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Factors associated with decision making on COVID-19 vaccine acceptance among college students in South Carolina

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Abstract

COVID-19 vaccination could be a promising approach in controlling the pandemic, but its success relies on the vaccine acceptance among various populations including young adults who are vulnerable to COVID-19 due to active lifestyle and perceived invulnerability. Vaccine acceptance decisions can be influenced by multiple factors and people may weigh these factors differently in decision making. The current study aimed to explore COVID-19 vaccine acceptance among college students in South Carolina and examine how they weigh these factors according to their COVID-19 vaccine acceptance levels (i.e., acceptance, hesitance, refusal). Online survey data were collected from 1062 college students in South Carolina between September and October 2020. Multinomial logistic regression was used to compare perceived importance of 12 factors affecting levels of vaccine acceptance, controlling for demographic variables. About 26.1% of participants reported they would definitely take COVID-19 vaccines when available. Compared to acceptance group, refusal and hesitance groups considered side effects and vaccine characteristics (e.g., where the vaccine is produced) as important. Hesitance group considered authoritative advice from school/college as important. Acceptance group considered authoritative advice from government/doctors and local availability of the vaccines as important. Our findings suggest relatively low vaccine acceptance among college students in South Carolina and different factors were considered in their vaccination decision according to their acceptance levels. Tailored vaccine promotion messages should address specific concerns among the refusal and hesitancy groups. Schools should attend to valid communication strategies in vaccine campaign since the hesitancy group considered school's advice as important. College health educators also need to pay attention to the refusal group who do not value duration of protection or authoritative advice as much as their counterparts in vaccine decision making.

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Author Contributions

Cheuk Chi Tam, Shan Qiao, Xiaoming contributed to the development and approved the final version of the manuscript. All authors designed the study. Shan Qiao and Xiaoming Li were responsible for data collection. Cheuk Chi Tam completed the data analyses.

Conflict of interest

The authors have no conflicts of interest to report.

Keywords

COVID-19; vaccination decision making; vaccine acceptance; college students

Introduction

The novel coronavirus disease 2019 (COVID-19) pandemic has become a public health crisis worldwide and the United States (US) has been experiencing great burdens of the pandemic. As of July 19, 2021, there have been a total number of 609,142 deaths due to COVID-19 in the US, which is followed by Brazil (542,214) and India (414,108) (Johns Hopkins University and Medicine, 2020). To control the emergent pandemic, many countries have made efforts in developing and testing vaccines against COVID-19, and such efforts has resulted in several efficacious COVID-19 vaccines becoming available for use in the US in early 2021 (CDC COVID-19 Vaccine Breakthrough Case Investigations Team, 2021). However, the success of COVID-19 vaccination would strongly depend on individuals' vaccine acceptance. It is suggested a minimum herd-immunity threshold of 67% among general population to significantly halt the spread of COVID-19 (Kwok, Lai, Wei, Wong, & Tang, 2020). This has been challenging since the latest national data (at the end of July 2021) indicate that only 49% of the US population have been fully vaccinated, and such a rate is even lower in Southern states (e.g., South Carolina, 39.9%) (Our World in Data, 2021). To better promote COVID-19 vaccination, it is important to understand the factors contributing to vaccination decision making.

Vaccination decisions can be influenced by multiple factors. Vaccination theoretical frameworks, such as the Increasing Vaccination Model, posit that vaccine uptake could be influenced by factors from three aspects, including individual cognitions, social processes, and practice issues (Brewer, Chapman, Rothman, Leask, & Kempe, 2017; MacDonald, 2015). Individual cognitions factors include individuals' beliefs or attitudes towards vaccination, such as perceived efficacy or benefits of vaccines, safety concerns (e.g., side effects), and perceptions on characteristics of vaccines (e.g., ways vaccine is administered). Social processes factors refer to interpersonal interactions on attitudes and perceptions of vaccination. An example of such factors is recommendations from trusted sources, such as health authorities. Practice issues focus on factors that directly affect vaccination behaviors, such as vaccine availability.

