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The effect of private self-consciousness on the intention to receive the COVID-19 vaccine

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ABSTRACT

Background: Although COVID-19 vaccines have been developed, the number of people willing to receive the vaccine has not yet reached the level for herd immunity. Using the health belief model with governmental information support, this study examined private self-consciousness in combination with other factors that influence the intention to receive the COVID-19 vaccine.

Materials and methods: The perceived susceptibility to and perceived seriousness of COVID-19, perceived benefits of and perceived barriers to the COVID-19 vaccine, governmental information support, private self-consciousness, and the intention to receive the vaccine were examined in 523 adults. The data were analyzed with partial least squares regression.

Results: The results indicate that private self-consciousness reduces the effect of perceived susceptibility on the intention to receive the vaccine and the negative effect of the perceived barriers to receiving it on intention.

Conclusion: The information provided by the public health department should focus on perceived seriousness and perceived benefits because they are not affected by private self-consciousness.

Keywords: health belief model, private self-consciousness, COVID-19 vaccination, governmental information support

INTRODUCTION

Novel COVID-19 first emerged at the end of 2019 and has since spread across the world. On March 11, 2020, World Health Organization (WHO) declared the coronavirus outbreak a "global pandemic", which is generally defined as an illness that spreads far and wide throughout the world [1]. According to WHO's weekly updates, the COVID-19 pandemic has caused over 2,564,560 deaths worldwide as of March 5, 2021 [2]. The first case in Taiwan was confirmed in a 50-year-old woman who had just returned to Taiwan from Wuhan, China, on January 21, 2020. As of March 2021, there have been 967 confirmed COVID-19 cases, including 10 deaths, in Taiwan [3].

As the threat of COVID-19 became clearer and more cases of this new disease cropped up in Asia, Taiwan's authorities activated Central Epidemic Command Center (CECC) to involve other stakeholders and government agencies in managing the associated risks. One of the main jobs of the center is to maintain the transparency of up-to-date information for citizens [4]. CECC organizes daily briefings on new confirmed cases and new measures to be implemented, providing this information through regular press conferences. To improve citizens' COVID-19 prevention knowledge, CECC invites experts to regularly promote related knowledge through mass media. CECC has also developed an information system whereby each adult resident is able to purchase preventive tools, such as face masks and 70% isopropyl alcohol. The system also provides information about the locations and stocks of prevention material providers, such as pharmacies. Citizens can also obtain information about government epidemic prevention measures from this system. Such clear risk communication has helped to alleviate the concerns of Taiwanese people, reduce their uncertainty, and build their confidence and trust in the government's ability to handle the virus.

One of the most effective preventive measures for containing the spread of infectious diseases is vaccination. Effective vaccination not only fosters individual immunity against vaccine preventable diseases (VPDs) but also protects those who are unable to receive vaccines through "herd immunity" [5]. However, despite its effectiveness in preventing infectious diseases, vaccine hesitancy, which describes attitudes and behaviors surrounding vaccine delay and refusal, is on the rise in many societies, leading to the recent re-emergence of variant viruses such as VOC 202012/01 in the UK [6]. Although governments and public health institutions worldwide have been anxiously expecting vaccines to control the ongoing pandemic, a recent poll shows that 47% of Americans are still hesitant to receive the COVID-19 vaccine [7]. Almost 40% of adults are uncertain about whether they will get vaccinated in the UK [8]. Only 65.7% of Japanese people indicated a willingness to be vaccinated [9]. In Taiwan, almost 40% of adults are reluctant to receive the COVID-19 vaccine [10].

The herd immunity threshold for COVID-19 is to range between 50% and 67% in the absence of any interventions [11]. With the different statuses of each country, an estimated 56.1% to 85.0% of people may need to become immune to the virus to achieve herd immunity [12]. To develop effective interventions that promote the wide acceptance of COVID-19 vaccines once they are available, it is critical to identify factors that influence people's COVID-19 vaccine uptake intention.

