55TH CIECA CONGRESS 23-26 MAY 2023 VIENNA

Hazard perception/prediction skill has the potential to reduce novice driver collisions around the world

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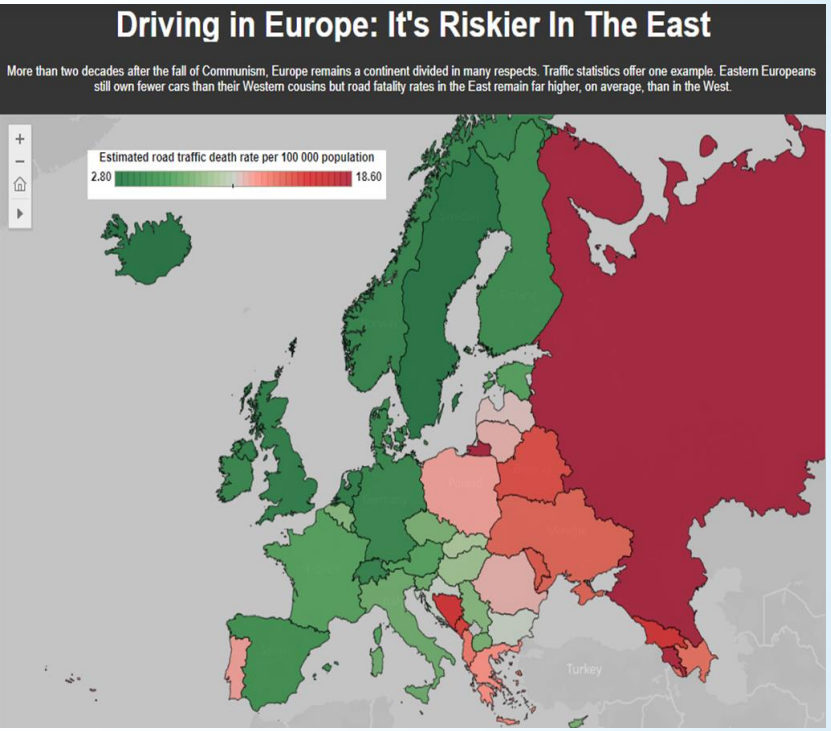
What skills do novice drivers need to improve and how can we test them?

- Over-representation of the youngest drivers in traffic collisions world-wide.
- The Hazard Perception test has significantly reduced collisions in young drivers since its introduction in 2002 in the UK (Wells et al., 2008).
- Good hazard perception skills are crucial to avoid collisions (Boufous, 2011; Drummond, 2000; Horswill & McKenna, 1999; Wetton et al., 2011).
- Is the Hazard Perception test suitable for international export?

No agreed method for developing a hazard test



- The majority of hazard perception research tends to report results from Western countries which can create a biased perspective of what we understand by “driving behaviour”.

- Results in different countries have not been consistent (Moran et al., 2019; Sagberg & Bjørnskau, 2006; Ventsislavova et al., 2019).

- Cross-cultural differences in relation to:

  -The complexity of the road environment (Bazilinskyy et al., 2020).

  -The nature of driving, including both the legal and social rules influencing the nature of the hazards (Di Stasi et al., 2020; Miller et al., 2021; Ventsislavova et al., 2019).

