

Role of COVID-19 Risk Perception and Organizational Safety Climate in Preventing COVID-19 Among Taiwanese University Students

Asia Pacific Journal of Public Health
2022, Vol. 34(8) 840–842
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DOI: 10.1177/10105395221129109
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Introduction

As of August 10, 2022, the number of confirmed cases of COVID-19 in Taiwan was 4801 676, and the total death toll was 9298.¹ COVID-19 risk perception refers to an individual's subjective fear of COVID-19 infection,² and it is a critical motivator for people to engage in preventive behaviors, particularly the use of masks.³ Organizational safety climate refers to the individual awareness of organizational safety aspects and is a typical moderator.⁴ This moderator revealed that the managers in a high-safety climate context devoted their time to removing threats to people's health, including reminding them to take care of their health and vice versa.⁵ This indicates that people may react differently when it comes to preventing threats in high-safety and low-safety climate contexts, respectively.⁵ To further contribute to the existing research, this study investigated the potential relationships between COVID-19 risk perception, preventive behaviors, and the organizational safety climate among Taiwanese university students.

Methods

Participants and Research Ethics

We administered an online questionnaire to the students of four universities in Taipei between May 8 and May 18, 2020. The universities had rapidly developed coping skills to prevent COVID-19 transmission as a result of their concern for their students' health. During the data collection, the teaching assistant assured the participants that the data would be used only for research purposes and that they had the right to refuse participation. This research was approved by the Ethics Review Board of the International College of Krirk University. The number of the approved proof is KRUERB2020-028. The valid questionnaires were administered after informed consent was obtained from all participants; 449 samples were collected in total. The demographics of the participants are listed in Figure 1.

Instruments

This study used the COVID-19 risk perception scale, the organizational safety climate scale, and the preventive behavior scale to measure the individuals' recognition of COVID-19 risk, organizational safety, and preventive behavior.^{6–8} The items of these three scales were rated on a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). SPSS and Amos were used for the statistical analysis. By performing confirmatory factor analysis using Amos, the measurement scales with item consistency reliability were found to exhibit reasonable structural validity.

Results

The moderating effect analysis was conducted using SPSS. Because a significant correlation was hypothesized between COVID-19 risk perception and preventive behaviors ($r=0.16$, $P<.01$), we further conducted hierarchical linear regression. In model 1, sex ($\beta=-0.04$, $P>.05$) and grade ($\beta=0.11$, $P<.05$) as control variables jointly explained 1% of the variance in preventive behaviors. After the exclusion of control variables in model 2, the COVID-19 risk perception ($\beta=0.17$, $P<.001$) was found to positively predict preventive behaviors, resulting in a 3% increase in the explained variance. We further tested the moderating effect of the organizational safety climate. For this, the control variables, COVID-19 risk perception, and the interaction item of COVID-19 risk perception and organizational safety climate were jointly shown to predict preventive behaviors in model 3. The interaction item negatively predicted preventive behaviors ($\beta=-0.10$, $P<.05$), and this explained the 1%

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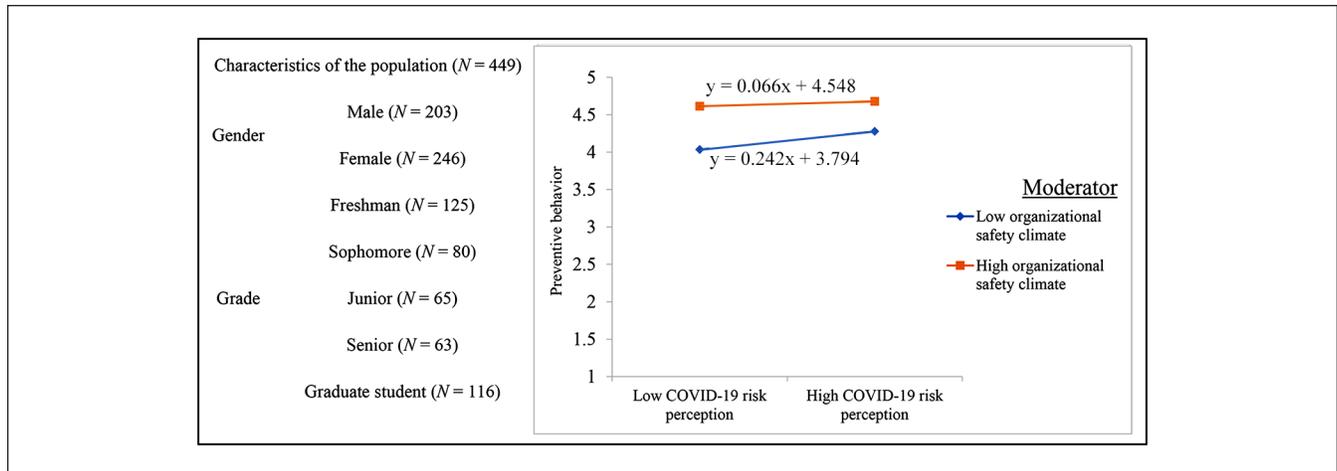


