The Influence of Physical Attractiveness and Gender on Patient Preferences in Online Doctor Consultations: The Moderating Effects of Disease Severity and Qualification Information

Xia Wei, Shubin Yu, Changxu Li

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Abstract

Background: With the development of information technology and the worldwide COVID-19 pandemic, digital health service, telemedicine, and online health consultations are playing an increasingly important role in people's lives.

Objective: The present research examines the effect of healthcare providers' physical attractiveness on patients' preference for online doctor consultations. We also investigate the moderating role of disease severity (high vs. low).

Methods: Drawing on the sexual attribution bias theory (SAB), three experiments were employed.

Results: This research found that patients tend to choose attractive doctors of the opposite sex but are less likely to choose attractive doctors of the same sex. Additionally, our studies revealed that such an effect is more prominent when the disease severity is high. Furthermore, the influence of gender stereotypes is mitigated in both the high and low disease severity conditions when service providers' qualification information is present.

Conclusions: This research contributes to the literature on medical information systems research and sheds light on what information should be displayed on online doctor consultation platforms.

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The Influence of Physical Attractiveness and Gender on Patient Preferences in Online Doctor Consultations: The Moderating Effects of Disease Severity and Qualification Information

Abstract

Background: The rise of digital health services, particularly online doctor consultations, has created a new paradigm in healthcare choice. While patients traditionally rely on online reviews or referrals to select healthcare providers, the online context often lacks such information, leading to reliance on visual cues like profile pictures. Previous research has explored the impact of physical attractiveness in general service settings but is scant in the context of online healthcare.

Objective: This study aims to fill the research gap by investigating how a healthcare provider's physical attractiveness influences patient preferences in an online consultation setting. We also examine the moderating effects of disease severity and the availability of information on healthcare providers' qualifications. The study employs signal theory and the Sexual Attribution Bias framework to understand these dynamics.

Methods: Three experimental studies were conducted to examine the influence of healthcare providers' physical attractiveness and gender on patient preferences in online consultations. Study 1 (N = 282) employed a 2x2 between-subjects factorial design, manipulating doctor attractiveness and gender. Study 2 (N = 158) focused on female doctors and manipulated disease severity and participant gender. Study 3 (N = 150) replicated Study 2 but added information about the providers' abilities.

Results: This research found that patients tend to choose attractive doctors of the opposite sex but are less likely to choose attractive doctors of the same sex. Additionally, our studies revealed that such an effect is more prominent when the disease severity is high. Furthermore, the influence of gender stereotypes is mitigated in both the high and low disease severity conditions when service providers' qualification information is present.

Conclusion: This research contributes to the literature on medical information systems research and sheds light on what information should be displayed on online doctor consultation platforms. To counteract stereotype-based attractiveness biases, healthcare platforms should consider providing comprehensive qualification information alongside profile pictures.

Keywords: online doctor consultations, healthcare providers, gender stereotype, physical attractiveness, qualification information

Introduction

Background

Digital health services have become increasingly important in healthcare, particularly after the COVID-19 pandemic necessitated the development of new online consultation systems [1-4]. Previous research indicates that patients often use online reviews to select healthcare providers [5]. However, there is limited understanding of how decisions are made when such reviews are not available. In traditional healthcare settings (i.e., offline healthcare), patients typically choose or are assigned a general practitioner (GP) based on their geographical location. In contrast, online healthcare settings remove these geographical restrictions, presenting patients with a vast array of choices and different information. This abundance of choices and inconsistent information can make it challenging for patients to compare and select healthcare providers [6]. For instance, the availability of online information can lead patients to select doctors based on inherent biases, which can arise from their personal preferences or the way the information is presented on the platform. Given these limitations, patients may resort to evaluating healthcare providers based on available photographs. This situation raises questions about the influence of a healthcare provider's appearance on patient choices and whether gender differences affect these decisions. Previous research indicates that attractive service providers can positively influence consumer attitudes and purchase intentions [7]. High physical attractiveness is often associated with greater credibility and professional ability, affecting consumer attitudes accordingly [8-10]. However, high attractiveness can also have negative effects, such as difficulty in forming same-sex friendships due to competition or eliciting envy and perceived threats among members of the same sex [11-14].

Much of the existing research focuses on general services like fitness clubs and educational consulting [15]. These findings may not be directly transferable to specialized online services, such as online doctor consultations. Such services are categorized as credence services, which are difficult for patients to evaluate due to their complex and specialized nature [16,17]. The challenge of evaluation is further exacerbated in an online setting where information about the provider's abilities may be limited.

There is a research gap in understanding how physical appearance affects patient preferences in online healthcare settings. This study aims to fill this gap by examining preferences for doctors of varying levels of physical attractiveness in online consultations. We also consider the moderating effects of disease severity and the availability of information on healthcare providers' qualifications to offer both theoretical and practical insights.

Research on doctor selection employs signal theory to explore how patients navigate information asymmetry [18,19]. Text-mining research identified key service features, such as overall service experience and personality traits, that affect patients' trust and, consequently, consultation volumes [20]. Online doctor consultation platforms typically display limited information about doctors, such as their name, profile picture, and title. The appearance of the doctor may influence patients' preferences. Prior studies have shown that the attire of physicians influenced patients' perceptions [21-23]. For example, physicians in white coats were viewed as more experienced and professional than those in casual jackets [24]. Despite this, there is still scant research on how such visual and textual information affects patients' decision-making.

