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.

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 (Ajzen)
- Beliefs and intentions (Ajzen)
- PA level (IPAQ)

Methods

Experimental procedure

Recruitment (online survey)

- Appointment scheduled

Presence and cybersickness questionnaires

Simulation (n=8)

Knowledge and access (n=16)

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

Prompts (n=7)

- Urgency / No urgency
- Prompts (4 conditions)

Participants: Recruitment through an online survey

- 23 healthy adults

Allocated to either:

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Results

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