

Privacy Paradox, Health Information Privacy Antecedents and Information Disclosure Intention in Online Health Communities

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Abstract

Previous studies indicate that people are concerned about privacy but their online behaviors do not echo these concerns, which is known as privacy paradox. This study investigates the antecedents and consequence of health information privacy concerns, aims to answer two questions: why some people are becoming careless about the information privacy whereas others not? And what factors cause the privacy paradox phenomenon in online health communities? We apply perceived health information sensitivity and self-efficacy as the antecedents of health information privacy concerns. Health status and empathy are proposed to moderate the relationship between health information privacy concerns and personal health information (PHI) disclosure intention. And health status is also related to health information sensitivity. We use the questionnaire to collect data and the findings can contribute to both the users and managers of the online health communities.

Keywords

Online health community, privacy paradox, health information privacy concerns, privacy sensitivity.

1. Introduction

The past decade has been characterized by the explosion of web and social media, which provides easier and greater access to health and medical information than ever before [1]. The Pew Research Center reported that 59% of U.S. adults have looked online for health information, whereas 35% of U.S. adults searched online for medical solutions [2]. Online health communities (OHCs) have emerged as useful platforms for people to seek and share information [3]. People can get or provide health-related information, experiences, medical solutions and support in OHCs beyond the restrictions of geographic proximity, time, cost saving and etc. [4].

However, while people are willing to share personal health information (PHI) in exchange for tangible benefits, they are often cautious about disclosing their PHI and frequently unhappy about the privacy invasions. "If these records ever leaked it could be devastating to people with certain diseases. I'm specifically thinking about stigmatized diseases like AIDS." "My health records are confidential. I don't want them in the hands of someone unscrupulous or marketing companies possibly trying to recommend a drug or something based on a condition I may have." Said by survey respondents in Pew Research of 'Health information, convenience and security' [5]. People's PHI can be used by commercial purpose without permission [4]. And sensitive PHI may lead to discrimination or social stigma sometimes. People get anxious when it comes to disclose PHI in OHCs, thus may refuse to provide PHI.

Over the past decade, considerable efforts have been devoted to the research of health information privacy [4, 6, 7]. Nevertheless, there are phenomena that break the status quo. Statistics shows that the population of people who are careless about privacy increased to 50%

in latest five years [8]. And one interesting phenomenon called privacy paradox arises in the OHCs [4, 9-11], which refers to the conflict between users' tendency to disclose PHI and their expressed concerns about their privacy protection [10]. Therefore, it is necessary to explore the underlying drivers of OHC users' intention to disclose information and health information privacy concerns.

To contribute to the research on the privacy-related issues in OHCs, our study mainly aims to investigate the antecedents of health information privacy concerns and privacy paradox in the context of OHCs. We will focus on the effects of self-efficacy and perceived health status on health information privacy concerns. And perceived health status will also be proposed as moderator to explain the privacy paradox phenomenon in OHCs. Drawing from the social psychological literature, this study adds empathy as another moderator. The results of this study will enable both practitioners and researchers to have better understanding of the privacy paradox, and are presumed to influence online privacy decisions and behaviors. The remainder of the article is organized as follows. In Section 2, we review the literature from the perspective of antecedents of privacy concerns and privacy paradox; In section 3, we develop the hypothesis and propose the research model; Section 4 describes the methodology and data collection; Section 5 give the result and we conclude the study in the last section.

2. Literature Review

2.1. Antecedents of Privacy Concerns.

Privacy-related issues are usually studied using a privacy calculus framework, reasoned action and social contract theory [4, 7, 12, 13]. Recently multidimensional developmental theory was extended to online context to explain online privacy issues. However, the antecedents of privacy concerns are often neglected [6]. Although previous studies have recognized several antecedents, how they affect privacy concerns remain unknown. And the antecedents of privacy concerns are rarely studied in the context of OHCs. Previous Pew Research surveys have found that Americans are quite sensitive about their personal health information and worry about how this information might be used in ways that negatively impact their ability to secure insurance, access credit or find jobs [14]. And people who believe they can control their PHI may be less concern about the disclosure risk [15]. In this study, we attempt to take perceived health information sensitivity and perceived self-efficacy into consideration to explore the antecedents of health information privacy concern.

