Should You Push the Switch, and Would You?
- ## An Experimental Study on a Moral Dilemma in Virtual Reality

Xueni Pan[1], and Mel Slater[1,2]

[1]University College London, London, UK
s.pan@cs.ucl.ac.uk
[2]ICREA-University of Barcelona, Barcelona, Spain

It has been frequently demonstrated that people tend to respond realistically to situations and events in immersive Virtual Reality (VR). Our research exploits this finding to test the hypothesis that the psychology underlying moral judgement is distinct from the psychology that drives moral action.

We have carried out a pilot study with 36 participants investigating people's responses when confronted with a moral dilemma in Virtual Reality. We used a 2x2 factorial group design. The first factor was whether the moral dilemma is an action or omission condition. The second factor was the VR platform, either an Immersive Cave VR system or a normal desktop screen. We collected participants' behaviour responses, post experimental questionnaire results, and interview data.

Participants were invited to visit a virtual art gallery that had some paintings on the ground level, and others on an upper level. They were taught to operate a virtual lift that would take virtual visitors to the upper level gallery. The visitors, although humanoid, were abstract, with no discernable demographic features (age, race, etc.).

After completing the lift-operator training sessions participants were left on their own to operate the lift. Several virtual people walked into the gallery, and some stayed at the ground level, others went on the lift to the upper level. In one condition (the 'action' condition) 5 people arrived at the upper level and one person stayed downstairs. A seventh person then entered, and asked to go to the upper level. Upon arrival there and while still on the lift he started firing shots at the 5 people, and one was immediately injured. Participants were faced with the choice of doing nothing thereby endangering all 5, or pushing the switch that controlled the lift to send it down again, thereby endangering the 1 person at ground level. In the omission condition, all was the same except there was 1 person on the upper level and 5 downstairs, and the participant had to choose between doing nothing thereby endangering the life of the 1, or sending the lift down and endangering the lives of the 5.

We recorded the actions of the participants over a 5s period starting with the first shot, and also gave them a questionnaire, followed by a debriefing interview. Our preliminary finding is that both VR platforms triggered strong and realistic reactions in the participants, including signs of panic (e.g., repeatedly pressing different buttons to move the lift). Additionally, after the experiments, participants were given a questionnaire containing moral dilemma problems. These questions were asked to reveal whether participants' moral choices were affected by their experience in the experiment. One of these questions asked if they should push a fat man with a heavy backpack off a bridge in order to stop a train hurtling towards another 5 people. For this particular question, participants who experienced the Immersive VR were significantly more likely to give a utilitarian answer ('yes') (33%) than those using the Desktop display (0%). This is also counter to results from the large questionnaire survey (12%) [1]. This pilot study is very encouraging for the use of VR in the study of the distinction between moral judgements taken in the abstract and action when faced with an actual dilemma. The results indicated that although only abstract human figures were used, participants had a strong emotional reaction to the dilemma, on both immersive and desktop platforms. In future, we will replace the abstract human figures with more realistic human-like virtual characters that vary in their appearance and behaviour. We will also vary distance of the participants to the events in order to get better insight into the value of immersion. Finally, we will seek more in-depth understanding of participants' emotional reactions using objective measures that include not only their behaviour but also physiological responses and facial expressions.

References:

[1]   B. Huebner, *et al.*, "How the source, inevitability, and means of bringing about harm interact in folkmoral judgments," *Mind & Lang*.