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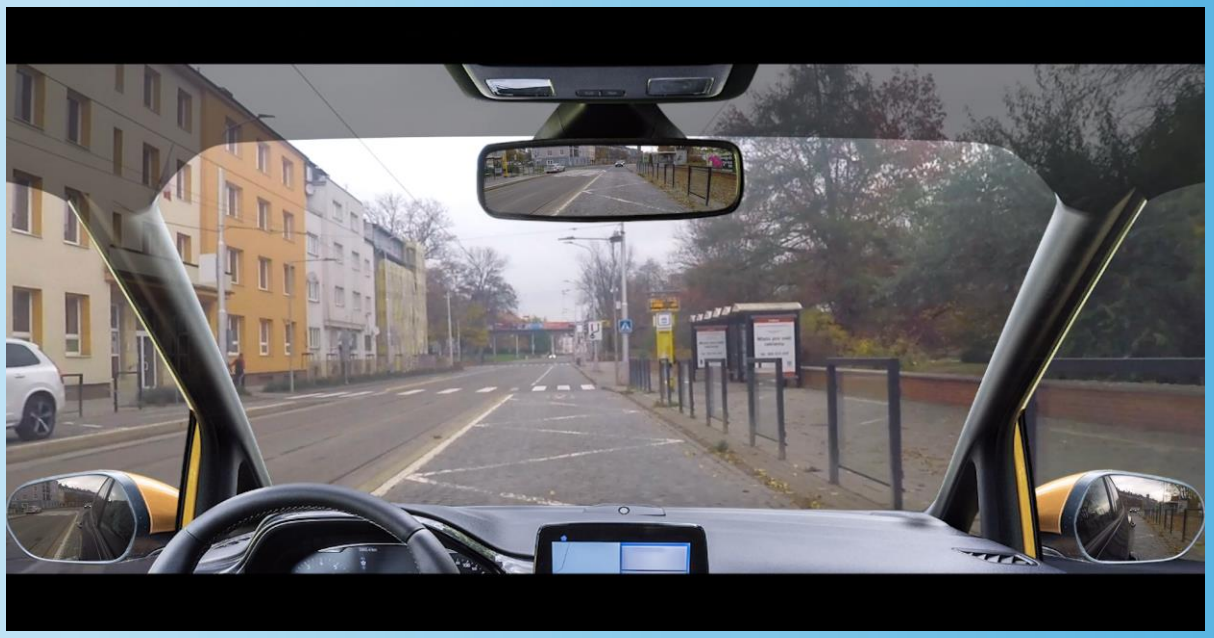
Hazard Perception vs. Hazard Prediction method

