International Journal of Physical Activity and Health

Volume 2
Issue 1 *Supplemental Issue: Abstracts of 2022 International Chinese Society for Physical Activities and Health*

Article 29

2-2023

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## Recommended Citation

Wei, Ran; Liu, Yuanlong; Applegate, Brooks; and Cork, Colin (2023) "Measuring Invariance of Theory of Planned Behavior Model on Online Fitness Program Participation During the COVID-19 Pandemic," *International Journal of Physical Activity and Health*: Vol. 2: Iss. 1, Article 29.
DOI: https://doi.org/10.18122/ijpah.020129.boisestate
Available at: https://scholarworks.boisestate.edu/ijpah/vol2/iss1/29

**Measuring Invariance of Theory of Planned Behavior Model on Online Fitness Program Participation During the COVID-19 Pandemic**

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**Abstract**

Theory of Planned Behavior (TPB) is one of the most frequently cited and most influential models to explain and predict human intentions and behaviors (Ajzen, 1991, 2011; Kim & James, 2016), which include physical activity and exercise. However, the dimensionality of TPB has not been examined in the context of online fitness program (OFP) participation during the COVID-19 pandemic. The purpose of this study was to examine the TPB measurement parameters of the factorial models and determine the generalizability of the psychological constructs of the TPB model on gender groups and whether COVID-19 affected annual income groups. The participants were 18 years or older adults in U.S.A. and self-identified as OFP participants during the COVID-19 pandemic. They were recruited using Amazon Mechanical Turk. TPB was used to examine OFP participation behavior with four constructs: Attitudes toward a behavior (AB), subjective norm (SN), perceived behavioral control (PBC), and participation intention (PI) along with an additional construct role identity (RI). Data were collected through Qualtrics and analyzed in RStudio-1.4.1106. Multiple group confirmatory factor analyses (CFA) were conducted to investigate measurement invariance on gender (male or female) and COVID-19 impact (yes or no), respectively. Final data for analyses included 724 respondents (52.5% males; 47.9% reported no). The CFA results supported unidimensionality of the modified TPB scale. Invariance tests were conducted at all levels of AB, SN, PBC, PI, and RI measures for both male and female groups and COVID-19 impacted groups: Dimensional (equal number of latent factors), configural (equal factor structure), weak (equal factor loadings), strong (equal indicator intercepts), and strict (equal indicator residuals), respectively. The results showed that each of the equal indicator residual models had an overall satisfactory fit to the OFP participation data for both male and female groups as well as the two COVID-19 impacted groups. Comparing with the equal indicator intercept solution regarding the groups in both gender and COVID-19 impact, each of the equal indicator residual models for AB and SN did not result in a significant degradation in model-data fit. But PBC, PI, and RI had significant chi-square changes and the changes of their CFIs were greater than 0.01. Results showed that the adapted TPB scale is valid for measuring OFP participation intention constructs during the COVID-19 pandemic. Since invariant factor loadings and indicator intercepts of TPB measures have achieved, it has confirmed that it is valid to be used in group comparison of latent scores.

*Keywords*: intention, theory of planned behavior, fitness