2.2. Privacy Paradox.

The privacy paradox suggests that while Internet users are concerned about privacy, their behaviors do not mirror those concerns [10]. Many researchers have studied the privacy paradox in online communities, and literature provides insights that the existence of this phenomenon relates to social needs [16-18], self-presentation [19-21] and personalization [22, 23]. In order to meet social needs, users often ignore their privacy concerns and disclose their privacy. Self-presentation is the effort to establish, change, or maintain the image that one wants to express in others' minds. It is a conscious impression control process [19]. Users update their images or comments to present themselves. And in mobile app, most users disclose their private information for personalized service.

Although the information privacy dilemmas in OHCs seem to be similar to those in other e-commerce websites, social networks, or virtual communities in appearance, but it has its uniqueness. In OHCs, People in poorer health conditions are more likely to disclose their PHI privacy in discussions [6]. For they are in urgent needs for health-related information, which is the extrinsic motivation. However, as pointed out by Laufer and Wolfe [24], privacy is a complex and multifaceted concept that involves emotions. The powerful role of emotions in

explaining the privacy paradox has received some support in the literature. Intrinsic motivation should also be taken consideration. For the information contributors in OHCs, things can be different if they stand at the position of the information seeker. Empathy refers to members' ability to accurately infer other members' point of view and feelings and further benevolently act in response to other members' distressful situation [25]. Users with high level of empathy are more intend to contribute information in OHCs [26]. Thus, this research explores the effects of empathy and perceived health status on the contradiction between health information privacy concerns and actual privacy behaviors.

3. Research Model and Hypotheses Development

3.1. Health Information Privacy Concerns.

Health information privacy concern is about the inherent concern of the potential loss of health-related information, security of information exchange, and whether the collector of this information will behave appropriately [7]. OHCs have provided people with context of online health consultation and health experience sharing. People disclose PHI in OHCs with purpose of receiving better support from the community, feeling emotionally relieved [6]. However, privacy concerns often arise simultaneously. For example, disclosing information about one's medical conditions may lead to social stigma, job loss, or even criminal prosecutions in the cases such as drug abuse [4]. Health information privacy concern may even cause individuals to avoid healthcare in sensitive areas. Given that health information privacy concerns can affect the provision of members to disclose health-related information, the following hypothesis is proposed:

H1. Health information privacy concerns negatively affect the PHI disclosure intention in OHCs.

3.2. Empathy.

Empathy refers to members' ability to accurately infer other members' point of view and feelings and further benevolently act in response to other members' distressful situation [25]. Studies indicate that There is a positive relationship between empathy and social support [25-27]. People with higher levels of empathy are more willing to help others [27]. In the case of the same privacy concerns, the willingness of different users to provide social support will still be different. Empathy is an important factor to explain it. A direct reason for people to provide social support is to understand the situation of posters and the urgency of needing help [27]. OHCs allow members to communicate with others who experience similar pain and stress at any time [28]. Members with higher empathy are easier to put themselves in the way of understanding others' situation. Though there are concerns about PHI, members may still provide social support in OHCs. Thus, we propose that :

H2. Empathy negatively moderates the relationship between health information privacy concerns and PHI disclosure intention in OHCs.

3.3. Self-efficacy.

Psychologist Albert Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplish a task. One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges [29]. Studies indicated that self-efficacy has influence on individuals' intention to take protective behavior in various context [4, 30]. There are privacy enhancement measures for users to protect PHI in OHCs, including computer technologies, policies and some medical restrictions, which may require users to take time to understand and learn. Users with higher confidence and ability to manage their PHI can have fewer information privacy concerns [4, 15]. But those who believe they cannot

manage potential threats experience high levels of privacy concerns because they are out control of their PHI. Therefore, we hypothesize:

H3. Self-efficacy negatively affects users’ health information privacy concerns in OHCs.