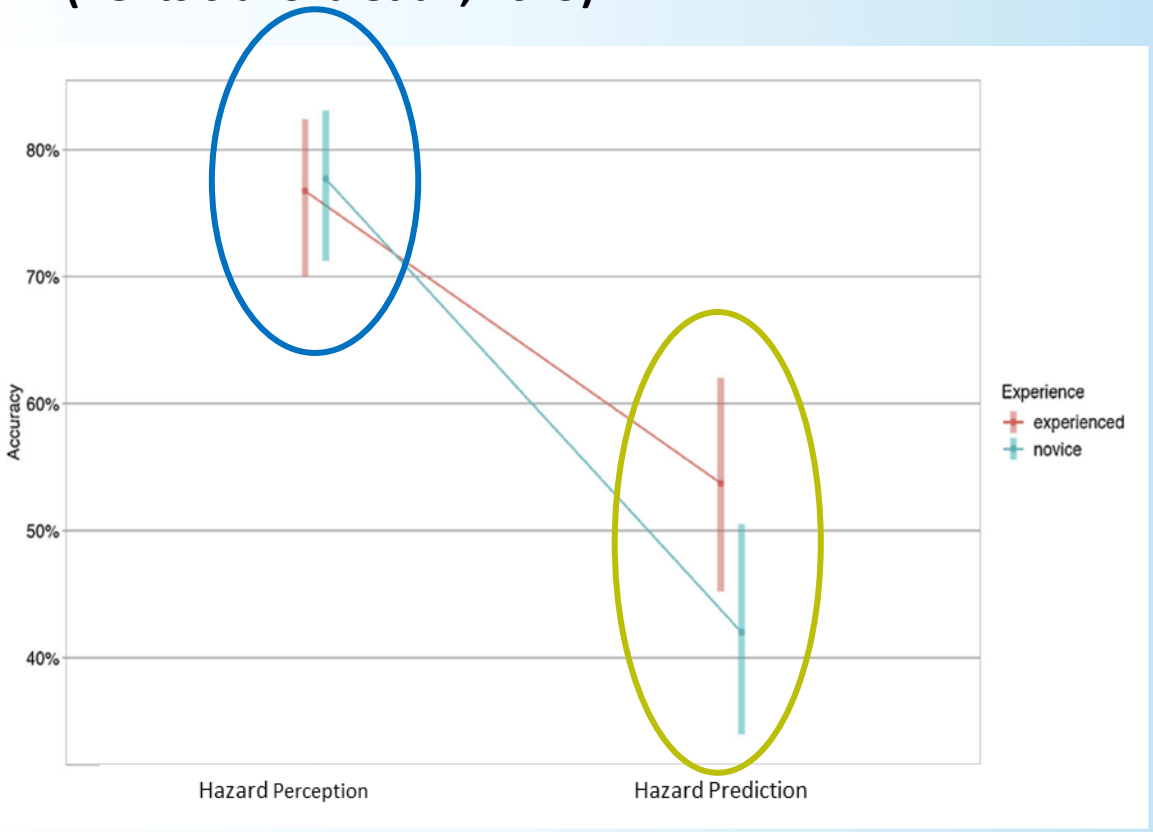


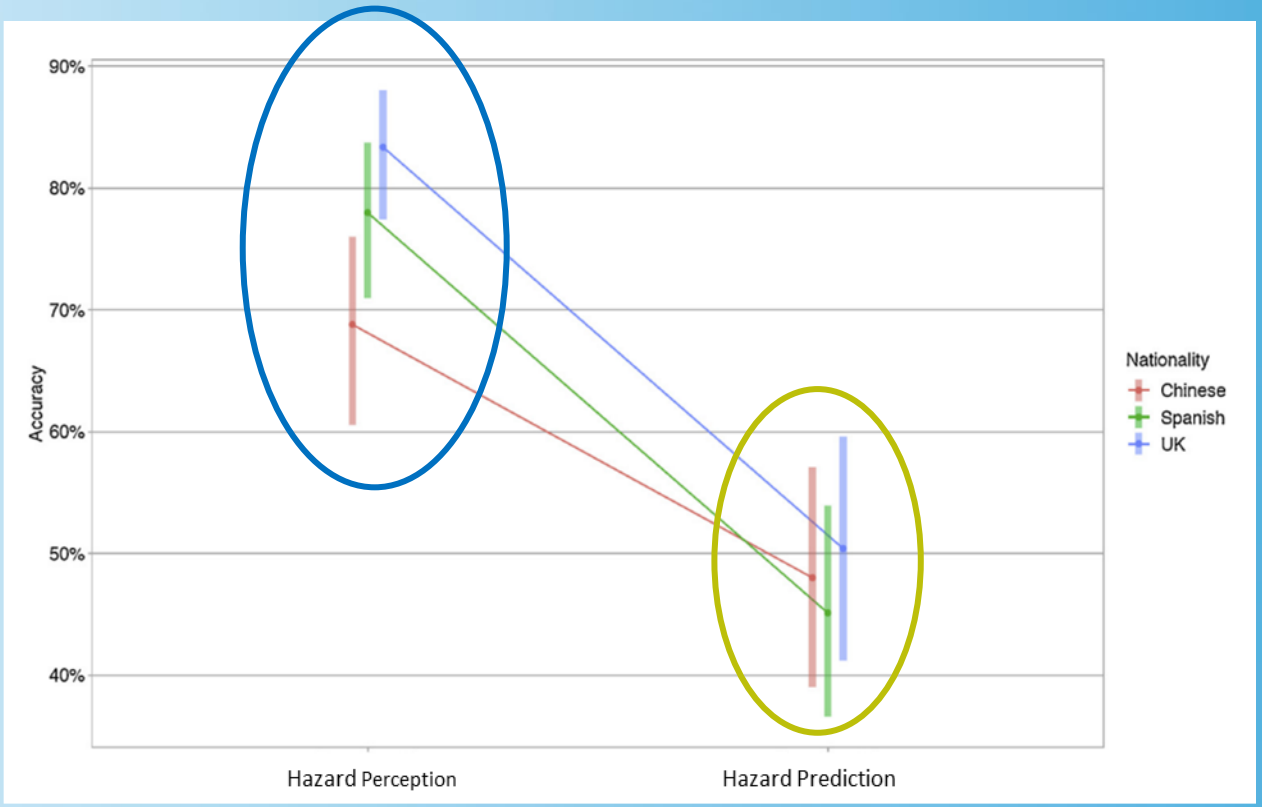
Hazard Perception vs. Hazard Prediction

- The basic premise behind hazard prediction - safest drivers do not wait for a hazard to happen and then respond, but try to predict what will happen based on clues in the visual scene (Crundall et al., 2021)
- We know that terms like “hazard” and “hazardousness” are inherently prone to individual differences in interpretation (Wetton et al., 2011)
- Asking participants to respond in a timely manner to a hazard, involves their own criterion of how hazardous a certain situation is to them (Ventsislavova et al., 2022). Differences in cultural hazard threshold
- There are no accepted guidelines on what should constitute a hazard onset or offset (Ventsislavova et al., 2019)

