

# Driver attention control

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The research question is: *“How can we get the driver back to concentrate on the main driving task when distracted by something else?”*

”Attention may be captured involuntarily by salient features of the environment and it happens quite often that the attention drifts away and that the driver gets distracted. To avoid car accidents it would be valuable if the driver's attention could be controlled to keep the focus on driving and minimize unwanted capturing. One assumption in this research is that it doesn't matter what kind of distracter that has brought the driver to distraction. It could be anything from talking on the mobile telephone to some strange painted house along the road, a fly buzzing around, looking at the navigator or thinking of what to buy for dinner. A second assumption is that the driver somehow must be made aware of the fact that he is distracted. The third assumption is that a distraction-alerting device could be used to make the driver aware of his distraction and make the focus of attention switch back to the main driving task.

The driving task puts most demands on the visual sensory channel. It is therefore assumed that in an already critical or distracted situation it is not wise to let the alerting device put even more demand on the already busy visual channel. The auditory channel is not as busy as the visual and neither is the tactile channel. Using multiple resources and combine different modalities would provide redundancy in the attempt to alert and to capture the driver's attention.

Using the VTI driving simulator for the experiment we compared the effects on driver attention control with two different alerting devices, presented to the audio and tactile sense modality respectively. While driving, the participants were distracted by a secondary task. An alerting device was then used to put the driver's focus back to the main task of driving. The hypothesis was that the audio device, in form of a voice calling out the driver's own name, would produce a more rapid switch of attention than the tactile device, in form of vibrations in the car cockpit.

The expected results are that the combined audio-tactile alerting device will provide the most rapidly switch of attention's focus back to the main task of driving. The reaction time is assumed to be shorter and the lane deviation smaller compared with the other conditions. The audio alerting device presented alone is expected to be second best before the tactile alerting device presented alone and last the control group. The speed is assumed to decrease as well as the lane deviation is assumed to increase during the times of focusing on the secondary task.

At this moment it can only be stated that the driver's own name has an obvious alerting effect. The data is not fully analysed and it is therefore difficult to draw any final conclusions. It is also difficult to say what the next step in the research will be.

Questions for discussion in an interactive session:

1) Does it matter what kind of distracter it is that distracts the driver from the driving task? For example: fighting children in the car, talking on mobile telephone, changing channel on the radio, something outside the car.

2) Is it possible to say that something that captures the drivers' attention is not a distraction but only an increased workload if it is closely related to the driving task? For example: Keeping watch over a bicycle in front of the car is higher workload. Watching a good-looking girl in a yellow dress on the side of the road is a distraction.

3) Depending on what the results will show, an option for coming experiment might be the use of another simulator. Can we compare the results from two different simulators?