In non-healthcare service settings, the impact of physical attractiveness on performance evaluation has shown mixed results. While some studies indicate that higher levels of attractiveness positively influence performance evaluations [25,26], others suggest a negative effect [27]. These mixed outcomes may be attributed to various contextual factors such as gender

[28], service quality conditions [29]. In online settings, service providers' physical appearance has been shown to influence customer choice, preference, and purchase intent[30]. For example, in the sharing economy, such as Airbnb, facial characteristics contribute to reputation mechanisms[31]. Studies have found that the perceived trustworthiness and attractiveness of a host's profile photo significantly affect Airbnb prices [32,33]. Physical attractiveness also influences online consumer shopping, with more attractive avatars correlating with higher sales when product involvement is moderate[34].

Previous research indicates that gender differences significantly influence how patients perceive doctors [24,35,36] . The Sexual Attribution Bias (SAB) offers an explanatory framework for these gender effectsm [37]. SAB leads individuals to attribute the success of same-sex individuals with high attractiveness to luck rather than ability, whereas for opposite-sex individuals, high attractiveness is attributed to ability [38]. This bias manifests in two ways: demeaning attractive individuals of the same sex and praising attractive individuals of the opposite sex. Studies have shown that negative vigilance against attractive same-sex individuals is strong and automatic due to intra-sexual competition[39–42].

Unlike general services where attractiveness universally enhances provider popularity [43,44] , we posit that in online doctor platforms, gender plays a significant role in shaping preferences for providers with varying levels of attractiveness. Influenced by same-sex competition, consumers may perceive same-gender providers with high attractiveness as less qualified. Conversely, influenced by mating motivation, consumers may prefer highly attractive providers of the opposite gender. Given the importance of competence in selecting credence service providers [45], SAB suggests that individuals may make derogatory attributions about the competence of same-sex providers with high physical attractiveness.

H1. *In online doctor consultations, people are more likely to perceive a more attractive doctor of the opposite (vs. same) gender as more (less) competent, thereby influencing their likelihood of selecting that doctor.*

We anticipate that disease severity will modulate the effects of gender and attractiveness on provider selection. Previous research has established a relationship between disease severity and behavior in various healthcare contexts [46–49]. The Elaboration Likelihood Model posits two routes of information processing: central and peripheral, determined by the individual's level of involvement [50]. In low-involvement situations, attitudes are influenced by simple cues, whereas high involvement leads to deeper consideration of complex information. Applying this model and stereotype theory, we suggest that in high-involvement scenarios, consumers will scrutinize providers' abilities more closely, potentially leading to greater influence of SAB on their choices. For example, women may question the competence of attractive female providers, suspecting their success is due to their appearance rather than merit [51]. This aligns with research showing that physical attractiveness elicits more jealousy among women than men [14]. Conversely, in low-involvement scenarios, the impact of gender on preferences for providers' physical attractiveness is expected to be less pronounced.

H2. *The effect of gender on individual preferences for the doctor's physical attractiveness is moderated by disease severity. Such an effect is more prominent when disease severity is high (vs. low).*

Furthermore, a foundational assumption for the effects discussed earlier is that consumers lack additional information about the service providers' abilities. This is often the case in credence services, where consumers typically have less expertise and access to information compared to non-credence services, making them more reliant on extra information supplied by the provider [52]. Research has shown that the provision of such information can mitigate consumer-perceived risk or uncertainty [53].

H3. *The effect of gender on individual preferences for the service provider's physical attractiveness disappears when information about the doctor's abilities is present.*

Methods

Ethical considerations

This study has received ethical approval from the College of Management, Shenzhen University.

Informed consent was obtained from all participants. The consent form provided detailed information about the research's purpose, the involved institutions, the nature of their participation, and the use of their data. Participants were informed of their right to withdraw at any time and the procedures for data removal. The consent process was designed to comply with data protection legislation, ensuring participants were aware of their rights and the protections in place. Privacy and confidentiality were protected by anonymizing study data. The data was stored securely and processed. For Study 1, we paid 3 yuan for each response we collected. For Study 2 and 3, Participants received a gift of approximately 5 yuan for their participation.

Study 1

Study 1 employed a 2 (attractiveness: high vs. moderate) x 2 (doctor gender: male vs. female) between-subjects factorial experiment. We created an online doctor consultation scenario where participants were asked to imagine that they had abdominal pain while travelling. As most clinics are closed at night, they decided to consult an online doctor via a platform called "*Doctor Online*".

Stimuli

An interface was designed for the platform. In the interface, the doctor's picture was shown on the left and their name, title, and department were displayed on the right. There was also a button for online consultation. To manipulate the physical attractiveness of the doctor, we used an AI face generator to generate different faces for male and female doctors (Figure. 1). We slightly adapted the physical features of the faces to make them less or more attractive.