Several studies have reported associations between some of these factors (i.e., beliefs and attitudes, safety concerns, and provider recommendations) and COVID-19 vaccine acceptance (Fisher et al., 2020; Gadoth et al., 2020; Kasting, Head, Hartsock, Sturm, & Zimet, 2020; Reiter, Pennell, & Katz, 2020). However, most studies were conducted among healthcare providers or general population and limited literature have examined these factors in other at-risk groups. Also, it has not been well studied whether these factors could be weighed differently in decision making by individuals with various levels of COVID-19 vaccine acceptance. Vaccine literature has highlighted the value to investigate the patterns of weighing factors in vaccination decision making among diverse groups because individuals who hesitate or refuse to take vaccines may show different vaccine belief systems (Smith,

2017). Such knowledge can inform tailored vaccine promotion interventions or campaigns for people with different vaccine acceptance levels (acceptance, hesitancy, and refusal).

Young adults (aged 18 to 30 years) should be engaged in the campaigns of COVID-19 vaccination. Although older adults have been prioritized for COVID-19 prevention and treatment because of the elevated risk for severe illness, existing evidence has shown a comparable risk for COVID-19 in young adults. For example, data from the US, Geneva, and Switzerland consistently showed that seroprevalence of SAR-CoV-2 antibodies in young adults (9.9% to 10.9%) were similar in older adults (e.g., 55 to 64 years: 7.4% to 11.9%) (Guilamo-Ramos, Benzekri, Thimm-Kaiser, Hidalgo, & Perlman, 2020; New York State Governor's Office, 2020; Stringhini et al., 2020). However, existing US data indicate that the COVID-19 vaccine uptake rate in young adults is much lower than that in elders (38.3% vs. 80%), though COVID-related hospitalization among young adults is increasing (Diesel, 2021). In addition, young adults are at high risk for COVID-19 transmission given that they are less likely to comply with preventive practices, including hand washing and social distancing, compared to other age groups (Czeisler et al., 2020; Zhang et al., 2020).

Among young adults, college students in the Southern US could be exposed to a higher risk of COVID-19 for two reasons. First, the COVID-19 epidemic is prevalent and serious in the South. As of July 20, 2021, the positivity rate of COVID-19 was 8.81% in South Carolina, and such a rate is higher than the threshold (5%) suggested by WHO for reopening (Johns Hopkins University and Medicine, 2021). Second, a great number of college students in the South have been back to schools since reopening of majority of colleges in Fall 2020. Many students attend to in-person classes and are living with roommates on or near campuses. In addition to COVID-19 vulnerability, it is important to note that the Southern States historically had a lower vaccination rate for other infectious diseases compared with other states. For example, an investigation from eight universities in North Carolina revealed that only 14% to 30% of college students reported receiving influenza vaccines (Poehling, Blocker, Ip, Peters, & Wolfson, 2012), and such rates were significantly lower than the goal of 50% vaccine coverage suggested by the American College Health Association (ACHA) (2016). Taken together, college students in the South should be targeted for COVID-19 vaccination promotion. An investigation on their COVID-19 vaccine acceptance and the factors influencing their vaccination decision making could be critical to inform COVID-19 vaccination promotion program among this population.

Since limited research has addressed COVID-19 vaccine acceptance among college students in the South and factors influencing their vaccination decision-making, the current study aimed to (1) explore the proportions of college students who would accept, hesitate, or refuse to take a COVID-19 vaccine (i.e., level of vaccine acceptance); and (2) examine whether the factors that may affect vaccine acceptance were weighed differently in decision making by college students according to their levels of COVID-19 vaccine acceptance.

Methods

Participants and procedure

Online survey data were collected among a convenience sample of college students in South Carolina between September 2020 and October 2020. College students were invited to the study through student listservs. Participants were eligible for the study if they were: (1) 18 years of age or older; and (2) full-time students currently enrolled in a university in South Carolina.

Potential participants could access the survey via the hyperlink in the invitation email. An online informed consent was presented before they began the survey. The online consent covered necessary study information including study purposes, confidentiality protection, voluntary nature of participation, and survey procedure. The survey typically took 20 minutes to complete. Upon completion, participants were offered an opportunity to win one of ten $25 Amazon e-gift cards through a prize draw. A total of 1370 college students responded to the survey. Data from 308 participants were excluded due to the low completion rate (less than 50% of the survey), careless response patterns (random and non-random patterns of responses), and aberrant completion time (less than 6 minutes), resulting in a total sample size of 1062 in the current study. The research protocol was approved by the Institutional Review Board at University of South Carolina.

