

# Experimental investigation of decision-making processes in daily physically active behaviors using a virtual reality set-up

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## Introduction

- Energy expenditure provided by physical activity (PA) can be significantly increased by daily behaviors (stair use, walking) [1,2].
- Factors from the environment, and motivational and volitional processes, tend to impact the decisions when an active solution (stairs) is available at the same time as an inactive solution (elevator) [3].

The aim of this study was to identify the decision-making processes implicated in daily PA when time and effort to reach an objective (e.g., a meeting) vary.



## Methods

### Participants

Recruitment through an online survey  
✓ 23 healthy adults

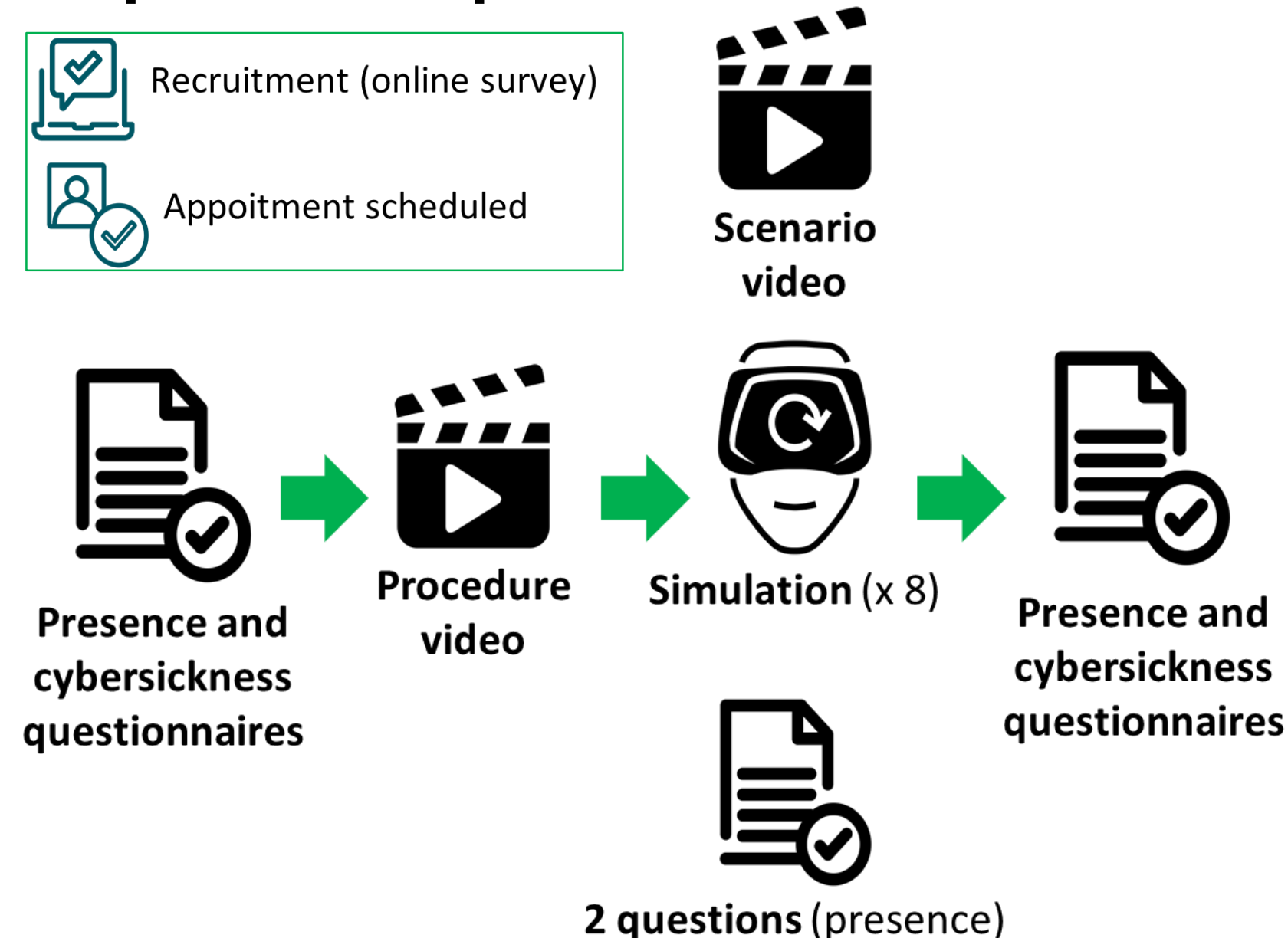
Allocated to either:

- Study 1 (« Knowledge and access »)
- Study 2 (« Prompts »)