Pre-test

We conducted a pre-test to check if the manipulation was successful. We recruited 111 participants (M_{age} = 30.0, SD = 7.86; percentage of female participants: 63.1%) to test the male doctor and 105 participants (M_{age} = 30.5, SD = 9.61; percentage of female participants: 70.5%) for the female doctor via an online panel service WJX. The results showed that for the male doctor, participants perceived the face in the high attractiveness condition to be more attractive than that in the moderate attractiveness condition (M_{high} = 5.53, SD = .98 vs. $M_{moderate}$ = 4.32, SD = 1.09, $F(1, 109)$ = 38.3, $P < .001$, η^2 = .26). For the female doctor, the face in the high attractiveness condition was perceived as more attractive than that in the moderate attractiveness condition (M_{high} = 5.98, SD = .85 vs. $M_{moderate}$ = 4.94, SD = .95, $F(1, 103)$ = 34.7, $P < .001$, η^2 = .25).
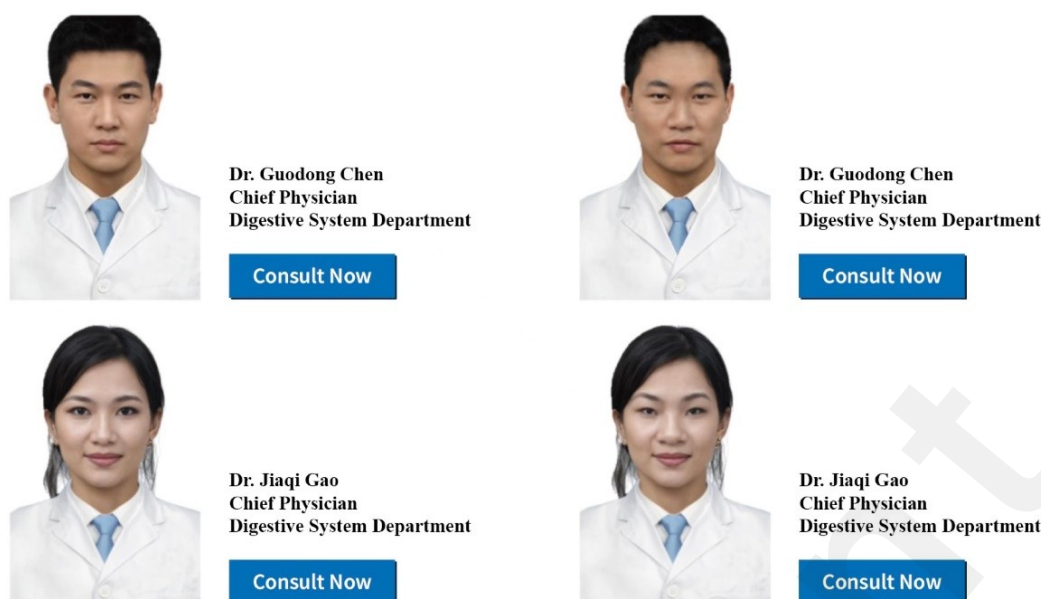
Figure 1. Stimulus used in Study 1

Note: These profile pictures were generated by AI

Subjects

We recruited 282 respondents via an online panel service WJX in China. The participants were not necessarily actual patients in this experiment. The mean age of the respondents was 27.8 (SD = 9.76). The number of female respondents was 156 (55.3%). Based on the respondents' gender, we created a new variable "*gender match*". If the gender of the participant is the same as that of the doctor, we assigned the value 1 (same gender). Otherwise, we coded the variable as 0 (opposite gender). In the end, there were 147 participants in the same gender condition, and 135 in the opposite gender condition. The majority of respondents had a bachelor's degree (36.9%), followed closely by those with a graduate degree or higher (31.6%). Less than a quarter of the respondents had an education level of high school or below. The majority of respondents were students (46.8%), followed by those working in industrial or manufacturing enterprises (14.9%). Less than 5% were either retired or unemployed. The data revealed that a slight majority of respondents (54.3%) had experience with online consultations, while 45.7% had not engaged in such services. See Table 1-2 for detailed information.

Table 1. Distribution of Respondents by Educational Level (Study 1)

Educational Level	Frequency	Percent
Junior High or Below	17	6.0%
High School/Vocational	44	15.6%
Associate Degree	28	9.9%
Bachelor's Degree	104	36.9%
Graduate or Above	89	31.6%
Total	**282**	**100.0%**

Table 2. Occupational Types of Respondents (Study 1)

Occupation Type	Frequency	Percent
Commercial/Service Industry	35	12.4%
Industrial/Manufacturing	42	14.9%
Self-Employed	31	11.0%
Retired	8	2.8%
Unemployed	9	3.2%
Students	132	46.8%
Other	25	8.9%
Total	282	100.0%

Manipulation Checks

For the manipulation check, we asked the participants to rate the physical attractiveness of the doctor using a single item: *What do you think of the doctor's physical appearance (1-not attractive at all; 7- very attractive)*. A single item was used to measure the doctor's perceived competence: *Do you think that this doctor is competent in this job (1-no; 7- yes)*. To assess participants' intention to select the doctor, we asked participants how likely he/she would be to select this doctor for an online consultation (*1-very unlikely; 7-very likely*). To rule out alternative explanations, we also measured a number of the doctor's attributes: perceived seniority (What do you think about the doctor's work experience? *1-very limited; 7-very rich*), anticipated embarrassment (How likely are you to feel embarrassed about consulting this doctor? *1-not embarrassed at all; 7 – very embarrassed),* perceived friendliness (How friendly is this doctor? *1-not friendly at all; 7 – very friendly*), and perceived willingness to help (Do you think this doctor is willing to meet patients' needs? *1-not at all; 7-very much*). Finally, respondents were asked to provide some relevant demographic information about their age, gender, educational background, and occupation.

Study 2

In Study 2, to reduce the complexity of the experimental design, we focused on female doctors. A between-subjects experiment was designed with two independent variables, each with two levels. The manipulated factors were disease severity (two levels: high vs. low) and gender of the participant (two levels: male vs. female).

Stimuli

In the experiment, respondents were randomly assigned to one of two groups of scenarios with different degrees of involvement. They were first asked to read material about a scenario of abdominal pain during travel. The low-involvement group was described as "slight abdominal pain, the same old symptom, not too worried, decided to consult a doctor". The high-involvement group heard it described as "severe abdominal pain, lumps when pressing with hands, never encountered such symptoms before, and felt both worried and afraid, decided to consult a doctor immediately".