Public health experts have provided much advice on the COVID-19 pandemic, such as face masks, social distancing, lockdown, and COVID-19 vaccination. However, people's responses do not always follow experts' advice. Some people have indicated that face mask rules and lockdowns violate their personal freedoms. With the rise in self-consciousness, people have become aware of their self-expressions. People's decision making no longer simply meets the requirements but is more likely to reflect themselves.

Private self-consciousness may be an important factor as a moderator in the predictive validity of self-report measures [13]. This study investigates the factors associated with the intention to receive the COVID-19 vaccine in Taiwan during the COVID-19 pandemic. Since the health belief model (HBM) [14] has been commonly used for examining preventive health behaviors [15], it is employed as an overarching theoretical framework in this study, and the impact of governmental information support and private self-consciousness are added to HBM. The findings from this study can inform future pandemic control and prevention initiatives when new infectious diseases, such as influenza-like illnesses, emerge.

Health Belief Model

HBM [14] has been widely applied in the medical field and social psychology due to its benefits in effectively explaining or predicting users' health behaviors. According to this model, the main beliefs driving personal health behaviors include expectations of disease prevention and health restoration and beliefs that health behaviors can help prevent diseases. An individual will act to avoid a disease if

(1) he or she acknowledges the risk of suffering from the disease (perceived susceptibility),
(2) he or she is aware of the severity of the disease (perceived seriousness),
(3) he or she believes that taking a particular action can reduce the threat of the disease (perceived benefits), and
(4) he or she believes that the chosen action can overcome barriers such as being inconvenient, expensive, unpleasant, painful or upsetting (perceived barriers) [14].

One additional construct is believed to be necessary to complete the model. According to some studies [16, 17], the provision of knowledge has a direct effect on influenza vaccination. It was claimed that governmental information support is helpful in COVID-19 preventive activities, especially in tackling barriers [18].

Private Self-Consciousness

Self-consciousness has been described as the consistent tendency to direct attention inward and as a tendency to focus on covert, or private, aspects of the self, such as attitudes, motives, feelings, and values. The concept of self-consciousness was derived from self-awareness theory [19]. The study [20] indicated that there are three kinds of self-consciousness: private self-consciousness, which is the inclination to introspect about one's inner thoughts and feelings; public self-consciousness, which refers to an awareness of the self as a social object and the tendency to focus on one's outer image; and social anxiety, which is characterized as experiencing social discomfort in the presence of others.

Private self-consciousness is considered a stable, individuating trait. The trait of private self-consciousness has been shown to play an important role in shaping a person's behavior. One of the particular traits of private self-consciousness is that it enables an individual to avoid illness-inducing effects [21], playing an important role in health behavior [22]. In addition, private self-consciousness may function as a moderator of the predictive validity of self-report measures [22]. In this study, we examined the effect of different levels of private self-consciousness on the intention to receive the COVID-19 vaccine.

MATERIALS AND METHODS

A research model of the intention to receive the COVID-19 vaccine (**Figure 1**) was developed based on HBM, where the perceived susceptibility to COVID-19, the perceived seriousness of COVID-19, the perceived benefits of preventive action, the perceived barriers to preventive action, and knowledge of COVID-19 are important factors affecting the intention to get vaccinated (hypotheses 1 through hypotheses 5). HBM components are affected by the government's information support (hypotheses 6 through hypotheses 10). Consistent with the argument about the influences of self-consciousness [20], this concept is defined as the moderating factor in HBM (hypotheses 11 through hypotheses 14).

Measures

The measures for HBM in terms of the intention to receive the COVID-19 vaccine were modified from the work of [23]; the measures for knowledge of COVID-19 were modified from the study of [24]; and the measures for private self-consciousness were modified from the research of [20]. The survey questions on the intention to obtain information from CECC include the following:

(1) I obtain information from CECC's COVID-19 press conferences every day,
(2) I always watch the COVID-19 prevention videos released by CEEE, and
(3) I always read CECC's COVID-19 prevention messages.

The perceived susceptibility to COVID-19, the perceived seriousness of COVID-19, the perceived benefits of preventive action, the perceived barriers to preventive action, private self-consciousness, and the intention to receive the COVID-19 vaccine are reflective latent constructs. Governmental information support and knowledge of COVID-19 are reflective latent constructs.