3.4. Perceived Health Information Sensitivity.

Perceived health information sensitivity refers to the perception about the sensitivity of health information [7]. Information sensitivity contextualizes the impacts of personal traits and health status. Privacy related studies indicate that information sensitivity significantly influence users’ information privacy concerns [7, 31, 32]. The disclosure risk will be high when health information are sensitive, such as mental health disorders, substance abuse, and sexually transmitted diseases, may increase the risk of judgment and stigma [4]. Users who have high information sensitivity will certainly come up with high information privacy concerns. Thus, we propose that:

H4. Perceived health information sensitivity will positively affect health information privacy concerns.

3.5. Health Status.

Health status refers to the overall status of one’s health conditions. It has been found to influence individuals’ decision making and actions [33, 34]. Individuals are more likely to be risk seeking when they encounter problems that involve life–death choices rather than other life problems, such as personal money, investment, or public property [4, 33, 35]. When users perceived themselves as depressed or seriously ill, they may be more willing to search for treatment and health information from more channels (such as OHCs) for the hopelessly optimistic information and loss of PHI is not so important things for them. Thus, we think that perceived health status can moderate the relationship between health information privacy concerns and PHI disclosure intentions. People who are in good condition have less need for health information privacy than the poor. So, we propose that:

H5. Perceived health status can negatively moderate the relationship between health information privacy concerns and PHI disclosure intentions

On the other side, personal health status should also have impact on how sensitive people are about their health information. Those who perceived their health to be “poor” were more sensitive about their health information than others [7]. Thus, unhealthy individuals have higher level of privacy concerns than healthy ones. Hence, we propose

H6. Perceived poor health status will positively affect perceived health information sensitivity

The proposed research model is summarized in Fig 1 according to the aforementioned hypotheses.

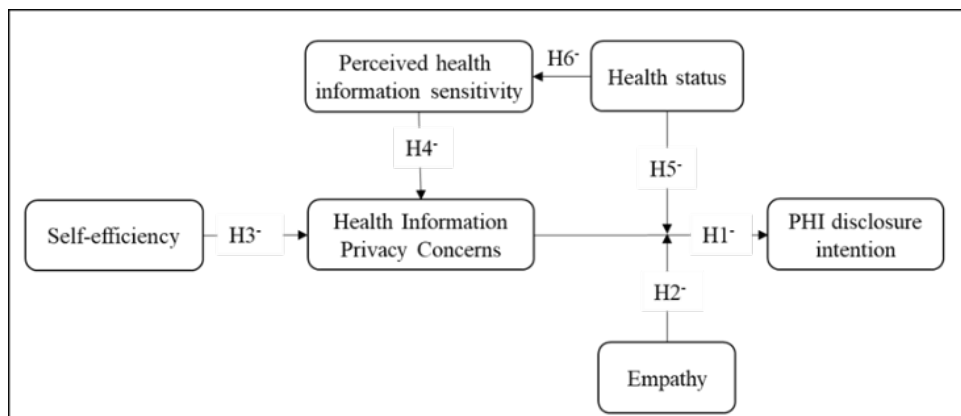


Fig. 1 Research model

4. Methodology

In an attempt to test the hypotheses proposed above, questionnaire survey based on the validated instruments used in the prior literature will be conducted among the people who have ever participated in the OHCs.

4.1. Instrument Development.

We reviewed literatures in several domains, such as health care, privacy, psychology and information system, to select appropriate measurement items and to make sure the measurement is in good content validity. The questionnaire included a set of measures, and the questions were adapted and modified to fit the Chinese OHC context. We also did a back translation to make sure the instrument of Chinese version are in good consistence with the English version [3]. And we rated all items using a seven-point Likert scale, with 1 indicating “strongly disagree” and 7 indicating “strongly agree”. Perceived health status was measured in single scale as “very poor, poor, fair, good and very good”, which was used in other studies and empirically demonstrated good reliability [35, 36]. The construct measures are shown in table 1.

