Impact of salience and relevance on parallel parking manoeuvres

Evgueni Douisssembekov, Catherine Gabaude, Joceline Rogé (LESCOT)
Patrick Bonhoure (Valéo), George A. Michael, Jordan Navarro (Université Lumière Lyon 2)
evgueni.douissembekov@ifsttar.fr

This study aims to evaluate the impact of both salience and relevance changes in parking environment on visual attention and manoeuvring among young and older drivers.

Method

The level of salience is settled by obstacle’s color (yellow or grey box on the boundary of the parking slot). At the same time, the level of relevance is settled by the presence or absence of pedestrian on the sidewalk.

Hypothesis

The difficulty of parking manoeuvring (longer duration and more frequent trajectory adjustments) should be higher:
• with unsalient obstacle compared to salient
• with pedestrian’s presence compared to his absence.

The difference of difficulty between parking with salient and unsalient obstacles should be more important in pedestrian’s presence.

Material

Car: Ford Focus SW (length = 4,52 m)
Parallel parking slot (length = 6 m)

Participants

20 young (25-35 years old) and 19 older participants (65-75 years old) who drive regularly.

Parking conditions

<table>
<thead>
<tr>
<th>Salience+</th>
<th>Salience-</th>
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<tbody>
<tr>
<td>Relevance+</td>
<td>Yellow box and pedestrian</td>
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<tr>
<td>Relevance-</td>
<td>Yellow box without pedestrian</td>
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Procedure

Each participant must complete four parallel parking manoeuvres (one per parking condition)

Dependant Variables

• Self-estimations of mental load (based on NASA-TLX questionnaires)
• Manoeuvres’ duration and number of trajectory adjustments

Results

Mental load score (NASA-TLX)

Participants assess their mental load as more important in « Salience+ » and « Relevance+ » conditions

Duration

Parking manoeuvres are faster among young drivers. Parking manoeuvres’ duration is affected among older drivers with narrowed peripheral field of view which is not the case among young participants.

Number of trajectory adjustments* per manoeuvre

Older drivers change more frequently their trajectory compared to young drivers

Conclusion

Manoeuvres’s difficulty is more important in case of low contrast between an obstacle and parking environment and the difficulty is also higher for older drivers. Surprisingly, the pedestrian’s presence helped drivers, it could represent a point of reference for driver estimating closeness of the sidewalk.