and the responses such as pleasure, self-image congruence, body satisfaction, high self-esteem, and self-compassion were identified. In addition, based on this, we proposed a strategy for strengthening the mechanism such as inducing continuous experience, adding a cognitive therapy process, and reinforcing shared surroundings. Through this study, if the domestic AR beauty app develops into an AR beauty therapy app in the future and has social impact, it will help the globalization and sustainability.

Keywords Beauty app, Augmented reality, Social sustainability, Repeated exposure, Cognitive change, Encouragement

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Introduction

Due to COVID-19, various non-face-to-face interaction have become familiar to all consumers. Consumers are increasing using new technology app such as Augmented reality (AR), Virtual reality (VR), and metaverse such as Sepora AR app, Zepeto Gucci Villa (Hollensen, Kotler, & Opresnik, 2022; Rejeb, Rejeb, & Treiblmaier, 2021). On the back of this phenomenon, the effect of non-face-to-face therapeutic programs using Augmented reality exposure therapy (ARET), Virtual reality therapy (VRT), Smart, positive, active, realistic, X-factor thoughts (SPARX) are

continuously being studied (Albakri et al., 2022; Fleming et al., 2019; Lindner, 2021; Lucassen et al., 2021). Consumers become accustomed to the non-face-to-face by COVID-19, they have come to think positively about this therapeutic programs, and the use of them is expected to continue to increase (Katayama et al., 2022; Li et al., 2021). In addition, women view the body as an object through self-objectification and recognize their body as an object evaluated by others (Fredrickson & Roberts, 1997). Fredrickson and Roberts (1997) found that women, in

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particular, suffer from depression and low self-esteem because of the views and social evaluations of others. In addition, self-objectification can lead to body image distortion and, in serious cases, even avoidance of people (Guo & Wu, 2021; Jongenelis, Byrne, & Pettigrew, 2014). Women are easily compared to others through social media, and it is easy to suffer from negative self-image and low self-esteem (Veldhuis, Alleva, Bij de Vaate, Keijer, & Konijn, 2020). Modern women are too easily compared to others through SNS, which make them suffer by creating a negative self-image and low self-esteem (Veldhuis et al., 2020). While unaware of and overlooking this seriousness, it is emerging as a social problem such as plastic surgery addition, avoidance of interpersonal relationships, and suicidal impulse due to depression. In particular, Korea society has a strong taboo on pathological psychotherapy. In the West, there is active, accepting, and supporting atmosphere for psychiatric counseling, but in Korea, psychiatric records are treated as a stigma, so they do not actively try to solve these problem (Lee, Lee, & Ha, 2016). As a result, music therapy, art therapy, and fashion therapy, which are less resistant to psychotherapy, have appeared, and non-face-to-face therapeutic program are increased in recently (Albakri et al., 2022; Fleming et al., 2019).

The purpose of this research is to help the women who struggling with self-objectification in non-face-to-face ear improve their social adaptability and and self-esteem through on AR beauty app. However, there are no research on ARET in Korea, and some VRT research exists. Although studies have been conducted on patients with anxiety disorders, alcoholism, and stroke, most of them approach serious pathological aspects (Cheong, Kim, Lyu, & Kang, 2020; Lee 2014; Park, Kim, Bae, & Choi, 2021). Some nonpathological approaches have been attempted, a demand analysis research for virtual reality therapeutic farm (Koo, Kim, Bae, & Kim, 2022), VRT development to improve social adaptation of runaway adolescence (Lee, 2021), and VRT as positive technology (Ryu, 2021) exist only a few researches. In other words, there is a lack of the research on non-face-to-face therapy, and there is no research on women who are struggling with self-objectification. Therefore, through systematic literature review on AR beauty app at domestic

and abroad, we analyze the necessary attributes and, based on this, suggest an AR beauty app that can have social implication. Through this, it will be able to help suggest marketing strategies for domestic AR beauty app and improve consumer's self-esteem and social adaptability.