To assess the validity and reliability of various construct, we conducted a pilot test as follows: we invited 50 respondents who have ever participated in OHCs to fill the questionnaire. SPSS was used to check the validity and reliability. Cronbach’s α of each construct was above the threshold of 0.7, which showed good internal consistence and reliability. Then, we performed exploratory factor analysis to measure convergent and discriminant validity of the items. First, we checked the KMO (Kaiser–Meyer–Olkin Measure of Sampling Adequacy) and Bartlett’s test of sphericity, the results showed the data was suitable for factor analysis. Then we checked the factor loadings, cross loadings, and the average variance extracted (AVE) to measure the validity of the data. Each item loaded significantly on its respective construct, and all the loadings were larger than the criteria of 0.70; The average variance extracted (AVE) for each construct exceeded the threshold value of 0.5, which indicated the explained variance was more than the unexplained variance [37]. The final questionnaire contained 26 questions, four of which were related to personal information.

4.2. Procedure and Data Collection.

We collected all data through online survey. Our questionnaire was divided into three parts. The first part introduced the background and purpose of our study. We evidently described the definition of OHCs and social support. And the participants were kindly informed that the survey information is maintained confidential. The second part required participants to provide their individual information, including gender age, education and length of participation in OHCs, which will be measured as control variables. The third part was designed to measure the six constructs in our study.

The survey was divided into two stages. The first stage was a pilot study. Twenty OHCs users were invited to fill the questionnaire and give feedback, the result showed suitable reliability and validity. And the structure and design of the questionnaire were amended according to the feedback. The second stage was data collection. The data was mainly collected from the post bar of Baidu and WeChat group. First, we chose “Premature baby bar”, “Diabetes bar” and “Stomach disease bar” as our target communities, in which the users were active and in large number. Second, we registered in the bars and interacted with the users, and the questionnaire was adapted to fit the context according to the characteristics and background of the bars, so that the participants of each bar can be more involved. We posted the questionnaire in the bar and updated it daily to make sure the post was on the latest page. Third, we joined the diabetes group in WeChat and posted the URL linked to a web-based questionnaire. Every participant was offered 1-3 yuan as incentive randomly.

The questionnaire was formally distributed from 21 October 2018 to 5 December 2018. We collected 310 responses. We excluded incomplete and careless questionnaires and those from non-OHC users after carefully examining the returned questionnaires. We finally obtained 249 responses with a valid rate of 80%.

Table 1: Construct measures

Constructs	Items#	Measurement Items	Reference
Self-efficacy	SEFF1	Protecting my information privacy is easy for me.	[4]
	SEFF2	I have the capability to protect my information privacy.	
	SEFF3	I am able to protect my information privacy without much effort.	
Health information sensitivity(IS)	IS1	Medication (not sensitive at all/very sensitive)	[7]
	IS2	State of my health at present (not sensitive at all/very sensitive)	
	IS3	Fitness at present (not sensitive at all/very sensitive)	
	IS4	Medical history (not sensitive at all/very sensitive)	
	IS5	Addictions (not sensitive at all/very sensitive)	
Health Information Privacy Concerns (HIPC)	HIPC1	I believe that submitting health information in the OHC is not advisable at all.	[4]
	HIPC2	Health information in the OHC will be abused for sure once submitted.	
	HIPC3	Health information in the OHC could be shared or sold to others once submitted.	
Empathy: Perspective-taking (EP)	EP 1	Before criticizing somebody, I try to imagine how I would feel if I were in their place	[25]
	EP 2	I sometimes try to understand my friends better by imagining how things look from their perspective	
	EP 3	I believe that there are two sides to every question and try to look at them both	
Empathy: Empathic concern (EE)	EE1	When I see somebody being taken advantage of, I feel kind of protective toward them	[25]
	EE 2	I often have tender, concerned feelings for people less fortunate than me	
	EE 3	I would describe myself as a pretty soft-hearted person	
	EE 4	I am often quite touched by things that I see happen	
PHI disclosure Intention(INTD)	INTD1	I am likely to reveal my health information in this OHC.	[4]
	INTD2	It is probable that I will reveal my health information in this OHC.	
	INTD3	I am willing to reveal my health information in this OHC.	