Data Collection Procedure

The perceived susceptibility to COVID-19, the perceived seriousness of COVID-19, the perceived benefits of preventive action, the perceived barriers to preventive action, private self-consciousness, and the intention to receive the COVID-19 vaccine are reflective latent constructs. Governmental

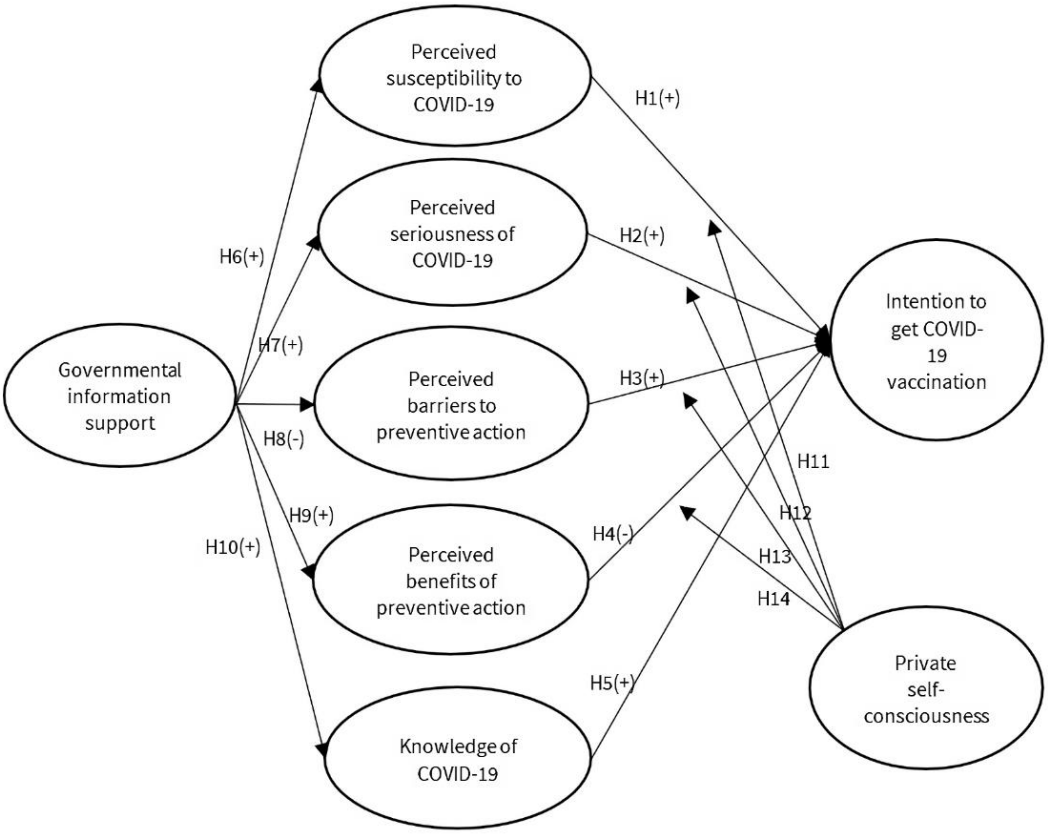

Figure 1. Research model (Source: Authors' own elaboration)

information support and knowledge of COVID-19 are reflective latent constructs. The survey methodology was employed to gather data for the purpose of empirically testing the relationships proposed by the research model and assumptions. A total of 523 questionnaires were collected during the period of January 10, 2022, to February 11, 2022, at Taipei Station in Taiwan.

Data Analysis

The data were analyzed by partial least squares path modeling (PLS-PM), a variance-based structural equation modeling statistical technique, using SmartPLS 4.0.9.1 [25]. PLS-PM tests theoretical models using hypothesis testing to understand the simultaneous modeling of the relationships among various independent and dependent variables. PLS is primarily intended for research contexts that are simultaneously data-rich and theory-skeletal. SEM was performed to assess the measurement model (outer model) and structural model (inner model). The measurement model is the part in which the observed variables are connected to the latent variables, while the structural model is that in which the latent variables are connected to each other by simultaneous equations.