Theoretical Background

Potential as a Therapeutic Aspect, AR Beauty App: Self-Image, Depression, Self-Esteem

Many women suffer from low self-esteem and depression when their appearance does not fit the ideal beauty seen in society due to self-objectification (Fredrickson & Roberts, 1997; Guo & Wu, 2021; Jongenelis et al., 2014). In this case, problem behaviors such as eating disorder, social avoidance appear, and many healing method are being studied (Agras, Telch, Amow, Eldredge, & Marnell, 1997; Vancompfort et al., 2013). In addition, therapeutic methods through appearance management such as clothing and makeup for women who suffer from self-objectivation have appeared for a long time, and the effectiveness has been confirmed (Joung & Miller, 2006; Lennon & Rudd, 1994). In particular, makeup has been shown to have a positive effect on women's psychology from before, and most women have been increased their confidence and satisfaction through makeup (Cash, Dawson, Davis, Bowen, & Galumbeck, 1989; Graham & Kligman, 1985). Because many women can approach the socially ideal beauty by makeup their appearance, it can create confidence, and linked to positive emotion and high self-esteem (Korichi, Pelle-de-Queral, Gazano, & Auber, 2008). These behaviors are also appeared in virtual makeup using AR with development of technology, and women have a positive experience through virtual makeup. Javornik, Marder, Pizzetti and Warlop (2021) conducted various experimental research on self-concept through AR makeup. He found that the gap between ideal self-image and actual self-image can overcome through AR mirror, which has a positive effect on consumers' self-esteem and psychological well-being. Ahmed, Ambika and Belk (2022) attempted to qualitative approach to the self-concept in the AR makeup mirror through netnography, and some interviewee said they

could have time to praise themselves for becoming beautiful while watching virtual makeup. Even though there is a gap with ideal beauty, this can be said to be the result of an increase in positive emotion and confidence while looking at their virtual makeup. Yu and Lee (2020) asserted that positive emotion, body satisfaction and self-esteem increase by using virtual makeup app through experimental research on female college students. Women have not changed their actual appearance, but even their virtual appearance has shown various positive effects by approaching the ideal image itself.

Therefore, even if consumers have a positive self-image through virtual AR beauty app, and it can be confirmed that various therapeutic effect such as improving positive emotion and self-esteem, and reducing depression.

Necessary Mechanism as a Therapeutic Perspective: Repeated Exposure, Cognitive Change, Encouragement

Psychological mechanism must exist for AR beauty apps in order to have therapeutic effects. Among various psychological mechanisms, AR beauty apps can be borrowed through ARET, reciprocal determinism, and fashion therapy. ARET is a psychotherapy program that improves negative cognition or psychological condition by utilizing repeated exposure to AR at a free time and place without the need to visit a counselor. In the early stage, Georgia Tech developed a psychotherapeutic program for Vietnam veterans, such as post-traumatic stress disorder(PTSD). It was confirmed to be effective in overcoming trauma by using repeated experiencing fear and desensitizing, that is, increase the psychological immunity (Curry & Kasser, 2005). Since then, it has been used to treat it by repeatedly exposing negative emotions such as acrophobia and spiders and snakes, and its effect has been confirmed using ARET in various situation such as rehabilitation treatment (Albakri et al., 2022; Suso-Ribera et al., 2019; VVR, 2019). Therefore, ARET can be applied to AR beauty apps and a mechanism used to reduce negative emotions and cognitions through repetitive exposure. It is to allow consumer to treat their negative self-images with repeated expose program of positive image appearing in the AR beauty app.

Reciprocal determinism is the theory that personal, behavioral and environmental changes reciprocal affect each other, one of the three changes, the others are affected and changed (Bandura & Simon, 1977). In order words, it means that if individual's factor such as cognition or belief change, changes occur by affecting individual's behavior and surrounding environment through interaction. Conversely, changes in individual's behavior and environment lead to changes in individual's cognition or belief. This theory become the basis for self-efficacy (Bandura, 1978) and contributed to the development and extension of Cognitive behavioral therapy(CBT) that behavior can be treated with cognitive change (Hazlett-Stevens & Craske, 2002). Therefore, if consumers experience repeated exposure to the positive self-image of the AR beauty apps, negative cognition will be desensitized. Consumers change their cognition through repeated exposure to low self-esteem and negative self-image, resulting in a therapeutic effect. In addition, Professor Sally Merry's team at Auckland university in New Zealand developed SPARX(Smart, Positive, Active, Realistic, X-factor thoughts) as a game to cope with adolescence depression. It was found the depression was significant reduced by experiencing a continuous cognitive change process at the same time as the game. Therefore, AR beauty apps also provide repeated exposure and enjoyment, and simultaneously experience cognitive change process so that it can have therapeutic effect.