To manipulate physical attractiveness in the dependent variable, we referred to the studies of Heilman and Stopeck [54] and Försterling [37], as well as previous studies on the use of photos as stimuli of attractiveness in job-seeking scenarios [55]. Thirty respondents were invited to participate in rating different female service providers' physical attractiveness. Respondents were asked to use a 5-point scale to rate the attractiveness of providers in ten 2.54-cm photos. All photos were selected from several medical websites and their photo styles were unified. Finally, three photos, representing the

mean value, higher than one standard deviation, and lower than one standard deviation were selected as photos to represent the three different levels of physical attractiveness, as shown in Figure. 2.

Pre-test

We also conducted a second pre-test with 28 respondents to check if confounding factors like perceived friendliness, perceived patience, perceived seniority, perceived willingness to help, and anticipated embarrassment were controlled for among three service providers. The results suggested that all three service providers were perceived as equally friendly ($M_{\text{high PA}}$ = 2.94, SD = 1.692; $M_{\text{middle PA}}$ = 2.94, SD = 2.016; $M_{\text{low PA}}$ = 3.75, SD = 2.053; $F(2, 25)$ = .586, P > .05, η^2 = .031), patient ($M_{\text{high PA}}$ = 3.19, SD = 1.682; $M_{\text{middle PA}}$ = 2.88, SD = 1.857; $M_{\text{low PA}}$ = 3.88, SD = 2.475; $F(2, 25)$ = .720, P > .05, η^2 = .037), experienced ($M_{\text{high PA}}$ = 2.44, SD = 1.711; $M_{\text{middle PA}}$ = 2.81, SD = 1.905; $M_{\text{low PA}}$ = 3.50, SD = 2.390; $F(2, 25)$ = .806, P > .05, η^2 = .042), willing to help ($M_{\text{high PA}}$ = 3.44, SD = 1.931; $M_{\text{middle PA}}$ = 2.56, SD = 1.750; $M_{\text{low PA}}$ = 3.50, SD = 2.268; $F(2, 25)$ = 1.037, P > .05, η^2 = .053), and embarrassing to consult with ($M_{\text{high PA}}$ = 3.38, SD = 1.996; $M_{\text{middle PA}}$ = 3.44, SD = 2.007; $M_{\text{low PA}}$ = 3.25, SD = 1.488; $F(2,25)$ = .025, P > .05, η^2 = .001).
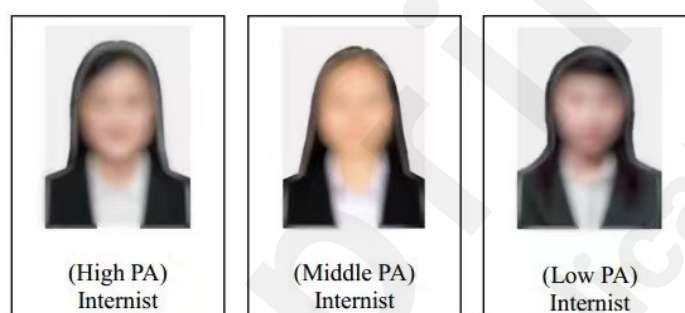

Figure 2. Stimulus used in Study 2

Note. The pictures were blurred because of privacy issues

Note. PA = Physical Attractiveness

Subjects

To observe how gender and degree of involvement influence individual preferences, this experiment recruited 158 citizens in the city center of Shenzhen, China. The participants were not necessarily actual patients during the experiment. Of the 158 respondents, 80 were men and 78 were women. We only recruited participants who were older than 18. The age distribution was weighted towards adults, with 55.1% aged 18–25, 22.8% aged 26–30, and 16.5% aged 31–40 for both men and women. The respondents were assigned to either high-involvement (75, 47.5%) or low-involvement (83, 52.5%) groups. The data showed that the majority of respondents had a bachelor's degree (57.6%), and less than 5% had an educational level of junior high school or below. The data also indicated that the largest group of respondents were students (36.7%), followed by those working in the commercial or service industry (19.6%). Less than 1% were retired. See Table 3-4 for detailed information.

Table 3. Distribution of Respondents by Educational Level (Study 2)

Educational Level	Frequency	Percent
Junior High or Below	7	4.4%
High School/Vocational	22	13.9%

Associate Degree	29	18.4%
Bachelor's Degree	91	57.6%
Graduate or Above	9	5.7%
Total	**158**	**100.0%**

Table 4. Occupational Types of Respondents (Study 2)

Occupation Type	Frequency	Percent
Commercial/Service Industry	31	19.6%
Industrial/Manufacturing	26	16.5%
Self-Employed	10	6.3%
Retired	1	0.6%
Students	58	36.7%
Other	32	20.3%
Total	**158**	**100.0%**

Respondents were asked to examine the name and the photo of three doctors and asked to select one of them from whom to receive treatment. Then, they completed a questionnaire. A 7-point Likert scale was used in this experiment to measure the perceived severity of the disease. We used a 7-point Likert scale, adapted from previous studies on positive emotions caused by physical attractiveness [56,57] and research about the evaluation of attraction and ability [58], to evaluate the physical attractiveness of the physicians. Finally, respondents were asked to provide some relevant demographic information about their age, gender, educational background, and occupation.

Study 3

All basic conditions and requirements were the same as Study 2. Study 3 examined whether the subjects would make a different choice after being provided with extra information. We also sought to further verify that the presence of information about providers' abilities would reduce the influence of gender on respondents' preferences.