5. Result

5.1. Descriptive Statistics.

Table 2 shows the demographic characteristics of the 249 respondents. 51.8% of respondents were female, which is consistent with the previous studies [2, 3, 6]. The age of participants ranged from 18-60, of which 7.6% were older than 60. The number of older people who use the internet has been increasing in recent years [3]. 71.5% of the participants were educated undergraduate or higher. People with higher education tend to use OHCs more often [3].

Table 2: demographic files

Variable	Sample	Percentage (%)
Gender		
Male	120	48.2
Female	129	51.8
Age (years)		
<18	4	1.6
18–25	57	22.9
26–35	97	39
36–45	55	22.1
46–60	17	6.8
>60	10	7.6
Education		
Below high school	62	24.9
Bachelor's degree	163	65.5
Master's degree	17	6.8
PHD degree or higher	7	2.8
Length of participation in OHCs		
<3 months	62	24.9
3–6 months	77	30.9
6–12 months	56	22.5
>12 months	54	21.7

5.2. Measurement Assessment.

Following previous literature [8, 38, 39], our research model was tested using partial least squares (PLS), a structural equation modeling method that is suitable for complex predictive models and theory building [40]. PLS is preferred for three reasons: First, multivariate normality assumptions are not required in PLS. Second, PLS works well with small-to-medium-sized samples [39]. Third, PLS can measure both reflective and formative indicators. SmartPLS 3.0 was selected to analyze the research model [41]. PLS involved two stages of data analysis [41]. The first stage involved “the assessment of the reliability and the validity of the measurement model,” and the second stage involved “the assessment of the structural model”. To test the hypotheses, we adopted a hierarchical regression method to test the structural model. We used multi-group PLS following well established data-analysis procedures demonstrated in prior research [7, 8, 41]

5.2.1. Measurement Model.

The reliability and validity of the measurement instrument was evaluated by established reliability and validity criteria [42].

The reliability of construct can be evaluated by the values of standardized loadings, Cronbach’s α and composite reliabilities (CR). As shown in table 3, each item loaded significantly on its respective construct, and all the loadings were larger than the criteria of 0.70 [43]. Therefore, all the measures were sufficiently reliable. The minimum CR Cronbach’s α values are 0.909 and 0.849, respectively, and both of them exceed the criteria of 0.70, which indicate that the instrument was in good internal consistence and reliability.

The validity of the constructs includes convergent validity and discriminant validity. Convergence validity reflects whether each indicator reflects the same construct. The average variance extracted (AVE) for each construct exceed the threshold value of 0.7, which indicates the latent factors can explain at least 70% of the measured variance among times, the instrument was in good convergent validity. Discriminant validity is defined as follows: the correlations of items that must not be related are relatively weak [43]. In table 4, the square root of the AVE is much larger than all the other cross-correlations of that construct, indicating that the internal correlation is greater than the external correlation and there is a difference between the latent variables. Then the instrument also has adequate discriminant validity. Thus, overall, our measures have demonstrated good psychometric properties.

Table 3: Confirmatory factor analysis result of the measurement model

Construct	Item	Standard loadings	VIF (outer)	AVE	CR	α
Self-efficacy (SEFF)	SEFF1	0.906	2.226	0.801	0.923	0.877
	SEFF2	0.900	2.875			
	SEFF3	0.878	2.365			
Health Information Privacy Concerns (HIPC)	HIPC1	0.833	1.849	0.769	0.909	0.849
	HIPC2	0.920	2.716			
	HIPC3	0.876	2.171			
Empathy: Perspective-taking (EP)	EP 1	0.852	2.132	0.798	0.922	0.875
	EP 2	0.918	3.049			
	EP 3	0.909	2.410			
Empathy: Empathic concern (EE)	EE1	0.902	3.126	0.893	0.933	0.887
	EE 2	0.8190	2.310			
	EE 3	0.83397	2.838			
	EE 4	0.906	2.395			
Health information sensitivity (IS)	IS1	0.872	3.126	0.714	0.946	0.934
	IS2	0.810	2.310			
	IS3	0.833	2.838			
	IS4	0.806	2.395			
	IS5	0.867	2.887			
PHI disclosure Intention (INTD)	INTD1	0.840	1.907	0.783	0.916	0.862
	INTD2	0.920	2.825			
	INTD3	0.893	2.373			