As the last mechanism, it can be borrowed of AR beauty apps as an encouragement that appears in fashion therapy. Fashion therapy is one of the psychotherapy that improves users' self-esteem and social rehabilitation by improving their appearance using fashion items (Horn & Gurel, 1981; Thomas, 1976). It was first performed in 1959 on insane female in Unite States, and its effectiveness has been proven in various patients (Lee, Lee, & Yoo, 2020; Mulready & Lamb, 1985; Shin, 1987). The mechanism of fashion therapy is mainly cognitive change, but Lee (2018) identified various mechanism such as cognitive change, self-expression and encouragement through qualitative approach. Among these, self-expression is therapeutic mechanism when expressing oneself using actual fashion

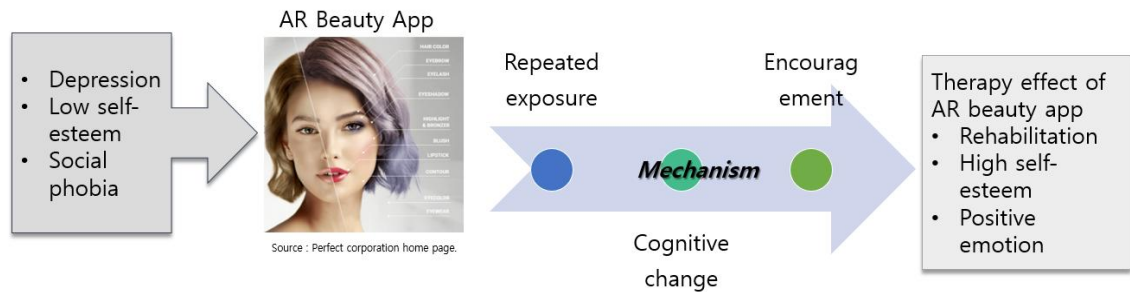


Figure 1. Three mechanisms in the field of psychotherapy through the AR beauty apps

items, and encouragement is a therapeutic mechanism through positive feedback and encourage by people around. In this study, it is a therapy as not practical product but AR beauty app, so it can be said that a therapeutic mechanism through encouragement is appropriate. This is because positive feedback can be formed through SNS or AR beauty apps.

Therefore, ARET, reciprocal determinism, and fashion therapy can be borrowed for AR beauty app's therapeutic mechanism such as repeated exposure, cognitive and encouragement (Figure 1).

Methodology

This study attempted to analyze using the systematic literature review method, and among literature on AR beauty apps published before September 1, 2022, only article published in journal were used for analysis, excluding proceedings, books, thesis and dissertation. It used searching engine such as Google scholar, Web of Science, Scopus, RISS, and DBpia for finding appropriate articles. It excluded fashion and virtual reality(VR) for research on AR beauty apps. As for the specific search process, first, databases such as Google scholar, Web of Science and SCOPUS searched for cases that included both 'AR' and 'beauty' in titles, abstracts and keywords. In the case of 'AR', the search was repeated using both 'augmented reality' and the abbreviation 'AR', and in the case of 'beauty', the app was an important factor, but the keyword of app was not included because it

was judged that there would be a limit to the search. Second, in the case of domestic databases such as RISS and DBpia, 'AR', 'augmented reality', 'beauty', and 'beauty apps' were searched in title, abstract and keyword. In the case of domestic databases, Korean search terms were used along with English search terms.

Excluding duplicated articles, a total of 268 articles were searched, with 234 English articles and 34 in Korean articles. Among these, in AR beauty apps research, abstract was reviewed to finally select attribute studies that has an important factor on consumers. The final 20 articles met the criteria for 1) AR beauty apps and consumer related research, and 2) exclusion of technology related research. In addition, in order to the reliability and objectivity of the literature selection, three researchers independently conducted a search based on PRISMA (Moher, Liberati, Tetzlaff, & Altman, 2009) (Figure 2).