Hazard Perception vs Hazard Prediction in different countries

Percentage of hazard perception and hazard prediction accuracy across nationality and driving experience (Ventsislavova et al., 2019)



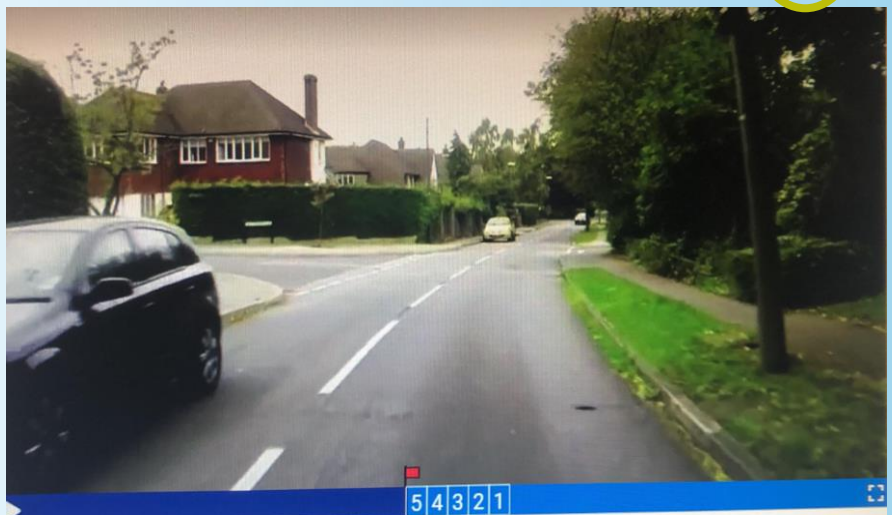


Too early or too late?

Good anticipation but you clicked before the hazard started developing. You will only score points for clicking when a hazard develops to the point that should cause you change speed or direction

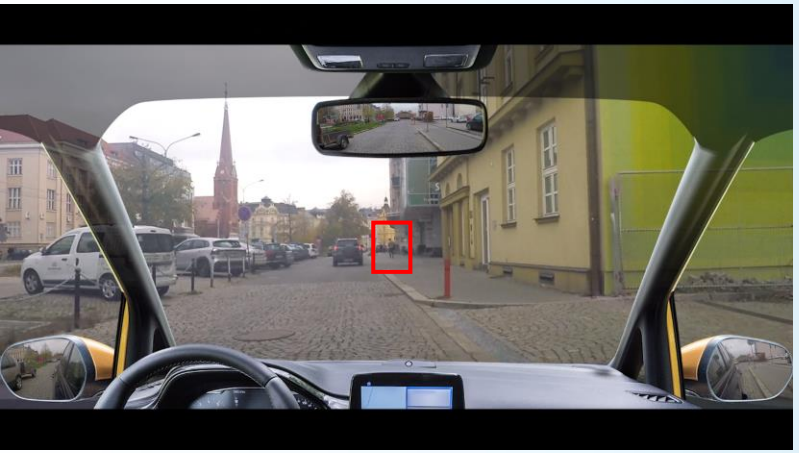
Penalises good drivers for pressing too early

Good drivers will spot very subtle cues to upcoming hazards and respond just before the scoring window (which would be counted as a miss).