The research model in this study has both formative and reflective constructs. Therefore, PLS-PM is appropriate for data analysis in this study because it allows for the simultaneous assessment of structural model parameters and path coefficients. Moreover, PLS-PM allows for both reflective and formative constructs to be examined together [26].

Table 1. Demographic characteristics of the sample (n=523)

Variable	n	%
Gender		
Female	233	44.55
Male	290	55.45
Age		
20~29	127	24.28
30~39	254	48.57
40~49	51	9.75
50~59	39	7.46
60~	52	9.94
Employment status		
Student	55	10.52
Employed	332	63.48
Retired	53	10.13
Homemaker/unemployed	83	15.87
Education		
High school or below	55	10.52
Junior college	417	79.73
College or above	51	9.75
Marital status		
Single	321	61.38
Married/cohabited	195	37.28
Divorced/separated/widowed	7	1.34
Total	523	100.00

RESULTS

Sample Characteristics

A total of 576 subjects responded. Among them, 523 responses were valid. **Table 1** shows the demographic characteristics of the final sample: 55.45% of respondents were

Table 2. Loadings and cross-loadings

	barr	bene	self	seri	susc	vacc
barr1	***0.764***	0.029	0.021	0.075	-0.048	-0.207
barr2	***0.728***	0.129	0.095	0.026	0.113	0.032
barr3	***0.849***	0.041	0.077	-0.045	0.098	-0.191
barr4	***0.708***	0.055	0.080	0.050	0.001	-0.103
barr5	***0.866***	0.001	0.096	-0.101	0.018	-0.242
bene1	-0.054	***0.763***	0.242	0.209	0.215	0.243
bene2	-0.040	***0.793***	0.424	0.191	0.205	0.196
bene3	0.032	***0.789***	0.232	0.149	0.158	0.205
bene4	0.016	***0.796***	0.374	0.099	0.178	0.202
bene5	0.105	***0.779***	0.200	0.092	0.133	0.121
bene6	0.126	***0.754***	0.285	0.109	0.149	0.159
self1	0.032	0.329	***0.852***	0.141	0.303	0.260
self2	0.137	0.334	***0.853***	0.117	0.266	0.183
self3	0.107	0.370	***0.873***	0.208	0.276	0.227
self4	0.021	0.387	***0.863***	0.218	0.298	0.237
seri1	-0.094	0.181	0.184	***0.841***	0.314	0.353
seri2	0.021	0.191	0.165	***0.837***	0.297	0.243
seri3	0.039	0.164	0.140	***0.799***	0.249	0.222
seri4	0.032	0.169	0.213	***0.832***	0.324	0.270
seri5	-0.055	0.138	0.111	***0.785***	0.247	0.251
susc1	0.001	0.187	0.220	0.260	***0.767***	0.334
susc2	-0.014	0.194	0.252	0.241	***0.843***	0.348
susc3	-0.073	0.230	0.289	0.300	***0.870***	0.427
susc4	0.205	0.146	0.271	0.261	***0.778***	0.226
susc5	0.034	0.203	0.295	0.334	***0.761***	0.328
vacc1	-0.207	0.268	0.254	0.288	0.395	***0.844***
vacc2	-0.233	0.260	0.238	0.335	0.357	***0.892***
vacc3	-0.230	0.249	0.238	0.291	0.364	***0.912***
vacc4	-0.212	0.198	0.230	0.252	0.397	***0.885***
vacc5	-0.238	0.225	0.221	0.312	0.400	***0.881***

Note. barr: Perceived barriers to preventive action; bene: Perceived benefits of preventive action; self: Private self-consciousness; seri: Perceived seriousness of COVID-19; susc: Perceived susceptibility to COVID-19; & vacc: Intention of COVID-19 vaccination