Stimuli

The only difference from the experimental procedure used in Study 2 was the adjustment of stimuli. Study 3 added similar ability information about the provider's professional background and clinical experience below the photo provided in Study 2. The description read: "… graduated from … medical college, … has participated in many research projects, … has been working for 5 years, … is an expert in diagnosis and treatment of common and frequently-occurring diseases…". To minimize confounding factors, the written description of the academic background, clinical experience, scientific research achievements, and areas of expertise of the service providers in the stimuli was very similar.

Subjects

Study 3 recruited 150 citizens in the city center of Shenzhen, with equal numbers of male and female respondents (50% men, 50% women). The participants were not necessarily actual patients during the experiment. The age

distribution was similar to that of Study 2, with a high concentration of young adults: 54% ages 18–25, 26.7% ages 26–30, with only 12% ages 31–40. The high- and low-involvement groups included 74 and 76 respondents, respectively. The data indicated that among the 150 respondents, the majority had a bachelor's degree (54.7%). This was followed by those who had completed high school, vocational school, or technical school (17.3%), and then by those with an associate degree (16.7%). The data also indicated that among the 150 respondents, the largest group were students, comprising 44.0% of the sample. This was followed by those working in the commercial or service industry, who made up 26.7% of the respondents. Those in industrial or manufacturing roles accounted for 7.3%, and self-employed individuals made up 4.7%. See Table 5-6 for detailed information.

Table 5. Distribution of Respondents by Educational Level (Study 3)

Educational Level	Frequency	Percent
Junior High or Below	11	7.3%
High School/Vocational	26	17.3%
Associate Degree	25	16.7%
Bachelor's Degree	82	54.7%
Graduate or Above	6	4.0%
Total	150	100.0%

Table 6. Occupational Types of Respondents (Study 3)

Occupation Type	Frequency	Percent
Commercial/Service Industry	40	26.7%
Industrial/Manufacturing	11	7.3%
Self-Employed	7	4.7%
Retired	4	2.7%
Unemployed	1	0.7%
Students	66	44.0%
Other	21	14.0%
Total	150	100.0%

Results

Study 1

The individual item scores within a single scale were computed to yield an average score, serving as a composite measure for that particular scale. The results revealed that participants perceived doctors in the high attractiveness condition to be more attractive than those in the moderate attractiveness condition (M_{high} = 5.62, SD = 1.03 vs. $M_{moderate}$ = 4.72, SD = 1.36, $F(1, 280)$ = 39.1, P < .001, η^2 = .12). This suggested our manipulation was successful.

We conducted an ANOVA to evaluate our hypotheses. The results showed that physical attractiveness did not have a significant main effect on perceived competence (M_{high} = 5.28, SD = .98 vs. $M_{moderate}$ = 5.10, SD = 1.12, $F(1, 278)$ = 2.32, P = .13, η^2 = .008). In consistence with our expectation, we observed a significant interaction effect of physical attractiveness and gender match on perceived competence ($F(1, 278)$ = 5.95, P = .015, η^2 = .021). In particular, when the doctor and participant were of different genders, attractive doctors were perceived to be more competent in the job than less attractive doctors (M_{high} = 5.45, SD = .93 vs. $M_{moderate}$ = 4.95, SD = 1.10, $F(1, 133)$ = 8.08, P < .01, η^2 = .057). However, when the doctor and participant were of the same gender, attractiveness did not produce any positive effect on perceived competence (M_{high} = 5.09, SD = 1.01 vs. $M_{moderate}$ = 5.21, SD = 1.13, $F(1, 145)$ = .41, P = .52, η^2 = .003).

Table 7: Descriptive Statistics for Perceived Competence Scores Based on Physical Attractiveness and Gender Match

Physical Attractiveness	Gender Match	Mean	SD	N
Moderate	Concordance	5.21	1.13	82
	Discordance	4.95	1.10	59
	Total	5.10	1.12	141
High	Concordance	5.09	1.01	65
	Discordance	5.45	0.93	76
	Total	5.28	0.98	141
Total	Concordance	5.16	1.08	147
	Discordance	5.23	1.04	135
	Total	5.19	1.06	282

Physical attractiveness had a positive effect on intention to select the doctor (M_{high} = 5.49, SD = 1.13 vs. $M_{moderate}$ = 5.10, SD = 1.32, $F(1, 278)$ = 5.10, P = .025, η^2 = .018). There was also a significant interaction effect of physical attractiveness and gender match on intention to select the doctor ($F(1, 278)$ = 3.96, P = .048, η^2 = .014). More specifically, participants were more likely to select attractive doctors than less attractive doctors of the opposite gender (M_{high} = 5.49, SD = 1.17 vs. $M_{moderate}$ = 4.86, SD = 1.36, $F(1, 133)$ = 8.15, P < .01, η^2 = .058). In contrast, when the participants and doctor were of the same gender, there was no difference in intention to select between more attractive and less attractive doctors (M_{high} = 5.31, SD = 1.07 vs. $M_{moderate}$ = 5.27, SD = 1.27, $F(1, 145)$ = .40, P = .84, η^2 < .001).