Figure 1. Demographics and moderating effect.

increase in variance. To confirm the moderating effect of organizational safety climate on the relationship between COVID-19 risk perception and preventive behaviors, an interaction effect diagram was drawn (Figure 1), which revealed a significant gap between the low and high organizational safety climate groups.

Discussion

This study demonstrated that the COVID-19 risk perception positively predicted preventive behaviors in Taiwanese university students.³ Furthermore, the organizational safety climate is a marked moderator of the relationship between COVID-19 risk perception and preventive behaviors of Taiwanese university students.⁹

The positive relationship between COVID-19 risk perception and preventive behaviors indicated that the COVID-19 risk perception of Taiwanese university students may determine the self-protective actions that they undertook during the pandemic.³ As suggested by protection motivation theory, the Taiwanese university students recognized the negative outcomes of COVID-19 infection and were motivated to accept preventive behaviors.¹⁰ As shown in Figure 1, high and low organizational safety climates differently moderated the positive relationship between COVID-19 risk perception and preventive behaviors. In a high organizational safety climate, both high and low COVID-19 risk perceptions significantly predicted a high level of preventive behaviors. In a low organizational safety climate, low COVID-19 risk perception significantly predicted a low level of preventive behaviors. However, with an increase in COVID-19 risk perception in a low organizational safety climate, preventive behaviors exhibited an increasing trend. According to psychological safety climate theory, managers (such as the managers in government organizations and universities) are more likely to care about the students' health and assist them in coping with the

COVID-19 threat in a high organizational safety climate.⁵ Thus, in a high organizational safety climate, the Taiwanese university students with either a high or low COVID-19 risk perception may positively accept preventive behaviors against COVID-19. However, in a low organizational safety climate, the managers may neglect the students' safety and health.⁵ Therefore, in a low organizational safety climate, the Taiwanese university students with a low COVID-19 risk perception are more likely to reject preventive behaviors against COVID-19, whereas they may focus on COVID-19 preventive behaviors when they recognize a high COVID-19 risk.

Conclusion

This study revealed that a high COVID-19 risk perception and a high organizational safety climate are both crucial for COVID-19 prevention. This means that the government, universities, and teachers in Taiwan must increase the publicity on the negative consequences of COVID-19 to motivate university students to adopt preventive behaviors so that they prevent COVID-19 transmission. Moreover, the Taiwanese government, universities, and teachers must construct a high organizational safety climate for the university students to increase their COVID-19 risk perception, thereby enabling them to be capable of preventing COVID-19 transmission by themselves.

Acknowledgments

We would like to thank the Taiwanese university students who participated in our research.

Author Contributions

Chia Ching Tu conceived of the study and revised the article. Dong Yang carried out the measurements and statistics, as well as assisted with the study design and paper revision. Chia Feng Tu revised the article and helped get questionnaires from university students in Taiwan.

Data Availability Statement

Research data are available from the corresponding author.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

This research was approved by the Ethics Review Board of the International College of Krirk University. The number for approved proof is KRUERB2020-028.

Informed Consent

Informed consent was obtained from all participants.

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