Table 3. Composite reliability and average variance extracted

	Number of items	Mean	Standard deviation	Cronbach's alpha	CR[1]	AVE[2]
Perceived susceptibility to COVID-19	5	3.899	0.739	0.846	0.890	0.619
Perceived seriousness of COVID-19	5	4.288	0.707	0.878	0.910	0.671
Perceived benefits of preventive action	6	3.899	0.607	0.814	0.852	0.547
Perceived barriers to preventive action	5	2.548	0.953	0.809	0.861	0.510
Knowledge of COVID-19*	12	8.386	2.064	-	-	-
Government information support	3	4.598	0.566	-	-	-
Private self-consciousness	4	3.848	0.772	0.884	0.919	0.740
Intention to get COVID-19 vaccination	5	4.536	0.572	0.929	0.946	0.779

Note. CR: Composite reliability; AVE: Average variance extracted; & Knowledge of COVID-19 & government information is a formative variable

male, almost half (48.57%) were 30~39 years old, 63.48% were currently employed, 79.73% had a junior college degree, and 61.38% were single.

Measurement Model

In the first step of the PLS-PM, the reliability, convergent validity, and discriminant validity of the instrument were examined.

Table 2 shows that all of the loadings are greater than the suggested threshold of 0.707 [26].

Table 3 shows that all Cronbach's alpha and composite reliability (CR) values are greater than the suggested 0.70, and all average variance extracted (AVE) values are greater than the suggested 0.50. This indicates good reliability and convergent validity of the measurement model [27].

For sufficient discriminant validity to be present, items should load more strongly on their own latent constructs, and the average variance shared between each construct and its measures should be greater than the variance shared between the construct and other latent constructs.

Table 2 shows that items load much more highly on their own latent constructs than on any other latent constructs (cross-loadings). In **Table 4**, the AVE square roots are greater than the correlations among latent constructs, which means that good discriminant validity was achieved.

Structural Model

To test the moderating effects of private self-consciousness, this study employed the PLS-PS (product of sums) approach recommended by [28]. Specifically, the moderating factors (private self-consciousness) and four independent variables (perceived susceptibility, perceived seriousness, perceived barriers, and perceived benefits) were multiplied to generate the product of sums. Four single-indicator interaction terms representing the four moderating

Table 4. Fornell-Larcker criterion

	1	2	3	4	5	6	7	8
1. Perceived barriers	0.746							
2. Perceived benefits	0.035	0.715						
3. Governmental information support*	-0.295	0.259	-					
4. Knowledge*	-0.153	0.105	0.268	-				
5. Private self-consciousness	0.086	0.407	0.222	0.140	0.860			
6. Perceived seriousness	-0.027	0.208	0.333	0.154	0.202	0.819		
7. Perceived susceptibility	0.024	0.247	0.328	0.110	0.333	0.352	0.786	
8. Influenza vaccine	-0.244	0.269	0.607	0.233	0.268	0.336	0.435	0.883

Note. *Governmental information support & knowledge of COVID 19 are formative variables

Table 5. Results of the structural models

Dependent variable		Direct effects only	Direct effects+moderating effects
R^2		0.342	0.364
$\triangle R^2$			0.022 (f2=0.034[b])
Intention	Perceived susceptibility (SUSC)	0.304*	0.298*
	Perceived seriousness (SERI)	0.160*	0.161*
	Perceived barriers (BARR)	-0.249*	-0.284*
	Perceived benefits (BENE)	0.123*	0.112*
	Knowledge of COVID 19 (KNOW)	0.148*	0.140*
	Private self-consciousness (SELF)	0.080*	0.085*
	SUSC X SELF		-0.103*
	SERI X SELF		-0.009
	BARR X SELF		0.104*
	BENE X SELF		0.055
SUSC	Governmental information support	0.328*	0.328*
SERI	Governmental information support	0.333*	0.333*
BARR	Governmental information support	-0.295*	-0.295*
BENE	Governmental information support	0.259*	0.259*
KNOW	Governmental information support	0.268*	0.268*

Note. *p<0.05 & Effect size (f^2) is calculated by the formula $(R^2_{full}-R^2_{partial})/(1-R^2_{full})$