Measures

Demographics—Participants provided their demographics including gender (0 = female, 1 = male), age (years), annual family income (from < $10,000 to ≥ $100,000), race/ethnicity (e.g., White/Caucasian), and school year (e.g., Freshman). Due to a low proportion of sample in certain categories, we dichotomized race/ethnicity (0 = White/Caucasian, 1 = non-White/Caucasian) and school year (0 = undergraduate, 1 = graduate).

COVID-19 vaccine acceptance—Participants answered one question ““How likely will you take a COVID-19 vaccine when it is available”) using a five-point Likert scale (1 = definitely not take it, 2= not likely to take it, 3 = I don’t know, 4 = likely to take it, and 5 = definitely take it). Based on the World Health Organization guidance (WHO, 2014), participants were categorized into three groups including (1) refusal group (with answer of ‘1’); (2) hesitancy group (with answers of ‘2’, ‘3’, or ‘4’); and (3) acceptance group (with answer of ‘5’).

Factors associated with COVID-19 vaccination decision making—A self-developed 12-item scale was used to assess the importance of certain COVID-19 vaccine-related factors in participants’ COVID-19 vaccination decision making. Guided by the Increasing Vaccination Model (Brewer et al., 2017; MacDonald, 2015), the scale measured factors associated with individual cognitions (e.g., perceived efficacy), social processes (e.g., recommendations from governments), and practice issues about vaccination (e.g., schedule of the vaccines). Participants rated items on a 7-point scale ranging from 1 (the least important) to 7 (the most important). Cronbach’s alpha of this scale was 0.75.

Statistical analysis

Data were screened for proper coding, univariate outliers (z scores), and normality (skewness and kurtosis). Descriptive statistics were reported for demographic variables and COVID-19 vaccine acceptance. Univariate analyses, including analysis of variance (ANOVA) (for continuous variables) and chi-square test (for categorical variables), were utilized to examine the difference of demographic variables by COVID-19 vaccine acceptance levels.

Multinomial logistic regression was employed to examine the associations of the perceived importance of 12 COVID-19 vaccine-related factors with COVID-19 vaccine acceptance levels, controlling for demographic variables. The 'acceptance group' served as the reference group. The *−2 log likelihood* estimate and *Negelkerke R-square* were utilized to determine the model fit. Binary logistic regressions were utilized for pairwise comparisons (i.e., hesitancy group vs. acceptance group; refusal group vs. acceptance group). Odd ratios, regression coefficients (b-weight; *b*), and 95% confidence intervals (CI) were reported. All statistical analyses were performed using SPSS software version 26.

Results

Descriptive statistics and univariate analyses

As shown in Table 1, participants were mostly female (79.8%) and White/Caucasian (85.9%). More than 50% participants were undergraduates (12.2% Freshmen, 10.5% Sophomore, 12.4% Junior, and 17.1% Senior). Nearly 40% participants reported annual family income of $100,000 or more.

Regarding COVID-19 vaccine acceptance, 26.1% participants were considered as acceptance group, 11.6% were considered as refusal group, and 62.3% were considered as hesitancy group. Univariate analyses suggested that males were more likely to accept COVID-19 vaccines than females (*Chi-squares* = 7.73, $p = .021$). No significant differences were found for other demographic factors.

Multivariate analyses

The model fit indices suggested that overall multinomial logistic model was statistically significant (*−2 log likelihood* = 1462.47, $p < .001$; χ^2 [34] = 293.05, $p < 0.001$). *Nagelkerke* R^2 indicated that the model explained 31.0% of the total variance in COVID-19 vaccine acceptance (Table 2).

With acceptance group as the reference group, binary logistic regression models suggested a similar pattern of COVID-19 vaccine-related factors associated with decision making between refusal and hesitancy groups. Participants who were more likely to refuse or hesitate to take COVID-19 vaccine reported higher scores on the perceived importance of 'side effects' ($b = .34$, *OR* = 1.45, $p = .016$; $b = .21$, *OR* = 1.23, $p = .009$; respectively), 'ways the vaccines will be administrated' ($b = .41$, *OR* = 1.51, $p < .001$; $b = .19$, *OR* = 1.21, $p = .003$; respectively), and 'where the vaccines were made' ($b = .42$, *OR* = 1.31, $p < .001$; $b = .18$, *OR* = 1.20, $p < .001$; respectively). However, participants who were less

likely to refuse or hesitate to take COVID-19 vaccines reported higher levels on “whether it is recommended by government” and “whether it is recommended by my doctors”.

