



DEPARTMENT
OF PSYCHOLOGY

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Why we act in the traffic the way we do

Human Factors in the Traffic

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Opole, 2015





Content

1. Traffic sustainability – heading Vision 0
2. Traffic psychology
3. Human behavior
4. Data and research methods



I. Traffic sustainability – heading Vision 0

The goal of inherently sustainably safe traffic is to **prevent crashes and, where this is not possible, to reduce the chance of deaths and severe injury to zero.**

This approach recognizes **people`s physical vulnerability**, but also what they are **capable** of (people make errors, after all) and what they are **willing** to do (people do not always abide by the rules).



I. Traffic sustainability – heading Vision 0

Traffic should be sustainably safe **for everybody** and not just for the the car driver.

The proactive approach of sustainable safety means that measures are taken in the **chain of “system design” to “traffic behavior”** **as early as possible**. By preventing system errors, the probability of human error and/or serious outcomes of crashes can be reduced.

Road safety thus becomes less dependent on the **individual choices of road users**. This implies that responsibility for safe traffic not only lies with road users but also with those who design and manage the elements of the traffic system such as infrastructure, vehicles, education, training and testing.



II. Traffic psychology

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

But we – as psychologists – don't deal only with humans' behavior and traffic safety. We work with **holistic approach** and **understand traffic as a very complex system**. In broader sense, traffic psychology deals with issues such – put in another words, when assessing measures we consider:

1. Quality of life
2. Public and individual health
3. Environmental issues
4. Safety
5. Land use
6. Economical sustainability



II. Traffic psychology – approaches: 3 E`s

1. Education and training

- Popular with those who receive it
- Popular with those who deliver it
- Politically uncontroversial
- Authorities seen to be acting

But there is **no general evidence that they produce a public health benefit.**

Brown, et al (1987);

Christie, (2001);

Christie, (2007);

Ker et al., (2005);

Mayew et al (1998);

Mayew & Simpson, (2002);

Vernick et al., (1999)



II. Traffic psychology - 3 E`s

Harm mechanism

Skills training without understanding leads to risky behavior. Increase confidence without competence. Driver education can lead to an increase in crash involvement (Roberts et al, 2001; Mayew & Simpson, 2002; Vernick et al 1999)

Mechanism: normalizing risky behavior => risk exposure => overconfidence.

Thought, education and training must play an important role. Each education and training must be **evaluated and ensure, that leads to evident public benefit.**



II. Traffic psychology - 3 E`s

Education and training should be:

1. Driven by theory and evidence
2. Designed to avoid
 1. Overconfidence
 2. Increased risk exposure
 3. Normalising risky behaviour
3. Evaluated

(McKenna, 2012)



II. Traffic psychology - 3 E`s

2. *Engineering*

Concept of self explaining road/ environment – helps human to act according to the situation.

We act as surrounding tells us to act.

We have to construct roads and environment the way, which allows to **absorb humans` errors** and let us stay alive and learn from our mistakes.



II. Traffic psychology - 3 E`s

3. Enforcement

Strong evidence that enforcement in **traffic leads to benefits in public health**
(Tay, 2005).

Deterrence assumptions:

1. People must know the rules
2. Must be able to use this knowledge
3. Benefits of rule breaking must be less than cost of threat

Deterrence **increases as a function of:**

1. Certainty
2. Severity
3. Imminence of punishment



III. Human behavior

Human **as irrational being** - we can not expect pure rational behavior.

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.**

This conclusion is in line with the notion that driving is a **self-paced task** (Näätänen & Summala, 1974).

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

Skill vs. Will dilemma



III. Human behavior

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



III. Human behavior

Four levels of GADGET model (Hataka et al, 2002):





III. Human behavior

5th level - Traffic as a culture (Good brakes, good horn, good luck!)

This is how people drive, how people cross the street, how power relations are made manifest in those interactions, what sort of patterns emerge from traffic.

It's the reason why horn in Rome does not mean the same thing as a horn in Stockholm, why flashing headlights at another driver is understood one way in the German autobahn and quite another way in Los Angeles.

Why pedestrians jaywalk in New York City and don't in Copenhagen? In New York City it's a way to distinguish yourself from crowd, in Copenhagen an act against law. In NYC pedestrians look at cars, not at lights.



III. Human behavior – how to influence it?

In principle two types of questions:

Why does individual do things?

Why does individual not do the right thing?

1. Lack of information/education/training (does not know things)
2. Ignorance (does not want to know things) & lacking impulses to get information & laziness („inertia“)
3. Non-conformity (wants to do things differently)
4. Beneficial for myself

What to do? What kind of measures?



IV. Data and research methods

Accidents data and accidents indicators

- **we do not need to wait for accidents to happen**
- place without accidents \neq safe place
- accidents are very complex events and it is complicated (or impossible) to describe all factors and relationships
- to understand roots, we need to explore and interpret data (not only analyse)
- there are “too few” accidents to use them as predictive measure
- rather we should use **traffic safety indicators**, data that we can get from:
 - observations (cameras, naturalistic driving...)
 - interviews (with drivers, passengers, pedestrians....)
 - analysis of possibly unsafe events (emergency brakings, near accidents, conflicts...) ...& explorations and interpretations



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Thank you for your attention!



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