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Abstract to poster:

An illusion of absence in a VR traffic scenario

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A-pillars are important structural components of cars, providing rigidity to the car in case of a rollover and thus safety to the passenger. However, the blind zones of the A-pillars present a safety risk, and numerous road accident reports have attributed the driver's view obstruction to the A-pillar. We hypothesized that A-pillars not only obstruct visibility but also evoke a perceptual illusion of absence, which reinforces the strong belief that there is nothing hidden behind them. We used virtual reality simulations to present a traffic scenario in which participants viewed a driving scene from the driver's perspective. In this scenario, another car remains hidden behind the A-pillar but appears out of the blind zone at the end of the scene, resulting in a near-collision. To test the hypothesis that the illusion of absence is stronger for narrower A-pillars, we varied the A-pillar widths from 9 to 18 degrees of visual angle in equal steps of 3 degrees. Based on preliminary results from 55 participants, we found that participants typically experienced a high level of surprise when the other car emerged from the A-pillar blind zone. This level of surprise even surpassed the level of surprise experienced when watching a movie of a magic trick employing the same illusion to make a coin appear out of nowhere. Moreover, the data suggests that the surprise rating was similar for the three narrowest A-pillars; however, the widest A-pillar evoked a lower surprise rating. The participants were also asked to indicate where they thought the other car came from. Almost half of the participants failed to guess that the car was hidden in the A-pillar blind zone. A more comprehensive result with data from 99 participants will be presented at the conference. This study was funded by the Research Council of Norway, project #334817.