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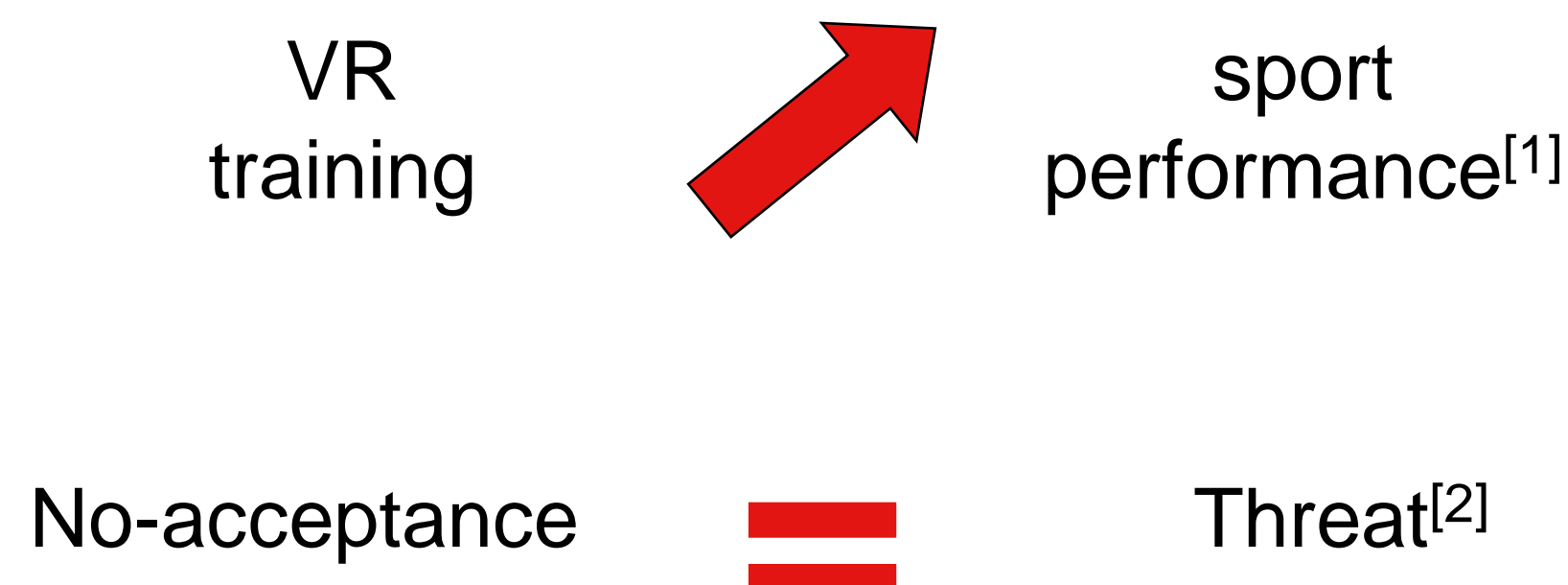
# Acceptance by coaches of immersive virtual reality for improving sport performance

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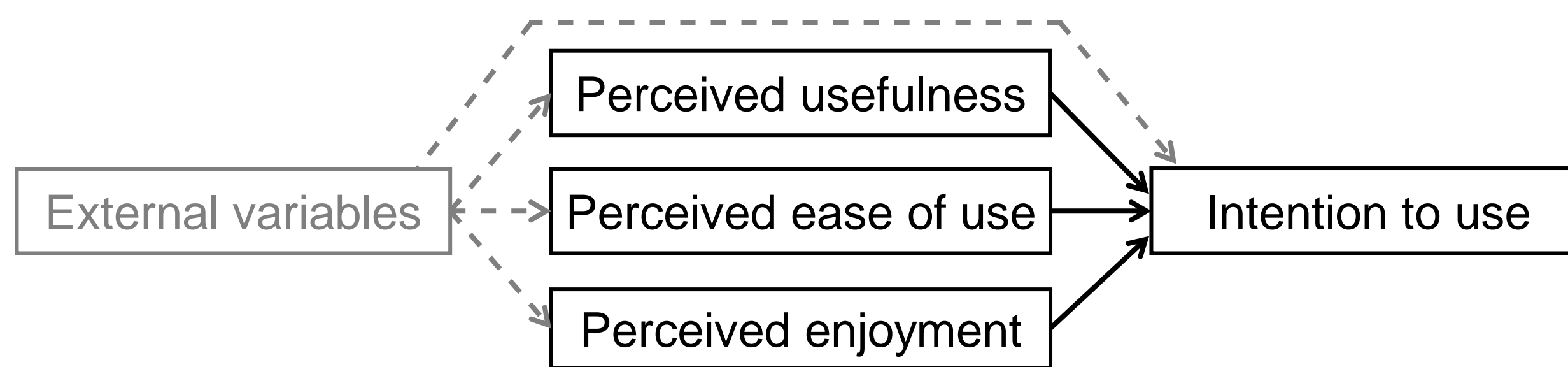
## 1 - Introduction

### Virtual reality (VR) and sport



### Acceptance of technologies

The tendency to be more or less favourable to the use of a technology before or/and after use<sup>[3]</sup>.