In addition, results suggested that two vaccine-related factors were associated with COVID-19 vaccine refusal or hesitancy. The ‘local availability of the vaccines’ ($b = -.27$, $OR = .76$, $p = .009$) were negatively associated with COVID-19 vaccine refusal. Students who scored higher on ‘whether it is recommended by my school/college’ ($b = .19$, $OR = 1.20$, $p = .001$) were more hesitant to take COVID-19 vaccines. Results did not show any significant differences between acceptance group and refusal/ hesitancy group in terms of efficacy of the COVID-19 vaccines and the duration of vaccine protection.

Discussion

The current study examined the COVID-19 vaccine acceptance and explored how the COVID-19 vaccine-related factors could be considered differently in their vaccination decision making according to the levels of vaccine acceptance among college students in South Carolina. To the best of our knowledge, the current study was one of the first attempts to document acceptance rate of COVID-19 vaccines and factors influencing future COVID-19 vaccine uptake among college students in the Southern US.

Our results suggested that 26.1% of college students in South Carolina were definitely to take a COVID-19 vaccine when available. This acceptance rate was much lower than 71.5% in a global sample and 75.4% in a US sample (Lazarus et al., 2020), although the disparities may be related to the different operationalization of vaccine acceptance (i.e., completely agree or somewhat agree to take a COVID-19 vaccine). The low rate of acceptance was also reflected in the COVID-19 vaccination coverage rate of 38.3% among US young adults during the similar time period (Diesel, 2021). Our finding was also aligned with previous studies on influenza vaccination that reported a significantly lower flu shot coverage in young adults than other age groups from 2010 to 2019 (Centers for Disease Control and Prevention [CDC], 2020b). The low acceptance rate may be related to optimistic bias. Compared with other age groups, young adults were more likely to underestimate disease severity and perceive low susceptibility for COVID-19 (Pasion, Paiva, Fernandes, & Barbosa, 2020; Wise, Zbozinek, Michelini, Hagan, & Mobbs, 2020). The vaccine refusal and hesitancy in college students could be a critical concern given the need of a minimum immunity level of 67% to achieve population immunity (Kwok et al., 2020). Given many US colleges planning to return to normal operation (Burke, 2021; Dennon, 2021), interventions to improve COVID-19 vaccine acceptance among college students merits a high attention. College students who would hesitate or refuse to take a COVID-19 vaccine should be targeted for vaccine promotion interventions.

Our findings suggested that perceived importance of COVID-19 vaccine-related factors in vaccination decision making differed by COVID-19 vaccine acceptance levels. Students who paid higher attention to recommendations from health providers and government were less likely to hesitate or refuse to take COVID-19 vaccine, suggesting that messages from health authorities could promote vaccination acceptance. This finding is consistent with a US national study suggesting that a provider recommendation could boost COVID-19

vaccine intentions (Head, Kasting, Sturm, Hartsock, & Zimet, 2020). Given the strong influence, CDC vaccine conversation guidance has highlighted the role of healthcare providers in recommending patients to take COVID-19 vaccines (CDC, 2020a). This suggests that campus vaccine communication could benefit from emphasizing health authorities' perspective on COVID-19 vaccination. However, we found that college students who paid higher attention to their schools' recommendations were more likely to hesitate to take a vaccine. This seems to be in accordance with a recent COVID-19 report, showing that college vaccine policies (e.g., mandatory vaccination) would increase the negative vaccination attitude in some students because of their concern on personal autonomy (Asgari, 2021). Accordingly, colleges need to take caution when providing recommendations and should attend to valid communication strategies.

Our findings suggested that hesitancy and refusal groups weighed more on negative consequences of COVID-19 vaccines ("side effects") and COVID-19 vaccine characteristics ('ways the vaccines will be administered' and 'where the vaccines are made') than acceptance group. Concerns on safety and quality of COVID-19 vaccines could be barriers against vaccine acceptance. Extant literature suggests that safety concerns and mistrust in vaccines contribute to vaccine hesitancy, and these concerns may become salient when the vaccine is rapidly developed (Dror et al., 2020; Karafillakis et al., 2016). Vaccine literature has suggested that misinformation regarding vaccines and a lack of sophisticated knowledge of immunization may induce anxiety and uncertainty, leading to an overestimation of the side effects (Bliss & Morrison, 2020; Dubé, Gagnon, Nickels, Jeram, & Schuster, 2014; Karafillakis & Larson, 2017; Larson, 2018). To reduce college students' concerns on safety and quality of COVID-19 vaccines, evidence-based health communication should address misinformation (e.g., "fact check") and deliver vaccine knowledge using population-appropriate languages. In addition, college student's high concerns on side effects may be primed by media bias for negative news about COVID-19 vaccines (Muric, Wu, & Ferrara, 2021). To provoke their attentions to other aspects of COVID-19 vaccination, message-framing techniques would be warranted for health communications. For example, loss-framed messages that emphasize the consequences of not taking vaccines have been effective in increasing willingness of getting vaccinated among young adults (Lee & Cho, 2017). In addition, recent literature has also highlighted the value of prosocial-framed messages, which could enhance individuals' attentions to prosocial benefits such as the protection of communities and significant others (Chou & Budenz, 2020; Jordan, Yoeli, & Rand, 2020).