Results

Results of Systematic Literature Review

Through a systematic literature review of the AR beauty apps, variables that affects consumers from a therapeutic perspective were examined (Table 1). Among the finally 20 articles, the theory and method used were investigated, and independent and dependent variables were analyzed. Many articles were conducted as quantitative research, but some of articles were studied as qualitative research, making it difficult to classify them into independent and dependent

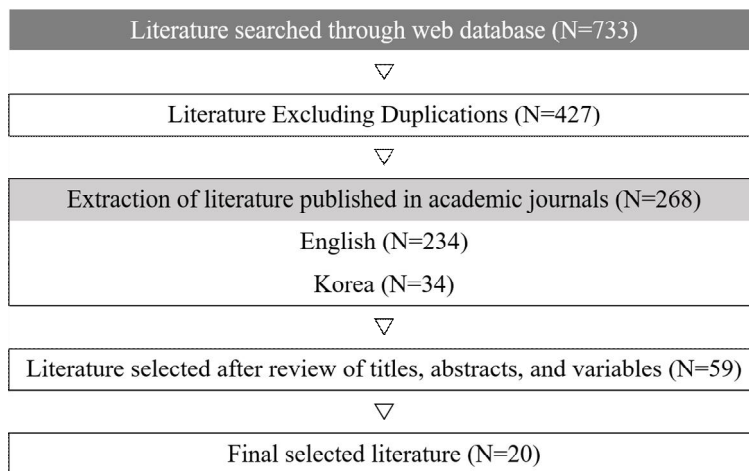


Figure 2. PRISMA-based AR beauty app study search process

variables. In particular, the emergence of the AR has emerged with development of the latest technology, and the first articles appeared in 2017, and most of them were after 2020.

Domestic research don't presented the key theory except Kim's (2020) experience economy, mainly in international studies, extended-self (Ahmend et al., 2022), TAM (Butt, Ahmad, Muzaffar, Ali, & Shafique, 2021), technology affordance theory (Caboni & Pizzichini, 2022), SOR theory (Hsu, Tsou, & Chen, 2021; Wang, Ko, & Wang, 2021), use and gratification theory (Gatter, Hüttl-Maack, & Rauschnabel, 2022), and self-schema (Javornik et al., 2022) are used as a theory to explain AR beauty app.

As a result of systematic literature review, it can be largely divided into technology-related aspects perceived by consumer and psychological approaches. In the technology-related aspects, easy-of-use, convience, interactivity and presence are mainly shown based on the TAM (Butt et al., 2021; Hsu et al., 2021; Hwang & Yoon, 2018; Joo & Yoon, 2021; Kim & Kang, 2021; Lee & Eu, 2022; Wang et al., 2021; Woo & Kim, 2020). Other psychological aspects include pleasure, flow and escape from reality (Ahmed et al., 2022; Butt et al., 2021; E. J. Kim, 2020; H. J. Kim, 2020; Hwang & Yoon, 2018; Javornik et al., 2022; Joo & Yoon, 2021; S. Kim, 2020; Wang et al., 2021; Woo & Kim 2020; Yu & Lee, 2020). The peculiarity

variables also appear peers' opinions in Whang, Song, Choi and Lee (2021) and self-compassion in Javornik et al. (2022).

In addition, among the studies, the questionnaire items are examined in detail for those that are not clear with variables alone, and it is found that two studies measured the psychological aspects of consumers. In the study of Lee and Kim (2019), the pleasure and escapeness are included as 'emotional satisfaction', 'made me feel special', and 'stimulated my emotions'. Joo and Yoon (2021) included two items in the aesthetics, the question that makes me beautiful through AR and aesthetic of the interface. This indicates that consumer become beautiful even with an ideal image, and is similar to the congruency of self-ideal image. The dependent variables mainly are satisfaction and purchase intention, E. J. Kim (2020) and Choi and Jin (2022) investigate the differences of makeup experience and behavior.

Results of Possibility as a Therapeutic AR Beauty App

Through literature review, variable related to therapeutic are examined and analyzed in three categories: repeated exposure, cognitive change and encouragement, which can be borrowed (Figure 3). First, it is a mechanism for repeated exposure by continuous use of AR. In case of repeated exposure, consumer are likely to use it continuously if they

