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Univerzita Palackého  
v Olomouci

## **Fitness to Drive**

# **Psychological aspects**

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## Background

1. Human being is a **controlling system element** (consequence:  $\approx 90\%$  of accidents are caused or co-caused by human beings) (e.g. NHTSA, 2015 – 94%,  $\pm 2.2\%$ ).
2. Most of the drivers **are safe and good drivers** (*but still behaving risky in some situations*). To enhance their safe driving behaviours, traffic safety measures **on the societal level** (e.g. strict and fair enforcement, smart traffic infrastructure – self-explaining and forgiving roads, safe and ergonomic vehicles) are needed.
3. Only **very small part of drivers are very risky drivers** (repeat offenders, excessive speeders, drunk drivers): 0,5% of all drivers committ more that 20% of all serious offences. For these drivers, **special interventions on individual level**, as rehabilitations (driver improvement courses) and psychological assessment of fitness to drive, are needed.



## Background

### Driving performance and behaviour

It is crucial to distinguish between **driver performance** and **driver behaviour**. Not differentiating between them has caused, and continues to cause, confusion. The two concepts are:

1. Driver performance – what the driver **CAN do** / (*driving instructors and traffic psychologists*)
2. Driver behaviour – what the driver **DOES do** / (*traffic psychologists*)

**Driver performance** relates to the driver's knowledge, skill, and perceptual and cognitive abilities. **Driver behaviour** is what the driver chooses to do with these attributes.



## Background

### Driving performance and behaviour

The distinction between **performance and behaviour** is central to **traffic safety** because normal driving is a **self-paced task**. That is, drivers choose their own desired level of task difficulty.

Rothengatter (1997) pointed out that research in traffic psychology shows not only the importance of performance factors, but also **the importance of motivational and attitudinal factors.**

*A distinguished sea captain commented: A superior seaman uses his superior judgment to keep out of situations requiring his superior skills (Evans, 2004).*



## Background

### 1. 1 Driving performance and behaviour (Gadget model)



An analysis of the driver's task and accidents has shown that **adequate psychomotor skills and physiological functions are not sufficient** for good and **safe performance** as a driver (Näätänen & Summala, 1974).



## Background

### Traffic psychology and traffic psychologists

Traffic psychology is primarily related to the study of the **behaviour of road users and the psychological processes underlying that behaviour** (Rothengatter, 1997, 223), as well as to the relationship between behaviour and accidents.

*Human behaviour – whether “normal” or “deviant” – **is explained, individually assessed, and altered by psychological means.** Psychologists have developed concepts and instruments to assess individual drivers and other road users in order to improve their safety.*



## Research design

1. The study sample comprised  $n=2471$  individuals aged 18-87, drivers who undergo FTD assessment. 2 groups based on drivers' history (crashes, offences, DPS points): safe and risky drivers.
2. We compared results of **performance tests** (e.g. Cognition, Perception, Attention, Memory, Intelligence) and **personality tests** (e.g. PSSI, NEO-PI-3)
3. Age was shown to have a significant influence on the results of both performance- and personality-related tests. Therefore, all the results were checked using residual analysis.



## Research design

### Sample

Two groups of drivers: Risky drivers and Safe drivers

#### Safe drivers

- 1) Professional drivers
- 2) Offences in driver's lifetime: max. 3
- 3) Offences in the last 2 years: 0
- 4) No history of their licence being withdrawn

#### Risky drivers

Licence withdrawn (12 points in the demerit point system or speeding or DUI offence).



## Key outcomes

### 1. Performance tests (what driver CAN DO)

**No differences** were found between the risky and non-risky drivers. Moreover, in some of the tests the risky drivers achieved better scores than the non-risky ones (especially in the domain of memory, both verbal and non-verbal).

In terms of practical implications, it is important to recognise that when assessing psychological fitness to drive, we cannot predict a person's safe driving behaviour in the future on the basis of their good results in performance tests.



## Key outcomes

### 2. Personality tests (inventories) – what driver DOES

Statistically significant differences between the risky and non-risky driver groups were shown for some personality traits.

**Risky drivers are:** less deliberate and cooperative and more likely to seek excitement, show less self-control and less respect for responsibilities and commitments, are more likely to break rules, flout social norms, and assert themselves. They are more preoccupied with their feelings and show a greater sense of their own incompetence and insecurity. They also have a stronger inclination to manipulate others.



## Conclusion

- Personality traits are a valid predictor of safe driving.
- Personality traits are measurable.
- Traffic psychologists have knowledge and instruments to assess psychological fitness to drive.



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# Questions?



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