Table 4: Construct statistics and factor correlations (N=249)

Construct	SEFF	IS	HIPC	EP	EE	INTD
SEFF	0.895					
IS	0.242	0.877				
HIPC	-0.078	-0.070	0.893			
EP	-0.043	-0.022	0.023	1.000		
EE	-0.029	0.024	0.039	0.742	1.000	
INTD	-0.046	-0.033	0.074	0.666	0.758	1.000

5.2.2. Structural Model.

We adopted a hierarchical regression method to test the structural model. First, we employed Models a1 and a2 to examine effects of control variables and threat and coping appraisals on health information privacy concerns. Model a1 of Table 5 shows that age and education level significantly influence health information privacy concerns ($\beta = 0.146, p < 0.01$; $\beta = -0.112, p < 0.05$), which indicate that individuals with diverse backgrounds have different privacy concerns. Model a2 of Table 5 shows that perceived severity positively affect health information privacy concerns ($\beta = 0.274, p < 0.001$; $\beta = 0.164, p < 0.01$), whereas coping appraisal variables (i.e., self-efficacy) negatively affect health information privacy concerns ($\beta = -0.246, p < 0.001$; $\beta = -0.106, p < 0.05$).

Second, Model b1 was applied to examine the effect of control variables on PHI disclosure intention. Model b1 of Table 5 shows that age significantly influences PHI disclosure intention ($\beta = -0.116, p < 0.05$). Then we test the main effects on PHI disclosure intention (Model b2). Model b2 of Table 5 shows that the health information privacy concerns have negative influence ($\beta = -0.213, p < 0.001$).

Then we added interaction factors to test the moderating effect. The significant path coefficients of the interactions and interaction graphs (Fig. 2) illustrate that the empathy negatively moderates the relationship between health informational privacy concerns and PHI disclosure intention ($\beta = -0.124, p < 0.01$), and perceived health status positively moderates the relationship between health information privacy concerns and PHI disclosure intention ($\beta = 0.091, p < 0.05$). Table 6 summarizes the results of the main effect and moderating effects. The hypotheses mentioned in the study are supported. In research model, health information privacy concerns are mediating variables. Table 7 shows that health information privacy concerns partially mediate the relationship between the PMT factors and PHI disclosure intentions according to the Sobel test results.

6. Discussion and Implications

6.1. Primary Findings and Theoretical Implications

This study makes several contributions. First. Prior studies on health information privacy lack theoretical foundation. In this study, taking the Antecedents of privacy concerns and privacy paradox into consideration. In this study, we attempt to take perceived health information sensitivity and perceived self-efficacy into consideration to explore the antecedents of health information privacy concern. And this research explores the effects of empathy and perceived health status on the contradiction between health information privacy concerns and actual privacy behaviors. This is the first article systematically study the online social support willingness of OHCs users.

Second, our research contributes to the literature of privacy paradox. Previous literature explained privacy paradox in OHCs as health condition and personalization [4, 44]. In our study, empathy is discovered to explain the privacy paradox.

Third, This article examines the moderating effect of health status on health information disclosure behavior and the impact on privacy concerns, this is another new attempt to take personal health conditions into consideration.

Table 5: Multiple regressions on the intention of HIPC and the intention of INTD.

Independent Variable	HIPC		INTD		
	Model a1	Model a2	Model b1	Model b2	Model b2
Block 1:Control variable					
Age	0.146**	0.092	-0.150*	-0.116**	-0.117**
Gender	0.019	0.011	0.066	0.027	0.025
Education	-0.112*	-0.052	0.187**	0.075	0.081
Length of participation	0.102*	0.043	0.113*	0.101*	0.078
Block 2: Main effect					
SEFF		-0.106*			
IS		0.246***			
HIPC				-0.213*	-0.226**
PHS					0.084
E					0.248**
Block 3:Moderating effect					
HIPC×PHS					0.091*
HIPC×E					0.102*
R2	0.033	0.270	0.058	0.415	0.440
Adjust R2 F	0.024	0.254	0.049	0.404	0.423
R2	3.748**	17.366***	6.776***	38.955***	25.625***
Note: * p < 0.05, ** p < 0.01, *** p < 0.001.					

