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?

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

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\(^1\)

Results
Block 1: Crossing time
Repeated measures ANOVA (high/low power of car design)
- Car design: No effect for starting time, arrival time, and crossing duration\(\text{F}(1,10) = .88\), p>.16

Block 2: Speed estimations
2 (car design) x 3 (actual speed) repeated measures ANOVA
- Car design: Significant effect\(\text{F}(1,10) = 155.66, p<.001\)
  - Low power cars are perceived to be faster\(\text{F}(1,10) = 44.7, p<.001\)
- Actual speed: Significant effect\(\text{F}(2,58) = 155.66, p<.001\)
  - Speed estimations differed significantly between 45, 50, and 55 km/h actual speed\(\text{p}<.001\)

Discussion
- Car design seems not to have an influence on road crossing behaviour in VR
- Decision to cross on average at a distance of 48 metres, image too small?
- Results can be explained by size-speed bias\(^6\), according to which large objects seem to be moving more slowly than small objects

References

Contact information: E-mail: wilhelm.klatt@psy.unibe.ch
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