Table 1. Systematic literature research for AR beauty apps

Author	Theory / Methods	Independent Variable	Dependent Variable
Ahmed et al. (2022)	Extended-self / Netnography	Experiential consumption	Fantasy, imagination, authentic self, proxy self
Butt et al. (2021)	TAM / Quantitative study	AR quality, ease of use, enjoyment, customization, interactivity	Satisfaction, continuous intention to use
Caboni & Pizzichini (2022)	Technology affordance theory / Qualitative study	Restriction, isolation, new everyday life	Satisfaction, willingness to use in a post-pandemic
Hsu et al. (2021)	SOR theory / Quantitative study	Personalization, interactivity, Perceived customer support	Experiential value, Continued usage intention
Gatter et al. (2022)	Use and gratification theory / Quantitative study	Autotelic need for touch, benefit(utilitarian, hedonic), imagined tangibility	Shopping experience. Purchase intention
Javornik et al. (2022)	Self-schema, behavioral plasticity / Experimental study	ideal congruence, appearance self-esteem, Ideal-actual gap	variety-seeking, Product choice confidence, self-compassion
Wang et al. (2021)	SOR theory / Quantitative study	AR service, presence, flow experience, decision comfort, fashion innovativeness	Purchase intention
Whang et al. (2021)	Telepresence theory / Quantitative study	AR experience, consumers' control (behavioral/cognitive /peers' opinions)	Purchase intention
S. Kim (2020)	Experience economy theory / Quantitative study	Escapeness experience, Aesthetic experience, Pleasure experience	Satisfaction, Purchase intention
Hwang & Yoon (2018)	Case study / Quantitative study	Relieve boredom, forwarding style information, convenience, before and after system comparison AR experience	Satisfaction
Kim (2017)	Case study		Product experience, Satisfaction
Kim & Kang (2021)	Qualitative study, Quantitative study	visibility(information), education, consistency, intuition, accuracy, controllability, erroneousness, efficiency, quickness, readability, variability	Satisfaction, social presence
E. J. Kim (2020)	Quantitative study	interest, immersion, education, escapeness, cognition, experience	Makeup behavior
H. J. Kim (2020)	Quantitative study	Image congruency, immersion, reality	Advertising effect
Woo & Kim (2020)	Quantitative study	AR experience	Functionality, reliability, convenience, usability, meaning, playfulness
Yu & Lee (2020)	Quantitative study	AR experience	Body satisfaction, self-esteem, emotion
Lee & Kim (2019)	Quantitative study	Sensory, emotional, cognitive, behavioral AR experience	Brand attitude, loyalty
Lee & Eu (2022)	Quantitative study	Social presence, interactivity	Perceived ease of use, perceived usefulness, re-intention
Joo & Yoon (2021)	Quantitative study	Interactivity, flow, escapeness, social presence, aesthetic, education	Cosmetics purchase behavior
Choi & Jin (2022)	Quantitative study	Demographics	Experience difference

are interested. Therefore, fantasy of Ahmed et al. (2022), enjoyment of Butt et al. (2021), new everyday life of Caboni and Pizzichini (2022), pleasure experience of S. Kim (2020), eliminating boredom of Hwang and Yoon (2018), interest and deviance of E. J. Kim (2020), pleasure of Woo and Kim

(2020), and escape from reality of Joo and Yoon (2021) it the driver of the repeated exposure mechanism. This is, pleasure and deviation are factors that can induce repeated access to apps and repeated exposure as consumers can continue to be interested. Thus, repeated exposure mechanism can be