### Measures (online survey)

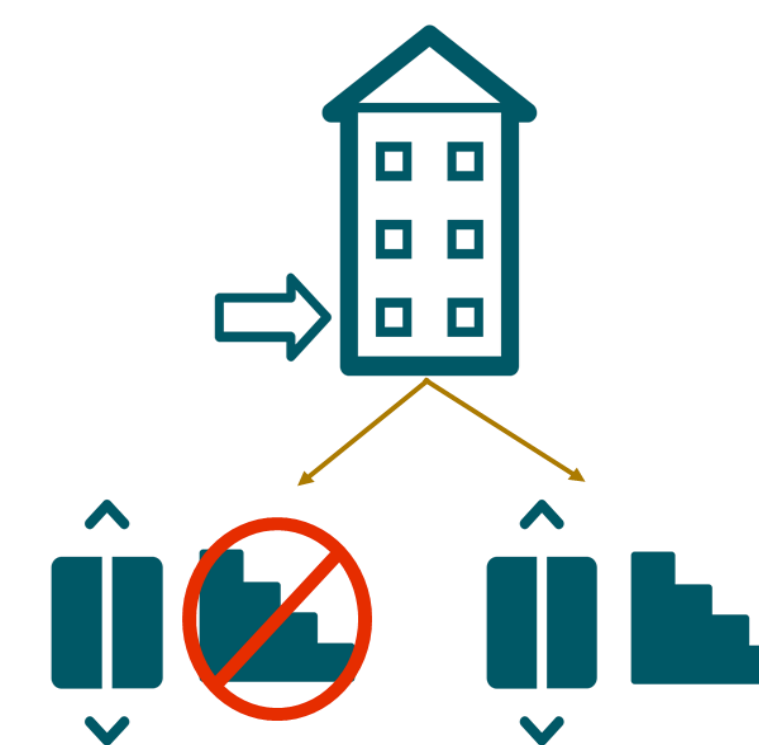
- Motivational regulation (Deci & Ryan)
- Beliefs and intentions (Ajzen)
- PA level (IPAQ)

### Experimental procedure



### Knowledge and access (n=16)

Urgency / No urgency  
1<sup>st</sup> floor / 3<sup>rd</sup> floor  
Free access / No access  
Know the building (n=8) / Never been (n=8)



### Prompts (n=7)

Urgency / No urgency  
Prompts (4 conditions)