Table 6. Summary of hypotheses testing

Hypotheses	Supported?
H1: Perceived susceptibility would positively impact the Intention	Yes
H2: Perceived seriousness would positively impact the Intention	Yes
H3: Perceived barriers would negatively impact the Intention	Yes
H4: Perceived benefits would positively impact the Intention	Yes
H5: Knowledge would positively impact the Intention	Yes
H6: Governmental information support would positively impact perceived susceptibility	Yes
H7: Governmental information support would positively impact perceived seriousness	Yes
H8: Governmental information support would negatively impact perceived barriers	Yes
H9: Governmental information support would positively impact perceived benefits	Yes
H10: Governmental information Support would positively impact knowledge	Yes
H11: Private self-consciousness moderates the impact of perceived susceptibility on influenza vaccine	Yes
H12: Private self-consciousness moderates the impact of perceived seriousness on influenza vaccine	No
H13: Private self-consciousness moderates the impact of perceived barriers on influenza vaccine	Yes
H14: Private self-consciousness moderates the impact of perceived benefits on influenza vaccine	No

effects were added to the model and linked to the dependent variable (the intention to receive the COVID-19 vaccine).

The results of structural model are presented in **Table 5**.

The results of hypothesis testing are shown in **Table 6**.

A structural model with only the direct effects of the five triggers and moderators on the intention to receive the COVID-19 vaccine was first examined. Perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and knowledge had a significant impact on intention, thus supporting hypotheses 1 to 5. These factors are significantly impacted by governmental information support, thus supporting hypotheses 6 to 10. Then, a model including both direct effects and moderating effects was examined. Private self-consciousness negatively moderated the impact of perceived susceptibility on intention and positively moderated the impact of perceived barriers on intention, supporting hypotheses 11 and 13. Private self-consciousness did not moderate the effect of perceived seriousness and perceived benefits on intention. Therefore, hypotheses 12 and 14 were not supported.

In **Table 5**, the direct-effects-only model shows that the triggers explained 34.2% of the variance in intention. When moderating effects were added, the R^2 increased to 36.4% (ΔR^2=2.2%), indicating an effect size of 0.034. With Cohen's formula [29], this represents a small-to-medium-sized effect. In **Table 5**, effects of HBM components (perceived susceptibility, perceived seriousness, perceived barriers, and perceived benefits) and knowledge on intention are all statistically significant. All of them, except for perceived barriers, have

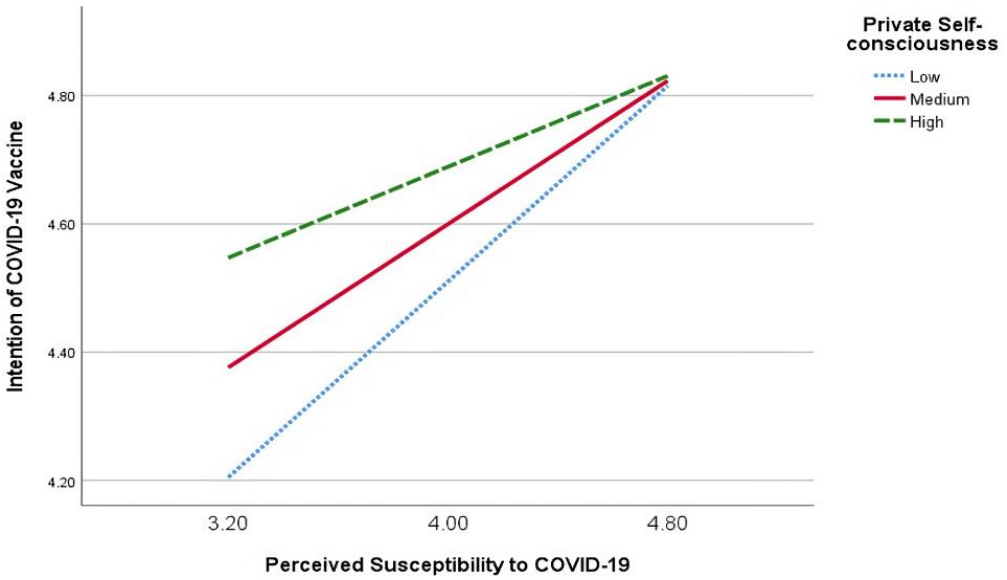

Figure 2. Graph of interaction between perceived susceptibility & private self-consciousness on intention to get COVID-19 vaccine (Source: Authors' own elaboration)