Table 6: Results of the main and moderating effects

Effect	Hypothesis	Path	Regression coefficients	Result
Main effect	H1	HIPC → INTD	-0.226**	Y
	H3	SEFF → HIPC	-0.106*	Y
	H4	IS → HIPC	0.246**	Y
	H6	PHS → IS	0.101*	Y
Moderating effect	H2	HIPC×E → INTD	0.102*	Y
	H5	HIPC×PHS → INTD	-0.124*	Y

Table 7: Mediating effects of health information privacy concerns

IV	M	DV	IV → DV	IV → M	IV+M → DV		Sobel test
					IV	M	
SEFF	HIPC	INTD	0.412*	-0.155**	0.373**	-0.253**	2.111*
IS	HIPC	INTD	-0.241	0.359***	-0.149**	-0.257***	-3.886***

Notes: IV, the independent variable; M, the mediator; DV, the dependent variable. *p < 0.05; **p < 0.01; ***p < 0.001.

6.2. Managerial Implications

This study provides some practical implications for both online health community managers and users. First, Users who have high information sensitivity will certainly come up with high information privacy concerns. Thus, OHCs managers should set privacy protection policies to reduce the sensitivity of users to health information, thereby reducing the privacy concerns of users. Second, every person — has different health status— has a different way of satisfying the universal need for self-realization. Therefore, OHCs should inspire members to participate by setting up mechanisms and regulations that facilitate personal growth. Third, users must understand that information disclosure can result in privacy leaks. Protecting their private health information is highly important as they obtain better health services. Community users should improve their ability to process and protect private information, so as to reduce the harm and worry caused by privacy leakage. Forth, administration must actively announce the website privacy police and strengthen private information protection. Fifth, user's empathy can weaken the negative effect of health information privacy concerns on the willingness to provide social support. User's empathy level is a personal trait and cannot be controlled by platform. Platform can identify people with higher levels of empathy through user behavior, and recommend those posts that are far away from everyone or unpopular posts to those with high level of empathy. This recommendation method can make it more likely for patients who are having difficulty of getting help, thus improving the welfare of these special patients. In addition, design features that allow members to locate and interact with members with similar backgrounds and experiences should be employed to enhance empathy and to encourage a member's willingness to share knowledge with others.

6.3. Limitations and Future Research

The research has several limitations. First of all, the data of this study comes from a questionnaire, which will cause the credibility of the data to be questioned. Future research should collect more available data from other channels. Second, we only studied the empathy to explain privacy paradox in OHCs, other psychological factor may also contribute the privacy paradox. Future research can explore additional moderators, such as the health information sensitivity, the Big Five personality traits and trust. Third, the consequence of health information privacy concerns was not considered in our study. Future research should focus more on the antecedents and consequence of the health information privacy concerns. Fourth, only three OHCs were selected for the data collection. Moreover, these OHCs mainly focus on nonlife threatening disease and there are only patients among communities. Given the limitations of the health topics of these communities, whether the research results can be generalized to all types of OHCs is still unclear. Therefore, future research can be extended to other OHCs with different health sizes and structures. Last, the model was tested using data collected in China. Given that OHCs in China may differ from those of other cultures, the model should be tested further in other countries.

7. Conclusion

In this research, we have proposed a conceptual model to explore the antecedents of health information privacy concerns and to explain the privacy paradox within the context of online health communities. The interesting point is that perceived health status may have different effect on health information privacy concerns from different aspect. The model will be validated by the data collected from questionnaires. The findings of this research will enrich the privacy-related studies and provide practical implications for both OHC administrators and users.

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