We also found that acceptance group paid more attention on the access to the COVID-19 vaccines (i.e., 'local availability of the vaccines') than hesitancy group. This finding implies that vaccination decisions may be driven by the convenience of taking a COVID-19 vaccine. As such, college vaccine campaign will benefit from providing clear information regarding COVID-19 vaccine access and applying appropriate approaches to promote convenience of vaccination.

The current study had several methodological limitations. First, data were collected from a convenience sample in South Carolina. Our findings may not be generalized to students in other states. Second, self-report data may be subject to response bias, such as social

desirability. Third, cross-sectional data cannot draw causal inferences. Fourth, measures on factors associated with COVID-19 vaccination decision making were self-developed and have not been validated. Fifth, we combined heterogeneous minority groups in the data analysis. Future research should use a random sample, apply a longitudinal design, validate self-developed measures, and account for the analysis across different racial/ethnic minority groups.

Despite these limitations, the current study identified a lower rate of vaccine acceptance among college students than that in general population. This finding merits attention because young adults have comparable COVID-19 risk with other age groups. Our data showed that factors associated with vaccination decision making were weighed differently by individuals with different vaccine acceptance levels, which may have important implications to COVID-19 vaccine promotion practices. Acceptance-enhancing interventions or vaccine communications in colleges could benefit from tailoring contents to the patterns of decision making. Healthcare providers need to be aware of their important role in promoting COVID-19 vaccination. The success of vaccination may strongly rely on young adults' participations. Policy makers, healthcare practitioners, colleges in the South need to work together and make efforts in increasing COVID-19 vaccine acceptance.

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Table 1.

Demographic analyses between COVID-19 vaccination acceptance groups (n = 1062)

	Overall	Refusal group	Hesitancy group	Acceptance group	Group comparisons	
					F/Chi-square	*p*-value
n	1062	123 (11.6%)	662 (62.3%)	277 (26.1%)		
Demographics						
Age, *Mean* (*SD*)		24.95(7.67)	23.64(6.47)	23.75(6.59)	1.95	0.142
Gender						
Female	848 (79.8%)	106(86%)	535(81%)	207(75%)	**7.73***	0.021
Male	211 (19.9%)	17(13.8%)	125(18.9%)	69(25.0%)		
Race/Ethnicity[a]						
White/Caucasian	912 (85.9%)	103(83.7%)	568(85.8%)	241(87.0%)	0.76	0.685
Black/African American	71 (6.7%)					
Hispanic/Latino	32 (3.0%)					
Asian	85 (8.0%)	20(16.3%)	94(14.2%)	36(13.0%)		
American Indian/Alaskan Native	6 (0.6%)					
Native Hawaiian/other Pacific Islander	3 (0.3%)					
Other	6 (0.6%)					
Annual family income						
< $10,000	63 (5.9%)	7(5.7%)	44(6.8%)	12(4.4%)	14.82	0.063
$10,000 to $24,999	102 (9.6%)	7(5.7%)	64(9.8%)	31(11.3%)		
$25,000 to $49,999	161 (15.2%)	26(21.1%)	104(16.0%)	31(11.3%)		
$50,000 to $100,000	306 (28.8%)	43(35.0%)	179(27.5%)	84(30.5%)		
>$100,000	417 (39.3%)	40(32.5%)	260(39.9%)	117(42.5%)		
School year[b]						
Freshman	130 (12.2%)				1.49	0.475
Sophomore	112 (10.5%)	66(53.7%)	353(53.7%)	137(49.5%)		
Junior	132 (12.4%)					
Senior	182 (17.1%)					
Master’s student, first year	100 (9.4%)	66(53.7%)	353(53.7%)	137(49.5%)		
Master’s student, second year or above	107 (10.1%)					

	Overall	Refusal group	Hesitancy group	Acceptance group	Group comparisons	
					F/Chi-square	*p*-value
Doctoral student, first year	78 (7.3%)					
Doctoral student, second year or above	216 (20.3%)					

[a]Race/Ethnicity was dichotomized into 0 (White/Caucasian) and 1 (non-White/Caucasian) for analyses

[b]School year was dichotomized into 0 (undergraduate) and 1 (graduate) for analyses.