### Objectives

- (1) Test the Technology Acceptance Model with coaches to investigate their acceptance before a first use
- (2) Examine the coaches' level of acceptance of VR headset before a first use
- (3) Compare coaches acceptance before a first use according to their level of competition

### Acceptance of VR in sport

Well accepted by athletes before a first use<sup>[4]</sup>

Coaches seem to have the most influence on athletes<sup>[5]</sup>

No study specifically on coaches' acceptance

## 2 - Methods



239 coaches  
(40.1 ± 11.7 yo)  
Different sports and competition levels

### Our TAM variables

Perceived Usefulness for Coaching (PUC)

Perceived Usefulness for Athletes (PUA)

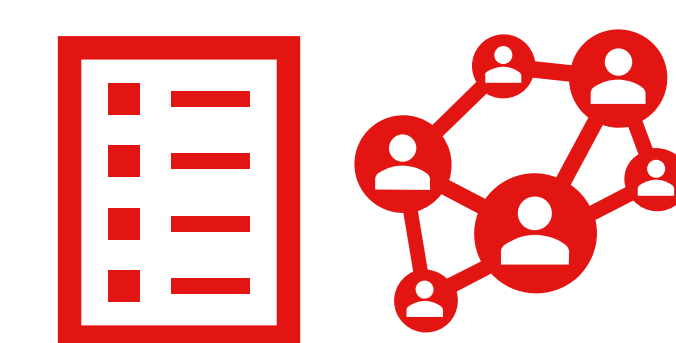
Perceived Ease Of Use (PEOU)

Perceived Enjoyment (PE)

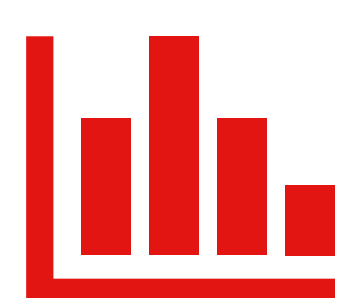
Intention To Use (ITU)

Job Relevance (JR)

$\omega \in [.796 ; .944]$



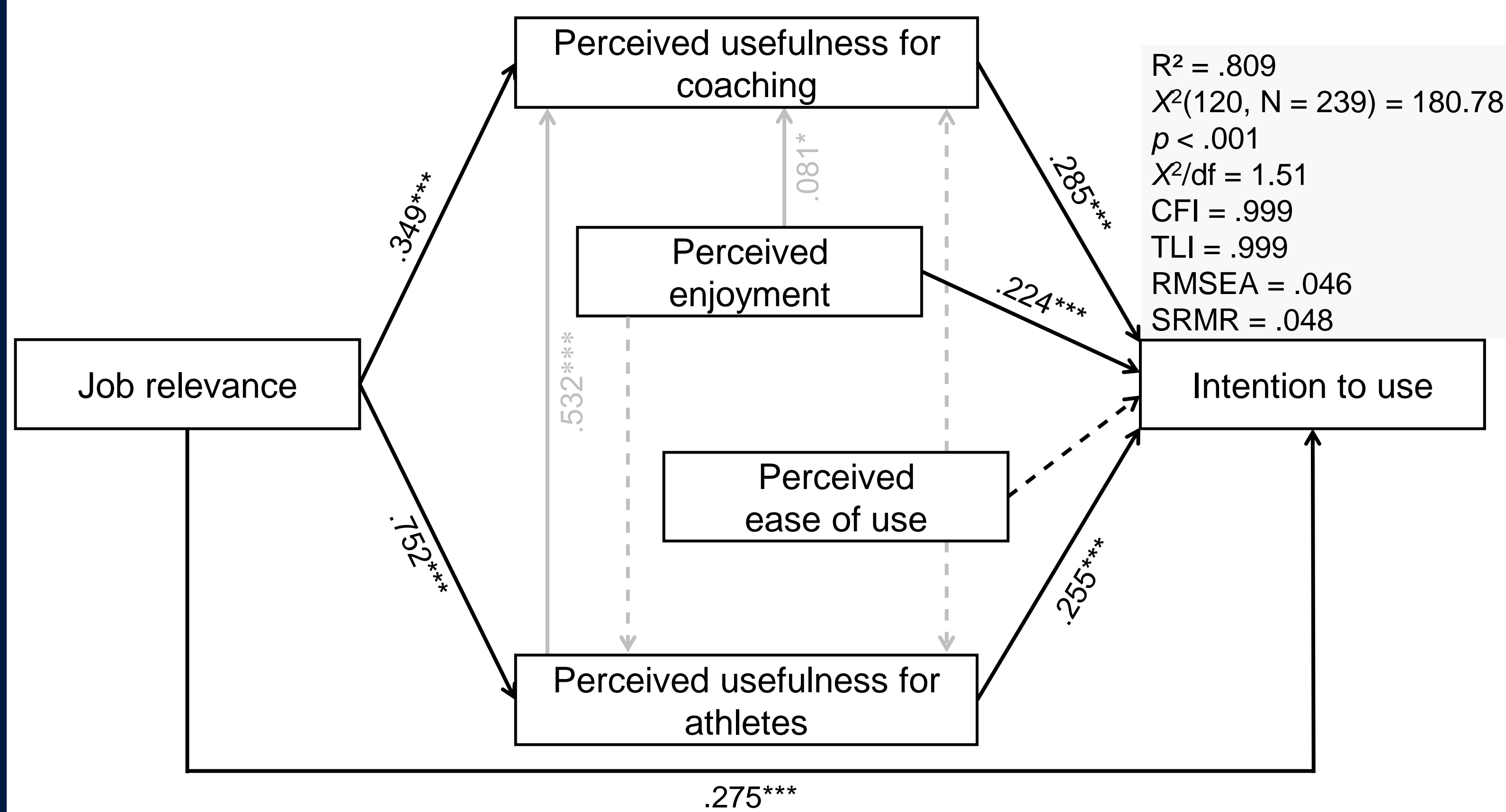
Online TAM questionnaires  
5-level Likert scale



