Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality

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PEDESTRIAN COLLISION AVOIDANCE ON NARROW SIDEWALK: A MEETING BETWEEN PSYCHOLOGY AND VIRTUAL REALITY

First Experiment – Questionnaire
- 64 videos of jousting, before any modification of trajectory
- 96 videos (48 of complete jousting with the new model, 48 of complete jousting with the opposite of the model result)
- One of 8 videos is a fake video (opposite of the model result)

Participants told who was to step down: pedestrian at left or at right in the jousting
- 8x8 counterbalanced videos

Participants said why the virtual pedestrian stepped down (speed, sex, distraction) with Likert scales
- 40 participants

Social Perception Model
- Speed and attention influence the decision to step down

Assumption: speed and attention increase the detection time in the ORCA model. Detection time is then a score.
- Virtual pedestrian decides to step down if his detection time is greater than the other pedestrian involving in the jousting

N.B.: the virtual pedestrian sees pedestrian in the public space, and detects him in the social space

First Experiment – Results
- Influence of speed and attention
- Pedestrian is expected to step down when:
  - he walks fast,
  - he is attentive
- For the participants, no gender effects

Discussion
- To use Social Pedestrian Non Player Characters in VR environment is feasible
- Needs to take into account the empowerment/authority

2nd Experiment – Results
- Credibility of model-based videos and fake videos according to the subjects’ answers
- Overall ranking of the model-based videos, Median = 4
- 64 videos of complete jousting with the new model.
- 96 videos of complete jousting with the opposite of the model result

64 videos of pre-jousting, before any modification of trajectory
- 96 videos (48 of complete jousting with the new model, 48 of complete jousting with the opposite of the model result)
- One of 8 videos is a fake video (opposite of the model result)

Participants said if the jousting is credible
- One of 8 videos is a fake video (opposite of the model result)
- 40 participants

2nd Experiment – Questionnaire
- 8 videos of complete jousting with the new model.
- 96 videos of complete jousting with the opposite of the model result

Participants said why the virtual pedestrian stepped down (speed, sex, distraction) with Likert scales
- 8x8 counterbalanced videos