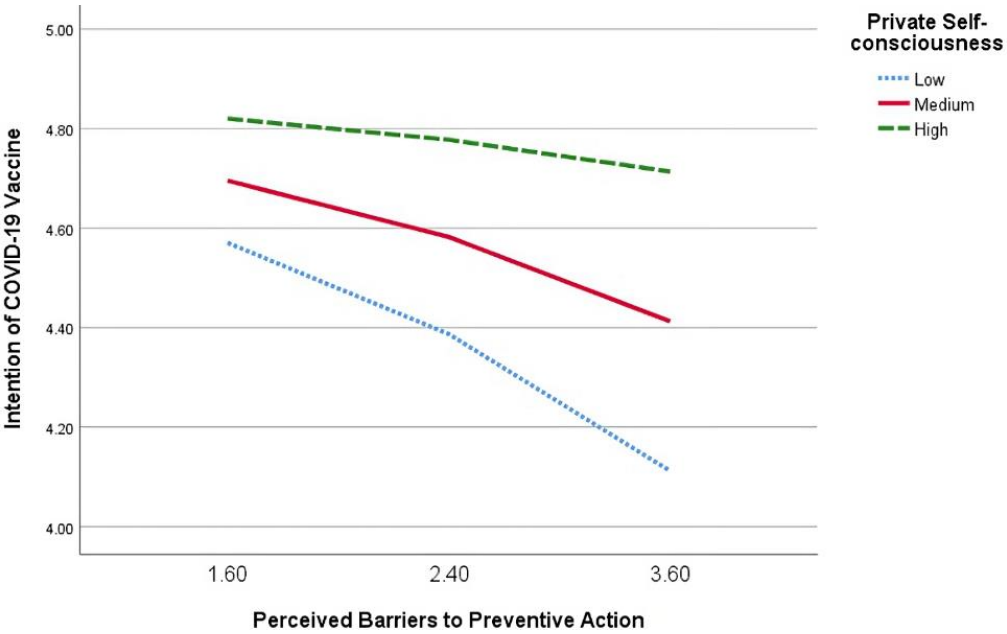

Figure 3. Graph of interaction between private self-consciousness & perceived barriers on intention to get COVID-19 vaccine (Source: Authors' own elaboration)

positive effects. The effects of governmental information support on these HBM components and knowledge are all statistically significant, and they are all positive effects.

These HBM components and knowledge are all statistically significant, and they are all positive effects.

The equation examines whether private self-consciousness moderates the effects of perceived susceptibility on intention. Private self-consciousness (b=0.085, p<0.05), perceived susceptibility (b=0.298, p<0.05), and their interaction (b =-0.103, p<0.05) all uniquely contribute to the overall effect on intention (see **Figure 2** for the interaction between perceived susceptibility and private self-consciousness).

The interaction term was statistically significant in the research model, indicating that private self-consciousness was a significant moderator of the effect of perceived susceptibility and perceived barriers on intention. The relationship between perceived susceptibility and intention was weakened by rising private self-consciousness, while the interaction term between perceived susceptibility and private self-consciousness was significantly negative.

The equation examines whether private self-consciousness moderates the effects of perceived barriers on intention. Private self-consciousness (b=0.085, p<0.05), perceived barriers (b=-0.284, p<0.05), and the interaction (b=0.104, p<0.05) all uniquely contributed to the overall effect on intention (see **Figure 3** for the interaction between perceived barriers and private self-consciousness).

The effect of perceived barriers on intention is negative, and the interaction effect of perceived barriers and private self-consciousness on the interaction is positive. The relationship between perceived barriers and intention is weakened by rising private self-consciousness.