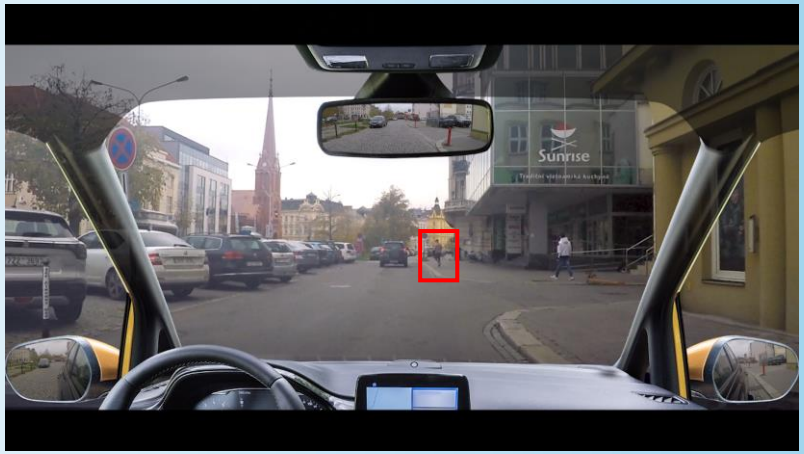


Hazard Prediction in driving

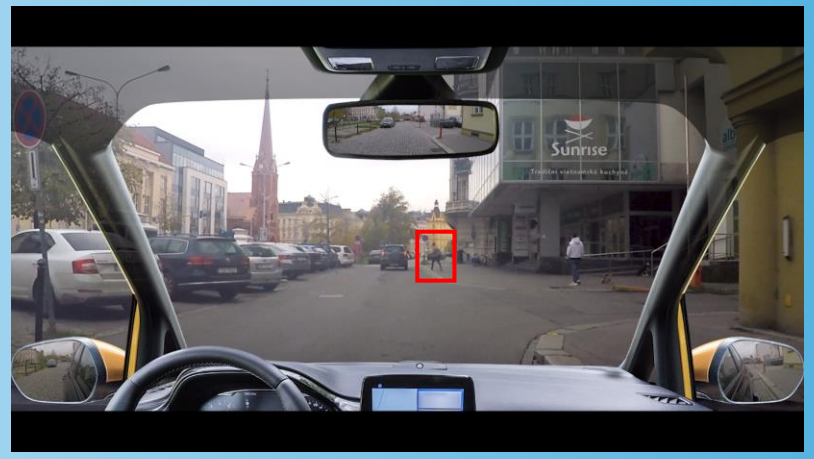
- Learners should not be looking for strategies to pass the test and not develop the real-world skill.
- Active prediction of hazards should lead to faster perception of hazards when they occur, resulting in faster response times.
- Assessment on prediction skills, will encourage drivers to seek specific training in hazard prediction.



2 seconds prior to cut point
Pedestrian turns head, giving initial indication that they will cross



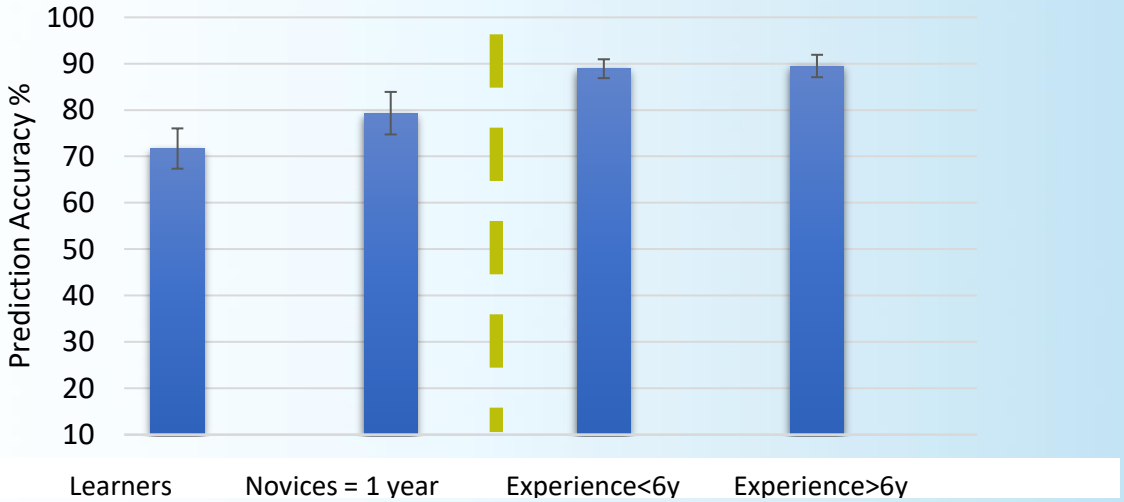
1 seconds prior to cut point
Pedestrian begins turning towards the kerb