Table 2.

Multinomial and binary logistic regression on COVID-19 vaccine acceptance with perceived importance of vaccine-related factors among college students

	Vaccine refusal[+]					Vaccine hesitancy[+]				
	b	***SE***	***p-value***	***Odd Ratio***	**95% *CI***	***b***	***SE***	***p-value***	***Odd Ratio***	**95% *CI***
Gender	−0.92	0.37	0.014	0.40	0.19-0.83	−0.27	0.20	0.178	0.76	0.52-1.13
Age	0.01	0.02	0.604	1.01	0.97-1.06	0.00	0.02	0.998	1.00	0.97-1.03
White/Caucasian	0.21	0.40	0.595	1.24	0.56-2.71	0.20	0.25	0.429	1.22	0.75-1.98
Annua family income	−0.14	0.11	0.234	0.87	0.70-1.09	−0.11	0.07	0.134	0.90	0.78-1.03
Graduates	−0.02	0.08	0.781	0.98	0.85-1.13	−0.04	0.04	0.308	0.96	0.88-1.04
Efficacy of the COVID-19 vaccines or the duration the vaccine protection										
Efficacy of the vaccines	0.00	0.11	0.993	1.00	0.81-1.23	0.12	0.07	0.078	1.13	0.99-1.30
The duration the vaccines can protect me from COVID-19	−0.07	0.10	0.435	0.93	0.77-1.12	0.02	0.06	0.676	1.03	0.91-1.15
Negative consequences of the COVID-19 vaccines										
Side effects	**0.37**	0.15	0.016	**1.45** *	1.07-1.96	**0.21**	0.08	0.009	**1.23** **	1.05-1.44
Long-term negative health consequences	−0.01	0.18	0.950	0.99	0.69-1.42	0.08	0.10	0.419	1.09	0.89-1.33
COVID-19 vaccine characteristics										
Ways the vaccines will be administered (oral or injection)	**0.41**	0.09	0.000	**1.51** ***	1.26-1.81	**0.19**	0.06	0.003	**1.21** **	1.07-1.37
Where the vaccines were made (domestic vs. overseas)	**0.42**	0.08	0.000	**1.53** ***	1.30-1.80	**0.18**	0.05	0.000	**1.20** ***	1.08-1.32
Schedule of the vaccines (One time vs. multiple times)	0.06	0.09	0.547	1.06	0.88-1.27	−0.07	0.05	0.179	0.93	0.84-1.03
Access to the COVID-19 vaccines										
Local availability of the vaccines	**−0.27**	0.10	0.009	**0.76** **	0.62-0.94	−0.11	0.06	0.077	0.89	0.79-1.01
Costs (e.g., any out-of-packet charge)	−0.10	0.09	0.261	0.91	0.77-1.07	0.06	0.05	0.276	1.06	0.96-1.17
Authoritative advice										
Whether it is recommended by my school/college	0.13	0.10	0.192	1.13	0.94-1.37	**0.19**	0.06	0.001	**1.20** **	1.08-1.35
Whether it is recommended by government	**−0.41**	0.11	0.000	**0.66** ***	0.53-0.83	**-0.14**	0.06	0.021	**0.87** *	0.77-0.98
Whether it is recommended by my doctors	**−0.61**	0.10	0.000	**0.54** ***	0.45-0.66	**−0.26**	0.06	0.000	**0.77** ***	0.68-0.88

[+]Acceptance group was set as the reference group. General model results: $-2\ Log\ Likelihood = 1462.47$, $\chi^2\ [34] = 293.05$, $p < 0.001$; $Nagelkerke\ R^2 = 0.31$.

SE = Standardized Error. 95% CI = 95% Confidence Interval.

*$p < .05$

** $p < .01$

*** $p < .001$