## Results

\* p < 0.05 ; \*\* p < 0.01

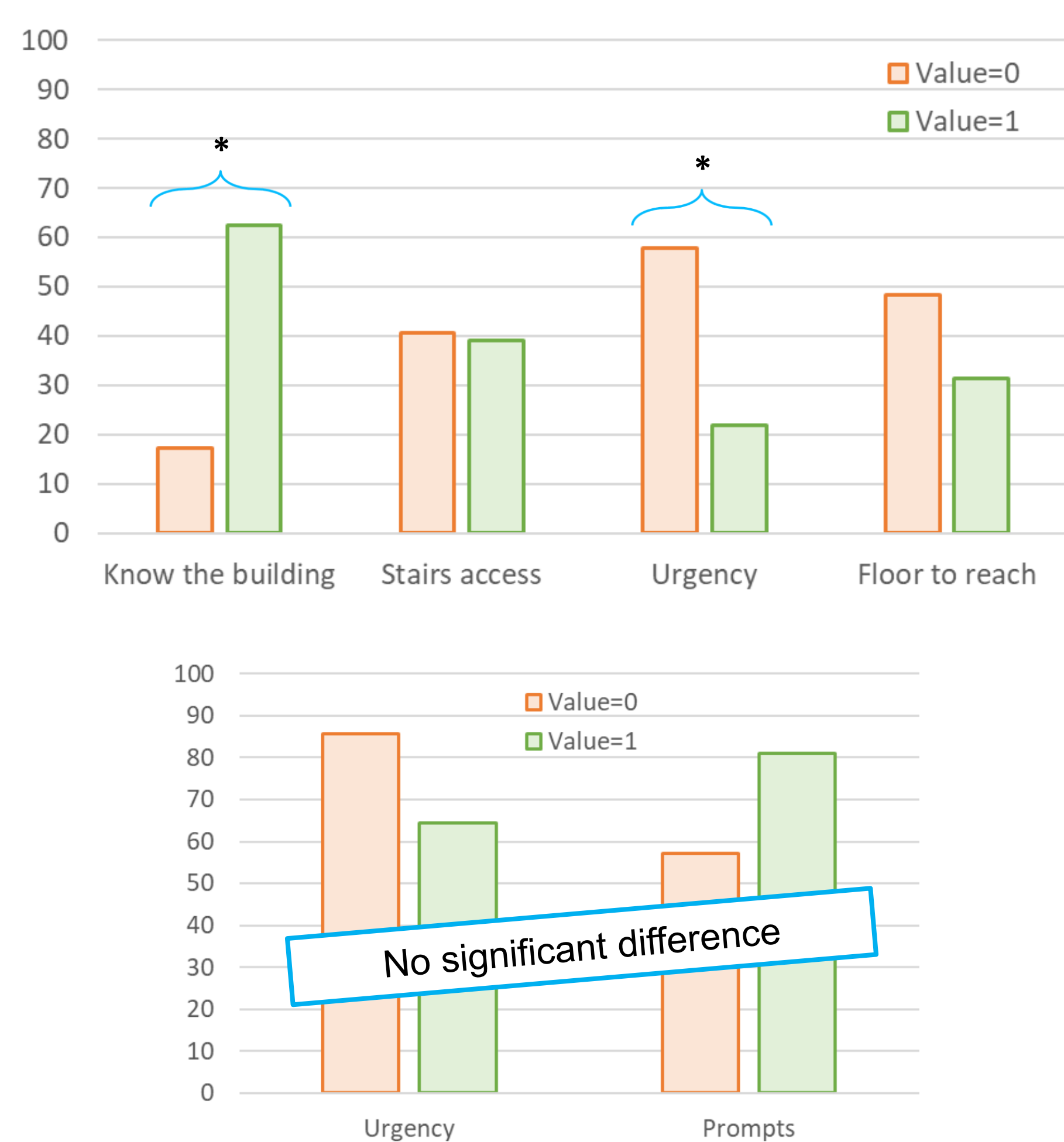


Figure 1. Percentage of active choices / experimental conditions in Study 1 (above) and Study 2 (below)