Table 8: Descriptive Statistics for Intention Scores Based on Physical Attractiveness and Gender Match

Physical Attractiveness	Gender Match	Mean	SD	N
Moderate	Concordance	5.27	1.26	82
	Discordance	4.86	1.35	59
	Total	5.10	1.31	141
High	Concordance	5.31	1.07	65

	Discordance	5.49	1.17	76
	Total	5.40	1.12	141
Total	Concordance	5.29	1.18	147
	Discordance	5.21	1.28	135
	Total	5.25	1.23	282

Next, we performed a moderated mediation analysis using Hayes PROCESS (Model 7) with 10,000 bootstrap samples. To rule out alternative explanations, we also examined the mediating effect of perceived seniority, perceived embarrassment, perceived friendliness, and perceived willingness to help. The results showed that the moderation effect of gender match on physical attractiveness on intention to select was only mediated by perceived competence (point estimation = .34, 95% CI = [.0622, .6593]), but not by perceived seniority (point estimation = .09, 95% CI = [-.0601, .2763]), anticipated embarrassment (point estimation = .01, 95% CI = [-.0196, .0663]), perceived friendliness (point estimation = -.01, 95% CI = [-.0912, .0477]), and perceived willingness to help (point estimation = -.001, 95% CI = [-.1395, .1423]). In particular, when participants and doctors were of different genders, physical attractiveness led to higher perceived competence of the doctor, thereby increasing the intention to select the doctor (point estimation = .27, 95% CI = [.0776, .4994]). However, when there was no difference in gender, such an indirect effect was insignificant (point estimation = -.06, 95% CI = [-.2716, .1233]).

We conducted a supplementary analysis in which we controlled for age. The results of this age-adjusted analysis remained consistent with our initial findings. Specifically, after accounting for age differences, the interaction effect of gender match and physical attractiveness on perceived competence ($F_{(1, 277)} = 4.81$, $P = .03$, $\eta^2 = .017$) and user intention ($F_{(1, 277)} = 2.32$, $P = .006$, $\eta^2 = .027$) remained stable. Also, the moderated mediation effect was significant (point estimation = .55, 95% CI = [.1598, .9762]). Therefore, H1 was supported.

Study 2

A manipulation check on the perceived severity of the disease showed that the scores of the low-involvement group ($M = 3$. $SD = 1.47$) were significantly lower than those of the high-involvement group ($M = 4.45$, $SD = 1.60$; $t_{(158)} = -5.95$, $P □ .001$, $\eta^2 = .185$). This indicates that the different degree (high vs. low) of involvement was successfully manipulated. A One-way ANOVA was employed for a manipulation check on physical attractiveness. The results showed that physical attractiveness of doctors was successfully manipulated ($M_{high PA} = 5.61$, SD = 1.13, $M_{Middle PA} = 4.77$, $SD = .94$; $M_{low PA} = 3.88$, $SD = 1.28$; $F_{(158)} = 98.24$, $P □ .001$, $\eta^2 = .499$).

A chi-square test was used to examine H1. The result showed that male and female participants had a significant difference in selecting the doctors with three different physical attractiveness levels ($X^2 = 14.165$, $df = 2$, $P □ .001$, $Phi = .299$). Furthermore, this research tried to identify the level of physical attractiveness upon which this kind of difference exists. Therefore, a post hoc test was conducted. The analysis finds that adjusted standardized residual of gender preference has a significant difference on high-level ($Number_{male choose high PA} = 48$, $Number_{female choose high PA} = 29$, $Z\text{-}score_{abs} = 2.9$, $Z\text{-}score_{abs} > 1.96$, $P < .05$) and middle-level ($Number_{male choose middle PA} = 25$, $Number_{female choose middle PA} = 47$, $Z\text{-}score_{abs} = 3.7$, $Z\text{-}score_{abs} > 1.96$, $P < .05$) service providers, while gender has an insignificant effect on those with low physical attractiveness ($Number_{male choose middle PA} = 7$, $Number_{female choose middle PA} = 2$, $Z\text{-}score_{abs} = 1.7$, $Z\text{-}score_{abs} < 1.96$, $P > .05$). This

indicated that in terms of different physical attractiveness in service providers, men (vs. women) preferred highly attractive female service providers, while women (vs. men) preferred moderately attractive providers; however, there was no difference between men and women's choice for the low-attractiveness provider. Thus, H1 is supported.

To further investigate how involvement in a credence service scenario influences men's (vs. women's) preferences for different physical attractiveness in service providers, a post-hoc test of chi-square and an analysis of logistic regression were employed. The test found that involvement moderated the effect of gender on preferences ($\beta_{gender \times involvement}$ = -18.39, *Wald* = 662.36, *P* < .01). The results illustrated that in the low-involvement condition, the effect of gender on preference was reduced. In particular, the effect of gender on individual preferences only existed in the high-involvement scenario (X^2 = 9.78, *df* = 2, *p* = .008, *P* ⫫.05). For the low-involvement scenario, there was no gender effect (X^2 = 4.82, *df* = 2, *P* > .05). Therefore, H3 was supported. In the high-involvement condition, compared with women, men preferred the highly attractive service provider (*Number* $_{male\ choose\ high\ PA}$ = 19, *Number* $_{female\ choose\ high\ PA}$ = 12, *Z-score* $_{abs}$ = 2.1, *Z-score* $_{abs}$ > 1.96, *P* < .05); compared with men, women were more likely to select a service provider with moderate physical attractiveness (*Number* $_{male\ choose\ middle\ PA}$ = 13, *Number* $_{female\ choose\ middle\ PA}$ = 28, *Z-score* $_{abs}$ = 2.9, *Z-score* $_{abs}$ > 1.96, *P* < .05) (Figure. 3).
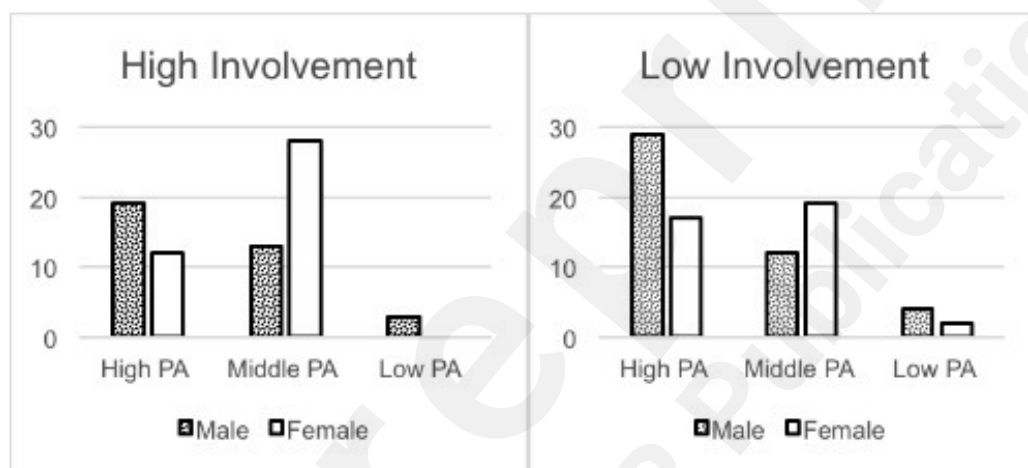

