Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality
Cléo Deroo, Angélique Montuwy, Béatrice Degraeve, Jean-Michel Auberlet, Anne-Hélène Olivier, Marie-Axelle Granié

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

Context: NARROW SIDEWALKS

Pedestrians manage social interpersonal distances

Impact of 3 personal factors were studied

Speed (fast – slow)

Sex (Male – Female)

Distraction (texting – non texting)

First Experiment – Questionnaire

64 videos of pre-jousting, before any modification of trajectory

* Bell counterbalance videos

Participants told who was to step down: pedestrian at left or right in the jousting with a Likert scale.

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

60 participants

Social Perception Model

Speed and attention influence the decision to step down

Assumption

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

= walks fast

= is attentive

= For the participants, no gender effect

Goal: to simulate a social virtual pedestrian (non player character) in order to study this kind of situation in virtual environment

Problem: why do we choose to step down or stay on the narrow sidewalk when we encounter a pedestrian walking in the opposite way?

To keep a safety zone

To anticipate the collision

We avoid the collision by modifying our trajectory

Direction

Speed

Collaborative effort (V/N)

Second Experiment – Results

Creditability of model-based videos and fake videos according to the subjects’ answers

64 videos of complete jousting with the new model.

* Bell counterbalance videos

One of 8 videos is a fake video (opposite of the model result)

Participants said if the jousting is credible

Overall ranking of the model-based videos, Median = 4

Discussion

To use Social Pedestrian Non Player Characters in VR environment is feasible

Needs to take into account the empowerment/authority

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