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Self-reported Aberrant Behaviour on Roads in a Sample of Czech Drivers

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1. The Manchester Driver Behaviour Questionnaire

The Manchester Driver Behaviour Questionnaire (DBQ) (Reason, Manstead, Stradling, Baxter & Campbell, 1990) has gained wide acceptance. So far, at least fifty-four published studies have used at least parts of this instrument in various ways.

The original DBQ, developed by Reason et al (1990), focused on two distinct types of behaviour that were named **errors and violations**. An additional factor named "**slips and lapses**" was also identified, which focuses on attention and memory failures.

1. The Manchester Driver Behaviour Questionnaire

In regard to the number of DBQ factors identified, previous research has either confirmed the **original three factors** of errors, violations and lapses (Åberg & Rimmö, 1998; Blockey & Hartley, 1995; Parker et al., 1995),

or **four factors** that are errors, lapses, aggressive and ordinary violations (Sullman et al., 2002),

or **five factors** that are errors, lapses, aggressive violations, ordinary violations and factor 5 (driving away from traffic lights and shooting through traffic lights as they turn red) (Parker, McDonald, Rabbitt,& Sutcliffe, 2000).

2. Design of the Study

The aim of this study was to:

a. **Determine the factors** that affect driving behaviour and examine the **relationship between self-reported driver behaviour in DBQ** (violations, errors and lapses) **and self-reported accident involvement** and offences among Czech Drivers.

b. To **test the psychometric properties** of the Czech version of DBQ (confirm the 3 factors or identify new ones) and compare Czech drivers' data and data from the UK (Reason, 1990).

c. Identify **the role of age, gender, kilometres per year driven and social status** using the data presented.

2. Design of the Study

In the present study, the original 50-item version was used (Reason, Manstead, Stradling, Baxter & Campbell, 1990) with a six-point Likert-type response.

An on-line version of the questionnaire was used. Data were collected between April and June 2013.

The questionnaire was translated into Czech (2 independent translations) and tested in a pilot study (50 respondents). Psychometric characteristics were compared to the original Reason's (1990) study. Interviews with 10 respondents were conducted with a focus on the formulations and clarity of the questions. The updated version of the questionnaire was translated into English and the original and the Czech versions were compared. Then the final Czech version was prepared.

I. Dotazník - řidičské chování

	Otázka	0 Nikdy	1 Zřídka	2 Občas	3 Často	4 Velmi často	5 Skoro vždy
1.	Chcete se rozjet, ale zjistíte, že máte zařazen třetí rychlostní stupeň.	◉	○	○	○	○	○
2.	Podíváte se na tachometr a zjistíte, že jedete nevědomky rychleji, než je povoleno.	○	◉	○	○	○	○
3.	Zabouchnete si klíče v autě.	◉	○	○	○	○	○
4.	Když jedete po dálnici za vozidlem, které blokuje levý (předjížděcí) pruh, ztrácíte trpělivost a předjedete ho.	○	○	○	○	○	○
5.	V noci jezdíte po vedlejších silnicích stejně rychle bez ohledu na to, zda máte zapnuta potkávací nebo dálková světla.	○	○	○	○	○	○
6.	Chcete se rozjet a zjistíte, že máte zataženou ruční brzdu.	○	○	○	○	○	○
7.	Jezdíte těsně za vozidlem jedoucím před vámi nebo blikáte na jeho řidiče, abyste mu tak naznačil/a, že má jet rychleji nebo vám má uhnout z cesty.	○	○	○	○	○	○
8.	Když parkujete na víceúrovňových nebo rozlehlých parkovištích, zapomenete, na kterém podlaží jste auto nechal/a.	○	○	○	○	○	○
9.	Když Vás něco rozptýlí nebo myslíte na něco jiného, až se zpožděním si uvědomíte, že vůz před vámi zpomalil, a vy musíte dupnout na brzdu, abyste odvrátil/a kolizi.	○	○	○	○	○	○
10.	Chcete zapnout stěrače a místo toho zapnete světla, případně naopak.	○	○	○	○	○	○