Figure 3. Influence of gender on consumers' preferences
for service providers with different levels of physical attractiveness
Note. PA = Physical Attractiveness

Study 3

A manipulation check on the perceived severity of the disease showed that the scores of the low-severity group (*M* = 5.17, *SD* = 1.14) were significantly lower than those of the high-severity group (*M* = 3.24, *SD* = 1.13; *t*(148) = -10.40, *P* < .001, η^2 = .422). This indicated that the degree (high vs. low) of severity was successfully manipulated. A One-way ANOVA was employed for a manipulation check on physical attractiveness. The data showed that there was a significant difference between the three levels of physical attractiveness (*M* $_{high\ PA}$ = 5.81, SD = .90, *M* $_{Middle\ PA}$ = 4.73, *SD* = .94; *M* $_{low\ PA}$ = 3.82, *SD* = 1.18; *F*(150) = 144.50, *P* < .001, η^2 = .661). Thus, the physical attractiveness of three doctors was successfully manipulated.

We employed a post hoc chi-square test and logistic regression model to test our hypothesis. The chi-square results showed that there was no significant difference in the physical attractiveness preferences of men and women (X^2 = 1.147, *df* = 2, *p* = .564, *P* > .05, *Phi* = .087) when they were provided with extra information about the service provider's qualification. A further post hoc chi-square test showed that in both the high-involvement (X^2 = 1.730, *df* = 2, *p* = .421, *P*

$> .05$, *Phi* $= .151$) and low-involvement ($X^2 = .046$, *df* $= 2$, $P > .05$, *Phi* $= .025$) scenarios, the effect of gender on preferences disappeared after respondents were given information on the service provider's abilities.
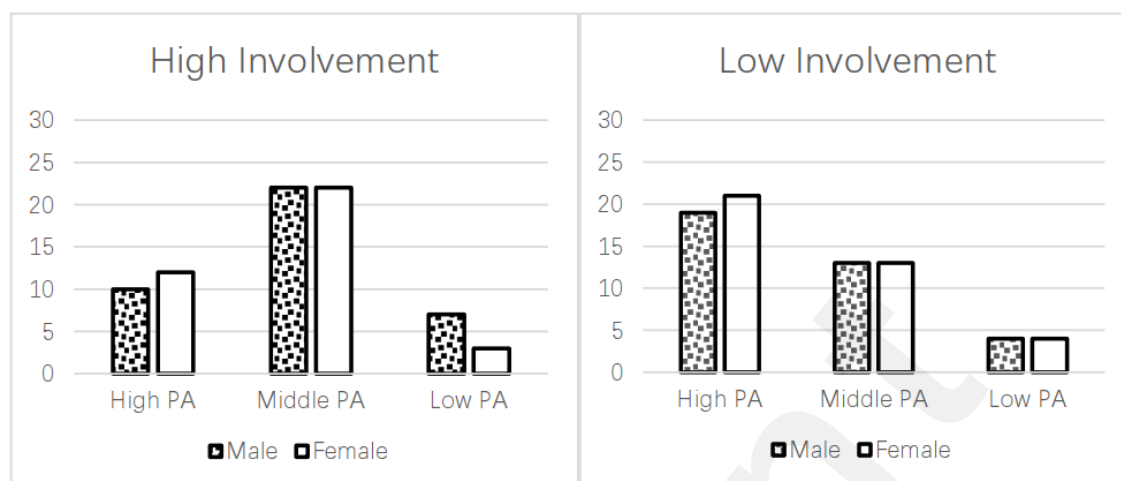

Figure 4. Influence of gender on consumers' preferences

for service providers (including ability information)

