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1. 1 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:

• Driver performance – what the driver **CAN do**.

• Driver behaviour – what the driver **DOES do**.

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

1. 1 Driving performance and behaviour

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

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).

1. 1 Driving performance and behaviour (Gadget model)

Goals for life and skills for living
-Importance of cars and driving on personal development
-Skills for self-control

Behaviour

Goals and context of driving
-Purpose, environment, social context, company

Mastering traffic situations
-Adapting to demands of present situation

Vehicle manoeuvring
-controlling speed, direction and position

Performance

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).

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1. 2 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.

1. 3 Psychological assessment of fitness to drive

Behavioural problems (e.g. mental, physical, and age-related) are **assessable** and can **be treated to effectively** improve road users' competence in coping with the challenges of traffic participation.

Interdisciplinary approach is needed to ensure comprehensive assessment. Assessment of fitness to drive combines **traffic psychology and traffic medicine** in an interdisciplinary approach.

The aim of determining fitness to drive is to achieve **a balance** between minimising any driving-related road safety risks for **the individual and the community** posed by the driver's permanent or long-term injury or illness, and maintaining the driver's lifestyle and employment-related mobility independence.

1. 3 Psychological assessment of fitness to drive (PAFTD)

The reasons for undergoing PAFTD differ among countries. We can observe two groups of countries:

1. PAFTD is required for drivers who **committed serious offences** (usually repeatedly), sometimes in connection with a demerit point system.

2. PAFTD is required for drivers as in Group 1 and all (or some) **professional (commercial) drivers.**

In both groups, PAFTD for elderly drivers is common.

1. 3 Psychological assessment of fitness to drive (PAFTD)

PAFTD assessment consists of:

1. **"Objective" psychological tests** for determining the performance capacity (e.g. cognitive functions) and personality

2. **Exploration** (interview and anamnesis) – with a focus on motivational factors, norms, beliefs, habits, lifestyles or values

3. **Practical driving assessment** – observation of behaviour in the field (optional).

2. Research design and methods

Research design

Questionnaire and retrospective study with focus on performance and personality factors of risky and safe drivers.

Method

Data (results from psychological tests and driver's history – anamnesis) from PAFTD was analysed and compared between different groups of drivers.
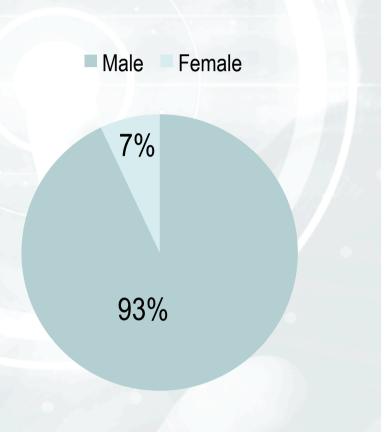
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2. Research design and methods

Sample

Data from 2471 drivers (PAFTDs) was analysed (approx. 20% of all assessments performed in one year in CZ). Data was collected during 2014 within the whole of the Czech Republic (from 20 different practitioners).

Mean age: 39 years (SD 13.2)

Gender: 93% male, 7% female

■ Male   ■ Female

7%

93%

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2. Research design and methods

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).

2. Research design and methods

Two psychological methods were analysed

1. NEO PI-R (NEO Personality Inventory), Paul Costa, Jr. and Robert McCrae, 1990.

The NEO PI-R consists of 240 questions intended to measure the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.

2. PSSI (Persönlichkeits-Stil- und Störungs-Inventar), Julius Kuhl, Miguel Kazén, 2009 (2nd edition). The PSSI (personality inventory) consists of 140 questions divided into 14 scales.

2. Research design and methods

Data analysis

For data analysis the following statistical methods were used:

Anova and post hoc test (Scheffe)

All results are presented on the 0.05 (or higher) level of significance.

3. Results

NEO PI-R

Safe drivers N=149, mean age 44, SD 11.2
Risky drivers N=446, mean age 36, SD 13.5

Differences in personality traits between the two groups of drivers:

Big 5

Neuroticism	Extraversion	Openness to experience	Agreeableness	Conscientiousness
Anxiety	Warmth	Fantasy	Trust	Competence
Hostility	Gregariousness	Aesthetics	Straightforwardness	Order
Depression	Assertiveness	Feelings	Altruism	Dutifulness
Self-consciousness	Activity	Actions	Compliance	Achievement Striving
Impulsiveness	Excitement Seeking	Ideas	Modesty	Self-Discipline
Vulnerability to Stress	Positive Emotion	Values	Tendermindedness	Deliberation

3. Results

NEO PI-R

<u>**Risky**</u> drivers seem to show <u>**more**</u>:

- **extraversion**
- **openness to experience**
- impulsiveness
- gregariousness
- activity
- excitement seeking
- feelings
- striving for achievement

<u>**Risky**</u> drivers seem to show <u>**less**</u>:

- **agreeableness**
- **conscientiousness**
- straightforwardness
- compliance
- dutifulness
- self-discipline
- deliberation

3. Results - PSSI

Safe drivers N=143, mean age 47, SD 13
Risky drivers N=390, mean age 36.3, SD 11.7

Scale	Tendency in a risky driver		Scale
Self-assertive	+++		Antisocial
Wilful			Paranoid
Reserved			Schizoid
Self-critical	+++		Avoidant
Conscientious		+++	**Compulsive**
Intuitive			Schizotypical
Optimistic		+++	**Rhapsodic**
Ambitious			Narcissistic
Critical			Negativistic
Loyal		+++	**Dependent**
Impulsive	+++		Borderline
Agreeable		+++	**Histrionic**
Calm			Depressive
Helpful			Self-sacrificing

3. Results – PSSI

Risky drivers are more:

- self-assertive
- self-critical
- compulsive
- rhapsodic
- dependent
- impulsive
- histrionic

4. Conclusions and discussion

In general, the differences between safe and risky drivers in terms of their **personality traits were confirmed**.

The NEO PI-R test showed differences in **all the Big Five personality traits**, with the exception of **neuroticism.**

While less significant, **differences in performance** qualities were also demonstrated, with **risky drivers showing better performance** (perhaps attributable to the age factor).

4. Conclusions and discussion

This research supports the following findings:

- 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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Thank you for your attention!

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