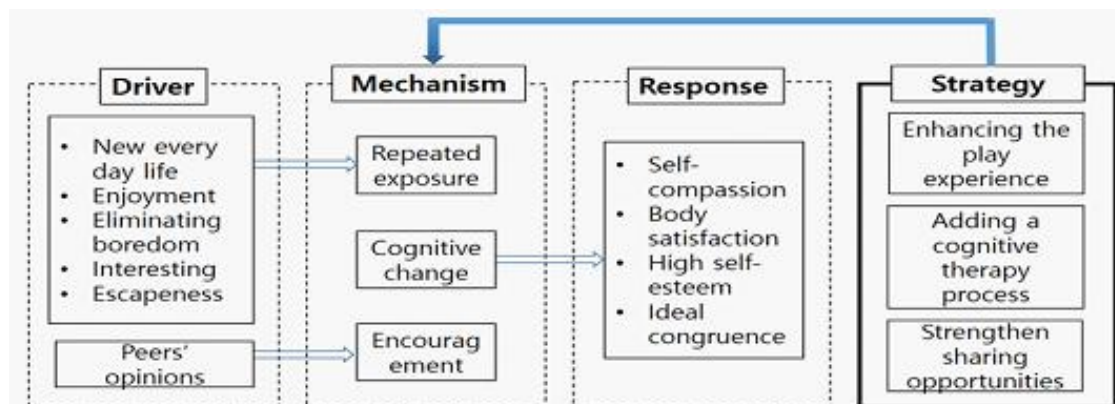


Figure 3. Analysis and suggestion of healing mechanism-based AR beauty apps

utilized, if it is possible to strengthen it on the AR beauty apps. Second, cognitive change is mechanism that changes consumers cognition. Since consumer change their response after experiencing AR beauty apps, self-compassion of Javornik et al. (2022) is included in this. Because self-compassion is one of positive cognitive factors with a careful effect to forgive oneself's mistake and take care of oneself even at moments of disappointment and embarrassment (Neff, 2003, 2011). In addition, not satisfaction of using AR beauty app, but body satisfaction and self-esteem of Yu and Lee (2020), ideal congruence of Javornik et al. (2022) and H. J. Kim (2020) are also included in the response changed by cognitive change mechanisms. Consumer recognized not real image but ideal image through using AR beauty app, and they think congruent with their ideal image and improve body satisfaction, it can occur cognitive changes. In addition, it is the same context that self-esteem increases. Finally, it is an encouragement mechanism. Positive feedback and encouragement from the surrounding on SNS will have a positive influence on consumers who use the AR beauty apps. Positive feedback and encouragement lead to a virtuous cycle of accessing the AR beauty app again, and the mechanism of repeated exposure and cognitive change are resulted in therapeutic effect. This is consistent with the results of Lee (2018) that encouragement of self-affirmation, confidence and praise from those around causes various positive effects such as improved self-esteem and social relationship, positive

emotion, and new challenges. Therefore, users of the AR beauty app will also have various therapeutic effects by encouragement in this context. Whang et al. (2021) investigated that user of the AR beauty app changed their purchase intention depending on their peers' opinion. This explains the word-of-mouth that users of the AR beauty app are also greatly influenced by surrounding's opinion. So, it can be borrowed as a consumers' driver to form a positive feedback loop of encouragement.

Conclusion

This study attempts to help consumer who form high satisfaction and loyalty and company that make strategies and by proposed therapeutic aspect of AR beauty app. For this, prior research examined through systematic literature review, and the necessary drivers and responses were identified. Based on the results of literature analysis and previous research on psychotherapy and fashion therapy, three mechanisms for AR beauty apps to have a therapeutic effects, repeated exposure, cognitive change and encouragement were derived. We proposed the strategies for strengthening mechanism (Figure 3).

First, it is a continuous experience and pleasure enhancement strategy to strengthen the repeated exposure mechanism. As a result of systematic literature review analysis, new every day life, enjoyment, elimination

boredom, interesting, escapeness, and deviance were found. This means that AR beauty apps are used to overcome the boredom of everyday life and to have fun and enjoyment. In other words, to satisfy these needs of consumers, AR beauty apps should establish various experience strategies that induce continuous access. Through this, it is possible to further strengthen the mechanism of repeated exposure. In order to induce continuous access, it is necessary to add immersion and addictive elements along with basic suggestions such as daily missions, mileage, and play to the AR beauty app. In other words, it is to add an element like a game where repeated access is inevitable. In addition, women are more sensitive to social relationships than men, so it reacts sensitively to feedback about sharing with the surroundings. It means that they are using the AR beauty app every day to check on positive responses. It will be able to utilize the same principle as the strategy of getting 'Like' on SNS such as Instagram or Facebook and making them access addictively every day to check it.

Second, in order to strengthen the mechanism of cognitive change, a cognitive psychotherapy process such as SPARX should be added. As a result of the analysis, response variables such as self-compassion, body satisfaction, self-esteem, and self-image matching were identified through the use of AR beauty apps. This is a result that can confirm that it already has the effective aspect of psychotherapy in various aspects. Therefore, if a cognitive psychotherapy process is added so that this can be strengthened and cognitive change can occur, a greater healing effect will appear. At SPARX, while conducting the game program, we gave advice to induce continuous cognitive change by introducing different characters to the participants' GNATS (Gloomy Negative Automatic Thoughts). Advice was given to induce lasting cognitive changes, such as how to feel better, how to overcome negative thoughts, and how to enjoy life, and the effects of these were already identified. Therefore, in future AR beauty apps, the case of SPARX can be applied to induce changes in women's self-objectification or low self-esteem. Provide advice on how to overcome negative thoughts such as 'I am not ugly' and 'I can be beautiful enough' to achieve cognitive change and live a better life. It is necessary to strategically

approach to increase the healing effect by adding interim cognitive change inducing advice to the AR beauty app experience process.