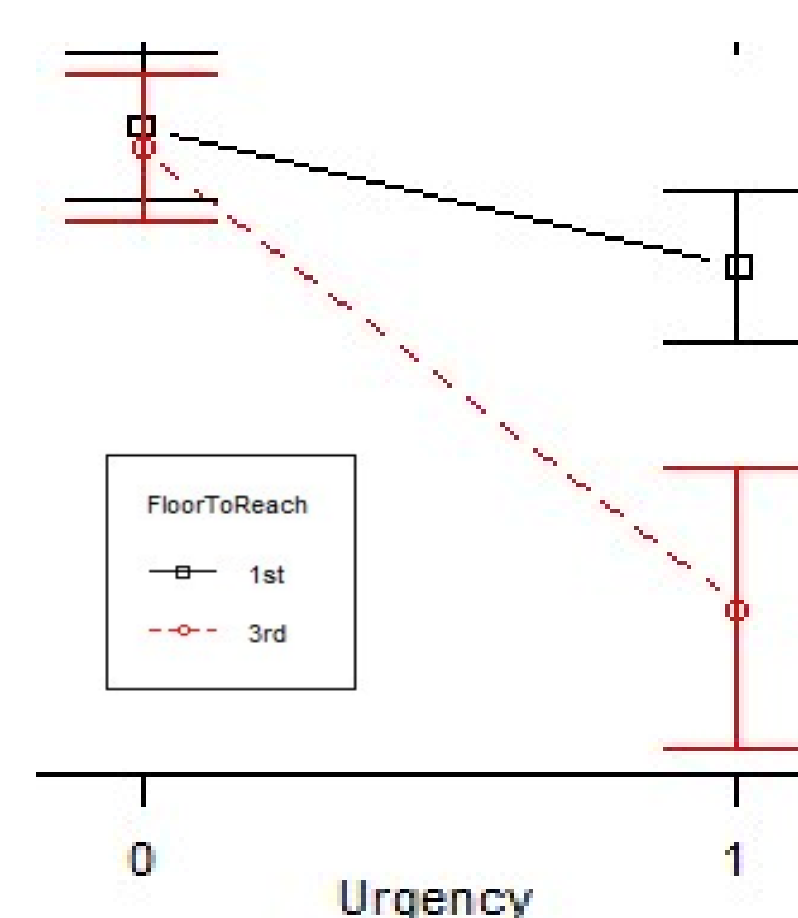
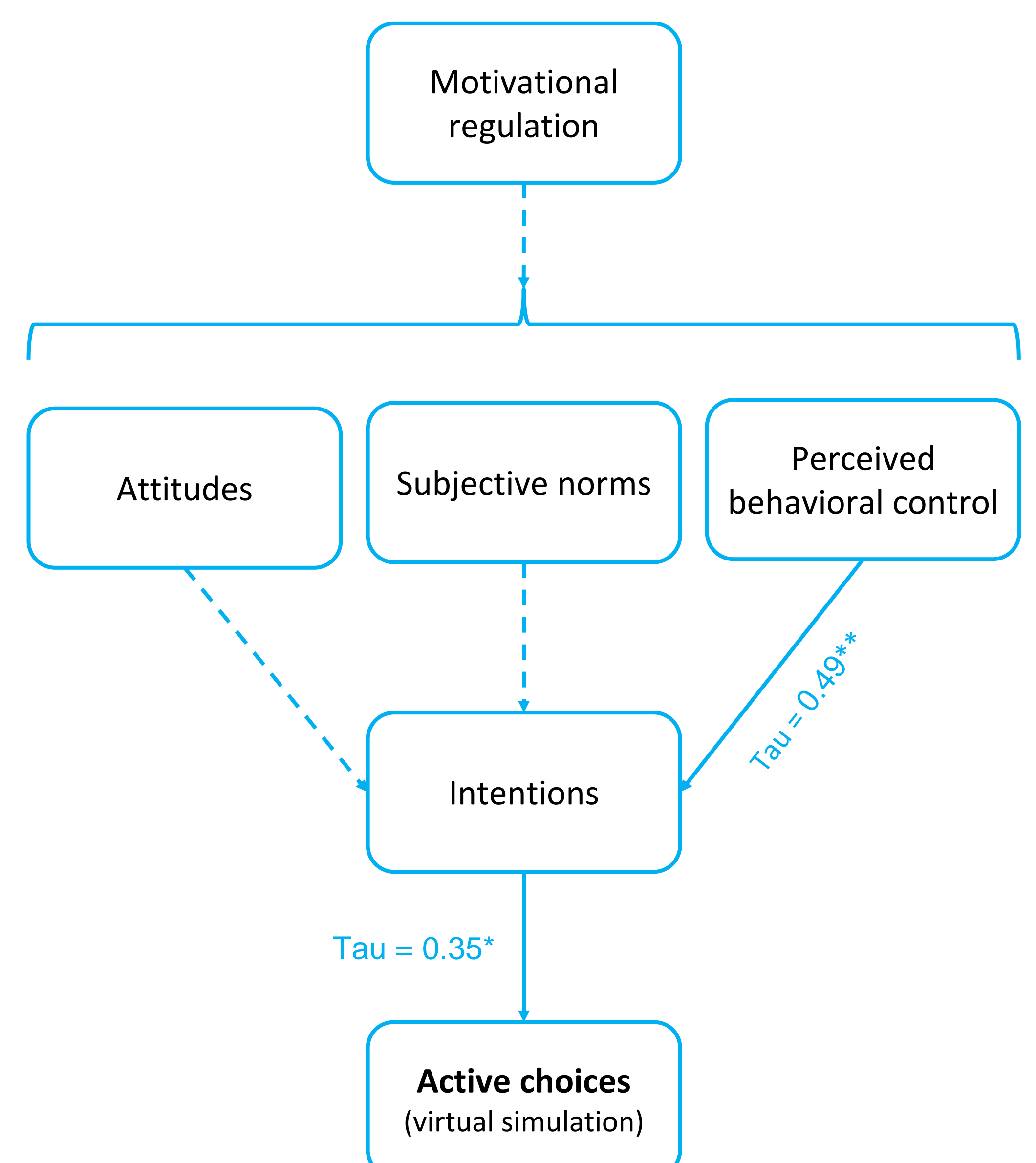


Figure 2. Interaction model Urgency \* FloorToReach in Study 1 (percentage of active choices, 128 observations)

- ✓ Significant interaction Urgency \* FloorToReach
- ✓ Adding KnowledgeOfBuilding improved the fit
- X Access and feeling of presence do not improve the fit

Generalized mixed effects models with **experimental conditions** (urgency, floor to reach, access to the stairs, knowledge of the building) and **immersion variables** (presence and cybersickness) as **fixed factors**, and **participants** and **simulation** order as **random factors**.



## Discussion

- ✓ Environmental factors such as accessibility of the stairs and prompts did not impact the percentage of active choices.
- ✓ Absence of urgency, lower effort to produce (i.e., floor to reach), and previous knowledge of the building predicted active choices.
  - Asking people to arrive in advance to their meeting could lead them to more active choices (e.g., taking the stairs)
- ✓ Previous intention to take the stairs predicted later choice to take the stairs in a virtual reality simulation.
- ✓ Actual PA level and motivation to be more physically active did not predict active choices
- **Steps forward:**
  1. Continue inclusion and data collection to increase statistical power
  2. Verify ecological validity of such results with an after-simulation questionnaire

## References

[1] Melanson. *Obes Rev.* 2017 // [2] Ekblom-Bak, Ekblom, Vikström, de Faire, Hellénus. *Br J Sports Med.* 2014 // [3] Brymer, Davids. *Sports Med.* 2016