WHEN YOU CROSS THE ROAD DEPENDS ON CAR DESIGN AND SIZE

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RESEARCH QUESTIONS

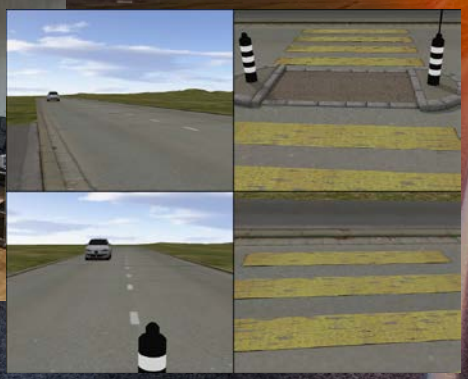
- Does car design have a bearing on the behaviour of pedestrians?
- Is the minimum accepted distance when crossing the street bigger for cars with dominant appearance than for cars with friendly appearance?
- Is the speed of dominant cars overestimated compared to friendly cars?

INTRODUCTION

- Sensitivity for facial features even in non-human and inanimate objects, such as cars[1)]
- Both car fronts and human faces lead to comparable N170 amplitudes in EEG[2) 3) 4)] and similar activation of the fusiform face area[5)]
- Car fronts elicit attributions of emotions, personality traits and attitudes[1)]

METHOD

- Virtual reality (VR) environment with a road and a zebra crossing with centre island
- Head-mounted display
- 4 cars with high power design, 4 cars with low power design, chosen from Windhager et al. (2008)[1)]
- Vehicles passing by individually



Block 1: Crossing time

- Cars passed by with a speed of 50 km/h without stopping
- Participant's task: Cross the road at the latest moment (starting position: Pavement or centre island)

Block 2: Speed estimations

- Cars passed by with a speed of 45, 50, or 55 km/h respectively
- Participant's task: Estimate the speed of the car (position: Pavement or centre island)

Participants

- 60 subjects (30 female), mean age 23.1 years

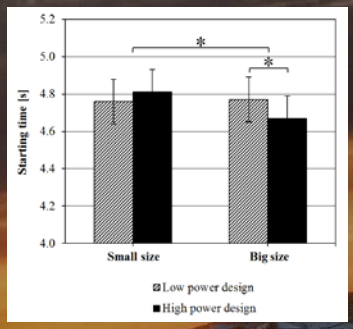
CONCLUSION

- Car design and car size seem to influence road crossing behaviour

RESULTS

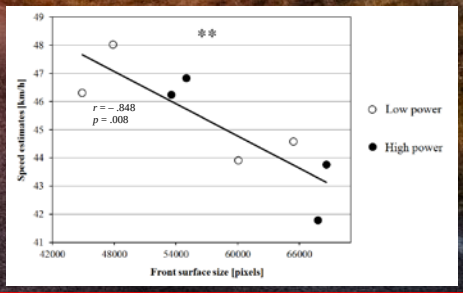
Block 1: Crossing time

- Car design: No effect for starting time, arrival time, and crossing duration (all p's > .16)
- Car size: S's started to cross the road significantly earlier in front of big cars compared to small cars ($F(1,55) = 6.622$, $p = .013$, $\eta^2 = .107$)
- Car design × car size interaction: S's crossed the road significantly earlier in front of big high power cars than in front of big low power cars ($F(1,55) = 6.622$, $p = .013$, $\eta^2 = .107$)



Block 2: Speed estimations

- Car design: Low power cars were perceived to be significantly *faster* than high power cars ($F(1,59) = 13.529$, $p = .001$, $\eta^2 = .187$)
- Car size: Cars with a small front surface were perceived to move significantly faster than cars with a big front surface ($F(1,59) = 126.512$, $p < .001$, $\eta^2 = .682$)
- Actual speed: Speed estimations differed significantly between 45, 50, and 55 km/h actual speed ($F(2,58) = 155.657$, $p < .001$, $\eta^2 = .843$)



DISCUSSION

- Car design seems to have an influence on road crossing behaviour in big cars
- Big cars compared to small cars: S's crossed the road earlier but estimated the speed to be lower?
- Decision to cross on average at a distance of 34 metres, image too small?
- Results in Block 2 can be explained by size-speed bias[6)], according to which large objects seem to be moving more slowly than small objects

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