DISCUSSION

Health Belief Model and the Intention of COVID-19 Vaccination

Consistent with previous studies, the variables of the perceived susceptibility to COVID-19, the perceived seriousness of COVID-19, the perceived benefits of preventive action, and the perceived barriers to preventive action are all directly related to the intention to receive the COVID-19 vaccine. Higher levels of perceived benefits were correlated with a higher intention to receive the COVID-19 vaccine, and higher perceived barriers were correlated with a lower intention to receive the vaccination. In addition, greater perceived susceptibility and perceived seriousness were associated with greater intention to receive the COVID-19 vaccine. These findings are consistent with HBM in general [14]. Studies focusing on prevention behaviors during a pandemic, mainly vaccinations, also had similar findings [30]. Specifically, perceived susceptibility and perceived barriers have a significant influence on intention, given the strong and consistent associations observed.

Additionally, this study also found that the more COVID-19 knowledge that people have, the higher their intention to receive the vaccine. Therefore, this study provides support for the utility of HBM as a guiding framework for understanding behavioral intentions during a pandemic.

Governmental Information Support and the Intention of COVID-19 Vaccination

According to the results of this study, governmental information support is directly related to people's perceived susceptibility to COVID-19 (positive effect), perceived seriousness of COVID-19 (positive effect), perceived benefits of preventive action (positive effect), perceived barriers to preventive action (negative effect), and knowledge of COVID-19 (positive effect). The more information people obtain from the government, the higher their perceived seriousness of COVID-19, perceived benefits of preventive action, and perceived barriers to preventive action during the COVID-19 pandemic are. The government can increase the vaccination rate by addressing the benefits of COVID-19 vaccination and maintaining a high level of transparency regarding vaccine safety and effectiveness.

Governmental information support has a positive effect on perceived barriers to preventive action. To reduce the barriers to preventive action, the government can provide more prevention materials. People can do epidemic prevention work simply with government support [31]. The effect of governmental information support on perceived benefits is positive. However, too much coverage of COVID-19 might cause anxiety among public because the perceived susceptibility to COVID-19 and the seriousness of COVID-19 would be increased.

Private Self-Consciousness and the Intention of COVID-19 Vaccination

Private self-consciousness interacted with perceived susceptibility to affect intention. Raising the level of self-consciousness dampened the influence of perceived threat on intention. Although perceived susceptibility will increase intention, increasing private self-consciousness will reduce the effect of perceived susceptibility to intention. The effect of private self-consciousness in the high-level group is lower than that in the low-level group (**Figure 2**). This can be because people with high-level private self-consciousness believe that they can protect themselves in many existing ways during the COVID-19 pandemic, and vaccine uptake is just one of these ways. In addition, people who do not rush to receive the vaccine think that they can protect themselves with other anti-epidemic measures, such as wearing face masks [32].

The effect of perceived barriers will reduce intention, but private self-consciousness will dampen the influence of perceived barriers on intention. The effect of the low-level private self-consciousness group's perceived barriers is higher than that of the high-level private self-consciousness group (**Figure 2**). As the level of private self-consciousness increases, intention also increases. This implies that private self-consciousness produces a climate wherein individuals will increase their willingness or belief to solve problems to maintain their health [21], such as receiving the COVID-19 vaccine.

CONCLUSION

The findings of this study would be useful for health education and health campaigns aimed at promoting COVID-19 vaccination. Many studies have indicated that personal consciousness influences intention [8]. Similarly, this study also found that private self-consciousness plays an important role in COVID-19 vaccination acceptability.

This study makes three recommendations. First, it is important for the government to offer transparent and correct information about vaccines because correct and clear information can increase people's likelihood of getting vaccinated. Second, knowledge does not affect the intention to receive the COVID-19 vaccine as much as HMB components do. To increase people's willingness to receive the vaccine, the government should focus on news reports on epidemic development rather than providing knowledge or health education about the disease only. Finally, with a limited budget, the information provided by the government should focus on perceived seriousness and perceived benefits because they are not affected by private self-consciousness.

In summary, since herd immunity against COVID-19 requires a certain immunization rate [12], massive vaccination is key to controlling the spread of the disease. Providing residents with correct and suitable information is crucial for the government to increase people's intention to receive the COVID-19 vaccine.

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Declaration of interest: No conflict of interest is declared by the author.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the author.

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