Structural Equation Modeling  
Student's t-test  
ANOVAs

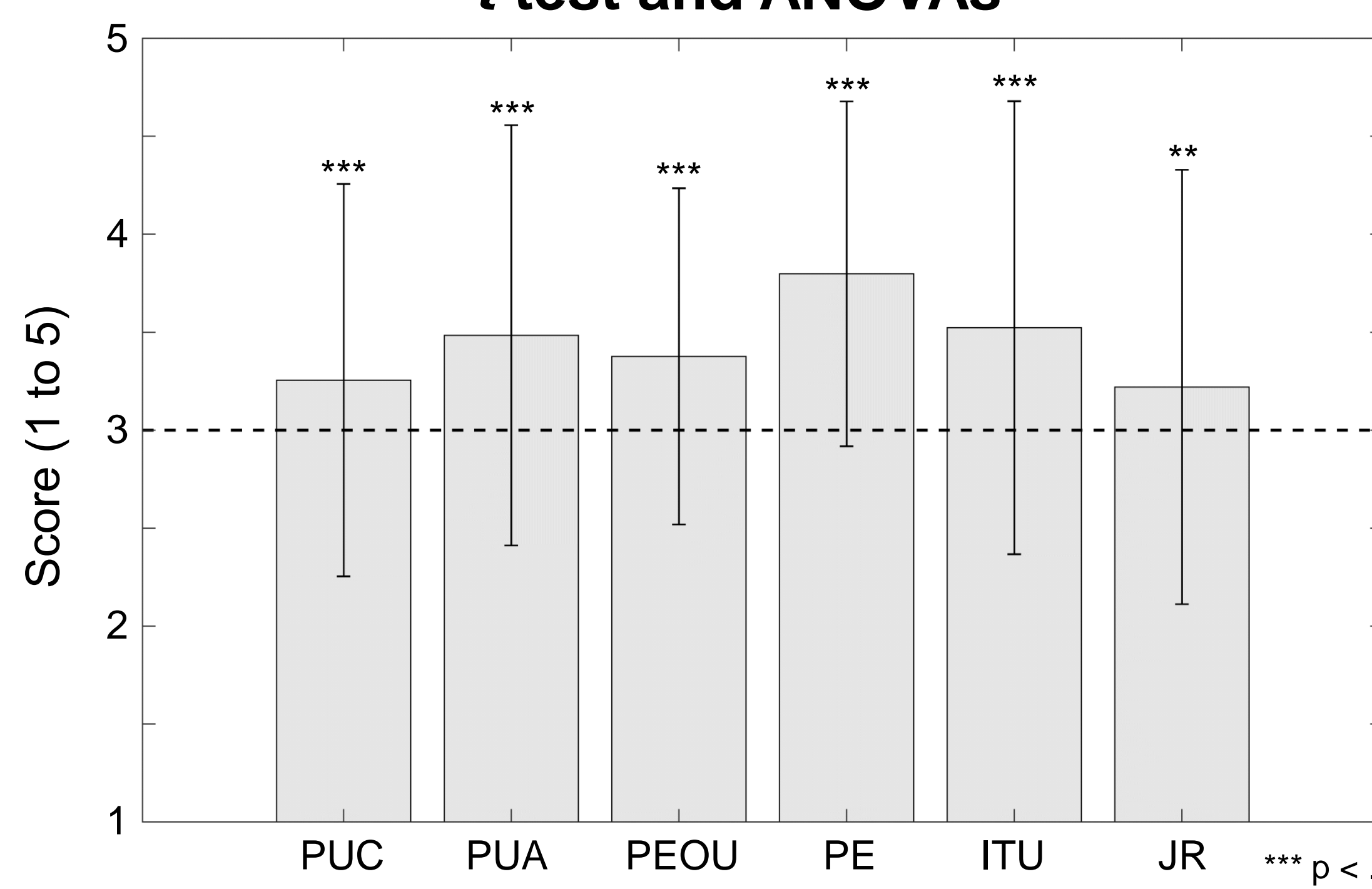
## 3 - Results

### Structural Equation Modeling



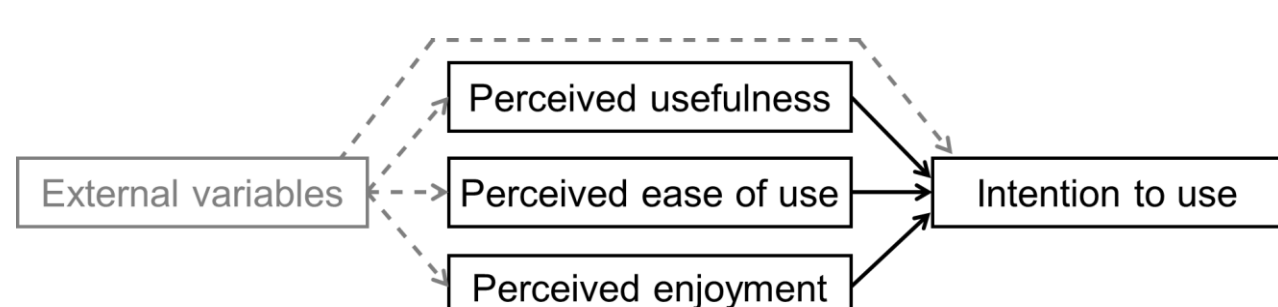
$R^2 = .809$   
 $\chi^2(120, N = 239) = 180.78$   
 $p < .001$   
 $\chi^2/df = 1.51$   
CFI = .999  
TLI = .999  
RMSEA = .046  
SRMR = .048

### t-test and ANOVAs



## 4 - Discussion

### Main results

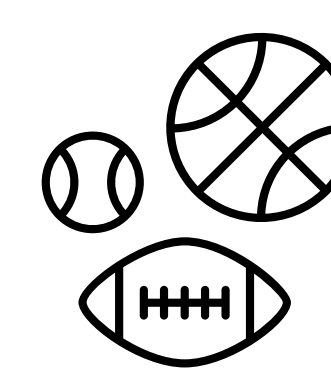


TAM is validated among coaches for the use of VR in sport



Coaches accept VR headset before a first use

### Perspectives



study of acceptance **before use** in specific sports



study of acceptance **after use**

## 5 - Références

- [1] Michalski, S. C., Szpak, A., et Loetscher, T. (2019a). Using Virtual Environments to Improve Real-World Motor Skills in Sports : A Systematic Review. *Frontiers in Psychology*, 10, 2159. <https://doi.org/10.3389/fpsyg.2019.02159>
- [2] Düking, P., Holmberg, H.-C., et Sperlich, B. (2018). The Potential Usefulness of Virtual Reality Systems for Athletes : A Short SWOT Analysis. *Frontiers in Physiology*, 9, 128. <https://doi.org/10.3389/fphys.2018.00128>
- [3] Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319. <https://doi.org/10.2307/249008>
- [4] Mascret, N., Montagne, G., Devrièse-Sence, A., Vu, A., et Kulpa, R. (2022). Acceptance by athletes of a virtual reality head-mounted display intended to enhance sport performance. *Psychology of Sport and Exercise*, 61, 102201. <https://doi.org/10.1016/j.psychsport.2022.102201>
- [5] Rittenberg, B. S., Neyedji, H. F., Young, B. W., et Dithurbide, L. (2022). The influence of coaching efficacy on trust and usage of technology in golf instruction. *International Journal of Sports Science et Coaching*, 17(4), 713-721. <https://doi.org/10.1177/17479541211061703>