Cut point
Pedestrian is exiting the pavement, ready to cross

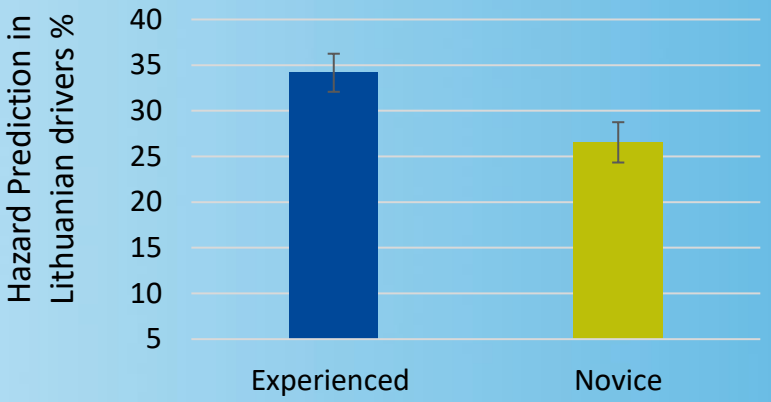
Developing a valid hazard test for each country

The first 12 months post-license is particularly problematic for young drivers.
The hazard prediction test is sensitive to the boundary between novice and moderately-experienced drivers (Ventsislavova & Crundall, 2018)

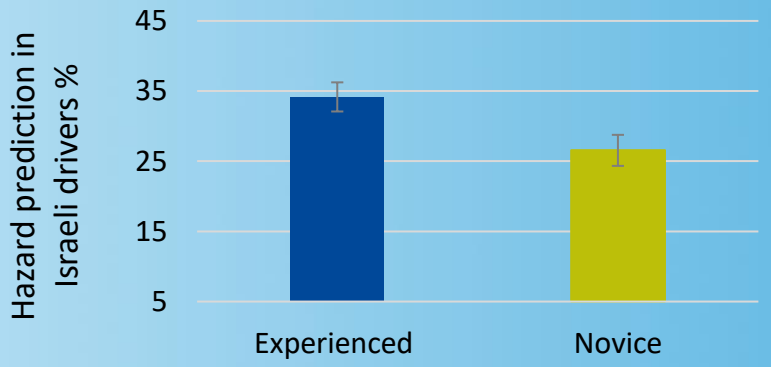


Percentage accuracy across all experienced groups

Endriulaitienė et al., (2022)



Ventsislavova et al., (2022)



Developing a valid hazard test
Recommendations

- Hazard perception needs to be **operationalised** appropriately
- **Standardised** hazard perception/prediction methodology which could be applied successfully anywhere in the world
- Ensure that all clips are **representative** of the particular driving context
- The test should be sensitive to different driver groups on the basis of **experience or crash risk**, rather than on the cultural particularities

Developing a valid hazard test
Recommendations

- **Hazard perception is a complex process**

- **Hybrid Approach**

Teamed with the traditional hazard perception test, the hazard prediction test could be very useful in terms of testing young drivers' prediction skills

- Some hazards would be better suited for eliciting response-time measures, while other hazards may fare better in a prediction test

- We are testing this possibility in different countries

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