Lastly, it is a strategy that promotes an incentive mechanism by strengthening opportunities to share with others. As mentioned before, women place more importance on their relationships with friends than men do. Whether it's online or offline, we build relationships and value feedback very much. In the study of Lee (2018), as the result of the study that praise and encouragement from the surroundings form a good virtuous cycle to further implement fashion therapy, encouragement works as a very positive mechanism for women, so there is a need to strengthen it. Therefore, a positive feedback loop of people around you is formed through the SNS photo upload function on the AR beauty app. In addition, in order to induce positive feedback, personal color diagnosis and suggestions are additionally introduced to recommend suitable makeup. Currently, various AR beauty apps only have makeup recommendation programs, and personal color diagnosis is insufficient. If the personal color diagnosis is added, a more suitable and satisfactory appearance can be provided to the user on the app, and it will get positive feedback more easily. In addition, since only positive feedback should be induced, take a strategy to maximize the effect by preventing negative comments from being written in the AR Beauty DOQ program, like the negative comments blocking function that is implemented in some games.

The academic implications are as follows. In the past, research on fashion therapy has been conducted intermittently, but not so much. Therefore, through this study, theoretical help can be provided to expand the lack of fashion therapy research. Beauty is also a part of fashion, and if research on healing effects is conducted in various fashion fields, it is judged to be of great help in strengthening the foundation of fashion therapy research. In the future, based on this study, it will be possible to present the possibility that various studies of fashion therapy can be combined with various fields of the 4th industry. In addition, the direction of research can be presented through systematic literature research on AR beauty apps. This can be used as basic data for conducting various studies such as consumers,

technology, psychology, and methodology for the direction of research when conducting follow-up research on AR beauty apps in the future. In other words, quantitative research has been conducted in many areas, but if the research is approached from the perspective of neurophysiological response or cognitive science through AR experimental research, it will be possible to scientifically suggest that there is practical utility. In addition, there is still a lack of research on AR beauty apps, so if research is conducted in consideration of various variables such as consumer psychology and emotion in addition to the surveyed research, it will help to establish the foundation of this field.

The practical implications are as follows. A method for social sustainability was proposed for domestic AR beauty app companies. Currently, the world considers ESG management a very important corporate philosophy. In addition to the environmental aspect, social sustainability is considered an essential element, and strategies and efforts are being made in various ways to realize it. Therefore, in order for domestic AR beauty apps to grow in the long term, these aspects should be considered and introduced strategically. If the various healing methods suggested in this study are implemented as one pro-social marketing strategy, the company will be able to get high consumer loyalty. Furthermore, consumers will be able to help increase consumer inflow and expand the market through SNS word of mouth about their experience of healing effects compared to other apps. Ultimately, these differentiated apps will be able to advance not only domestically but also overseas. Healing AR and VR related beauty apps have more implications because they have not been implemented yet. In addition, if it develops into an entirely healing beauty app like SPARX, it can be used in the fields of medicine and psychotherapy as well. In modern society, there are many people who struggle with psychological problems, so if there is an AR beauty psychotherapy app that is easy to access and less burdensome, its effectiveness will be further enhanced.

The limitations of the study are as follows. The lack of prior research on AR beauty apps has limited to derive reliable conclusions. In the future, it is judged that more reliable research proposals can be made if the research is

expanded to include AR beauty apps, AR fashion apps, and AR retail apps. In addition, since this study is an inferred mechanism based on literature research, more valid results can be derived if a qualitative approach is attempted with consumers who have actual experience. Additionally, although the classification criteria of this study were analyzed through discussion by three researchers, objectivity may be lacking. Therefore, if there is a large increase in previous research in the future, it is necessary to objectify it using a literature analysis program such as Citespace or VOSviewer.

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