Note. PA = Physical Attractiveness

Conclusions

Study 1 provided evidence to support H1. In the context of online doctor consultation, gender influences people's preferences for attractive healthcare providers. People are more likely to select a more (vs. less) attractive doctor of the opposite (vs. same) gender. This can be explained by the perceived competence of the doctor. In study 1, we adopted a separate evaluation method. On one hand, this method helps to rule out confounding factors and provides strong support for the hypothesis. However, in reality, when patients search for an online doctor consultation, they may see a list of all available doctors and select the one they prefer. Therefore, in Study 2, we adopted a joint evaluation method. Furthermore, we also manipulated the level of disease severity. The results of the second study show that when a service provider's profile picture was provided to consumers, the consumers' preferences were greatly influenced by the provider's gender. The impact of this gender stereotype existed only in the high-involvement condition. If involvement was low, consumers did not have higher requirements for the abilities of medical service providers and thus, relied less on their physical attractiveness to infer the ability of the service provider. The results of Study 3 illustrated that when extra qualification information was provided, the influence of gender on individual preferences for the service provider's attractiveness disappeared in both the high- and low-involvement conditions. It is important to note that the context of the research was based in China, a leading country in providing online consultation services. According to data from the China Internet Network Information Center (CNNIC), by June 2023, the number of users accessing online medical services in China had surged to 364 million, a rise of 1.62 million since December 2022. The data further reveals that the number of Internet hospitals in China has surpassed 3,000. These hospitals have offered online diagnostic and treatment services to over 25.9 million patients [60]. Thus, the participants in this study were familiar with online doctor consultations. With the COVID-19 pandemic, an increasing number of European countries have started developing online consultation services in healthcare. For instance, Estonia has already begun offering online services to patients in remote areas. Therefore, the findings from this study can offer significant insights to other countries.

The current research contributes to the literature on medical information systems research. First, this study further

enhances our understanding of patients' behavior in online doctor consultations. As a result of the information asymmetry, patients are always looking for other signals to aid in their decision-making [18]. The lack of trust is one of the biggest barriers to online services [59]. Besides professional status and service feedback, which are known as important signals for patients' doctor selection [47], this study has shown that physical attractiveness is also a crucial signal for decision-making in the online doctor consultation context. This study also helps to deepen the understanding of SAB in the context of online healthcare services. Previous studies on SAB focus on contexts like job interviews [61]. More recently, the literature has increasingly focused on general services, such as education services [15]. Additionally, the present study sheds light on the boundary condition of SAB. Our findings indicate that the degree of disease severity influences the effect of gender on preferences for attractive service providers. Based on the elaboration likelihood model, consumers with low disease involvement tend to rely on peripheral cues to make choices, which means they may automatically choose a more attractive service provider. Nevertheless, our research points out that this assumption only holds for both men and women when qualification information is present. When qualification information is absent and information asymmetry exists, men and women react differently to attractive service providers when they are highly involved.

These research findings have some crucial implications for online healthcare service management. Providing qualification information of service providers on online health consultation platforms can mitigate the effect of gender on the individual preference for the attractiveness of a service provider, regardless of the scenario's level of involvement. In the healthcare service sector, providing sufficient information to eliminate bias is a useful strategy. In the context of information asymmetry, patients may be influenced by the doctor's physical attractiveness and make irrational decisions. When marketing telehealth services, hospitals should focus on highlighting doctor expertise, patient satisfaction, and health outcomes instead of relying on doctor attractiveness or demographic characteristics to promote their services. Furthermore, hospitals should develop patient education materials that explain the importance of choosing a doctor based on their qualifications and expertise, rather than their appearance. Also, online healthcare platforms could consider implementing features that allow patients to filter and search for doctors based on their qualifications, expertise, and patient satisfaction ratings. This can help patients to make more rational decisions.

This study has some clear limitations, which point, in turn, to avenues for future research. One notable limitation of the current study is the restricted age range of both the healthcare providers depicted in the images and the study participants, who were predominantly young and below 25 years of age. This lack of age diversity could potentially limit the generalizability of the findings, as perceptions of physical attractiveness and professionalism may vary across different age groups. Although supplementary analyses controlling for age did not significantly alter the results, it remains an open question whether these findings would hold in a more age-diverse sample. Future research should aim to include a broader age range of both healthcare providers and participants to explore the potential moderating effect of age on the relationships examined in this study.

Another limitation of this study pertains to the clinical scenario presented, which focuses on an acute condition that could potentially be resolved in a single consultation. This may not fully capture the complexities involved when patients are seeking long-term care for chronic conditions. In such cases, the level of disease involvement is likely to be higher, and patients may seek more comprehensive information to assess a doctor's competence. The dynamics of how gender match and physical attractiveness influence patient choices could thus differ in a chronic care setting. Future research could benefit from exploring these nuances to provide a more holistic understanding.

Another limitation of our study is its focus on China. To enhance the generalizability of our research and generate a more worldwide impact, replication in various countries and across different cultures is necessary. Future research should, for instance, involve recruiting subjects from diverse nations. This is because healthcare systems vary significantly among countries. Systematic differences in healthcare structures, policies, and practices can substantially influence how patients evaluate doctors online. Consequently, these contextual differences should be carefully controlled for and considered in future studies to ensure the validity and applicability of research findings across different healthcare systems and cultural backgrounds. Furthermore, the cultural orientation of the patient can also play a role in this situation. Future studies should investigate how varying cultural dimensions, such as collectivism, power distance, and uncertainty avoidance, influence patient preferences and decision-making processes in online healthcare settings. For instance, individuals from countries with high uncertainty avoidance may require more concrete information in the doctor's description to feel comfortable with their choice.

Another important research direction involves examining the impact of other forms of information asymmetry in online healthcare settings. For instance, the availability and quality of online reviews can play a significant role in shaping patient choices. By analyzing the content and credibility of online reviews, researchers can better understand how they contribute to patients' decision-making processes and their perceptions of service providers. Additionally, assessing the role of online reputation management and its influence on patient choices can offer valuable insights into online healthcare.

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