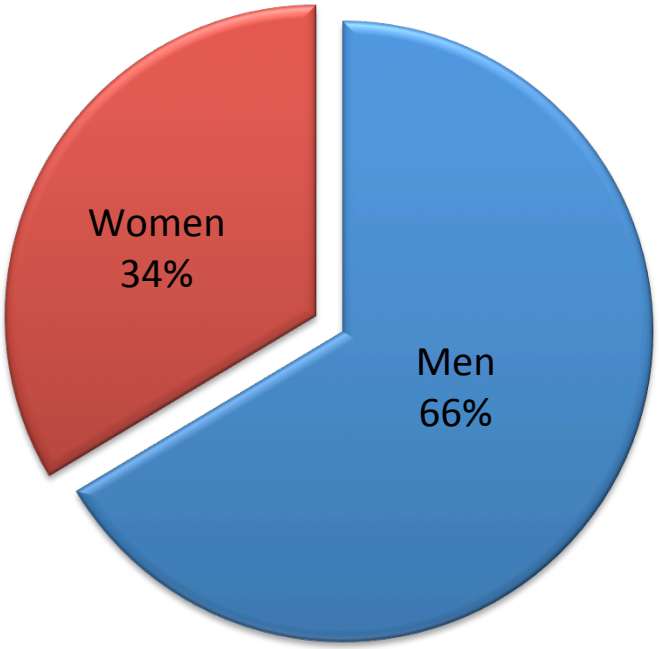
Blok otázek: 1/5

Následující otázky »

3. Sample

The total sample size was n = **2575 drivers** (the Czech driver population comprises approximately 6.6 million individuals), sample **= 0.04% of all drivers**.

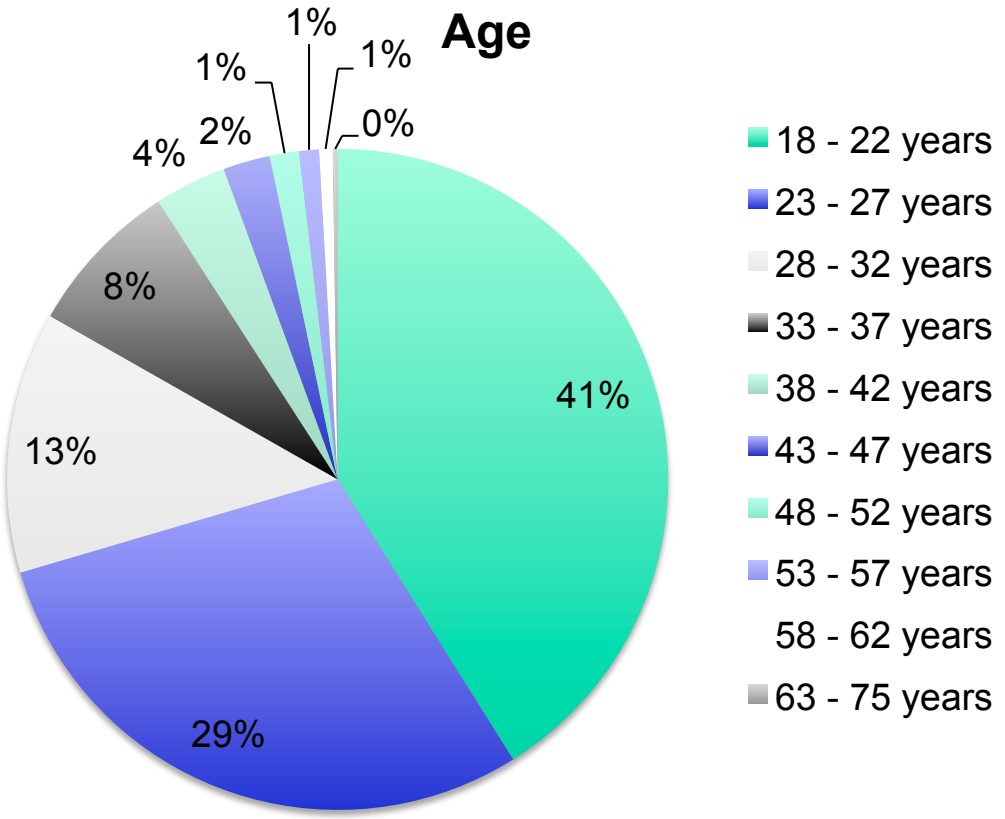
In terms of **sex** – men and women accounted for 2/3 and 1/3 of the sample respectively.



3. Sample

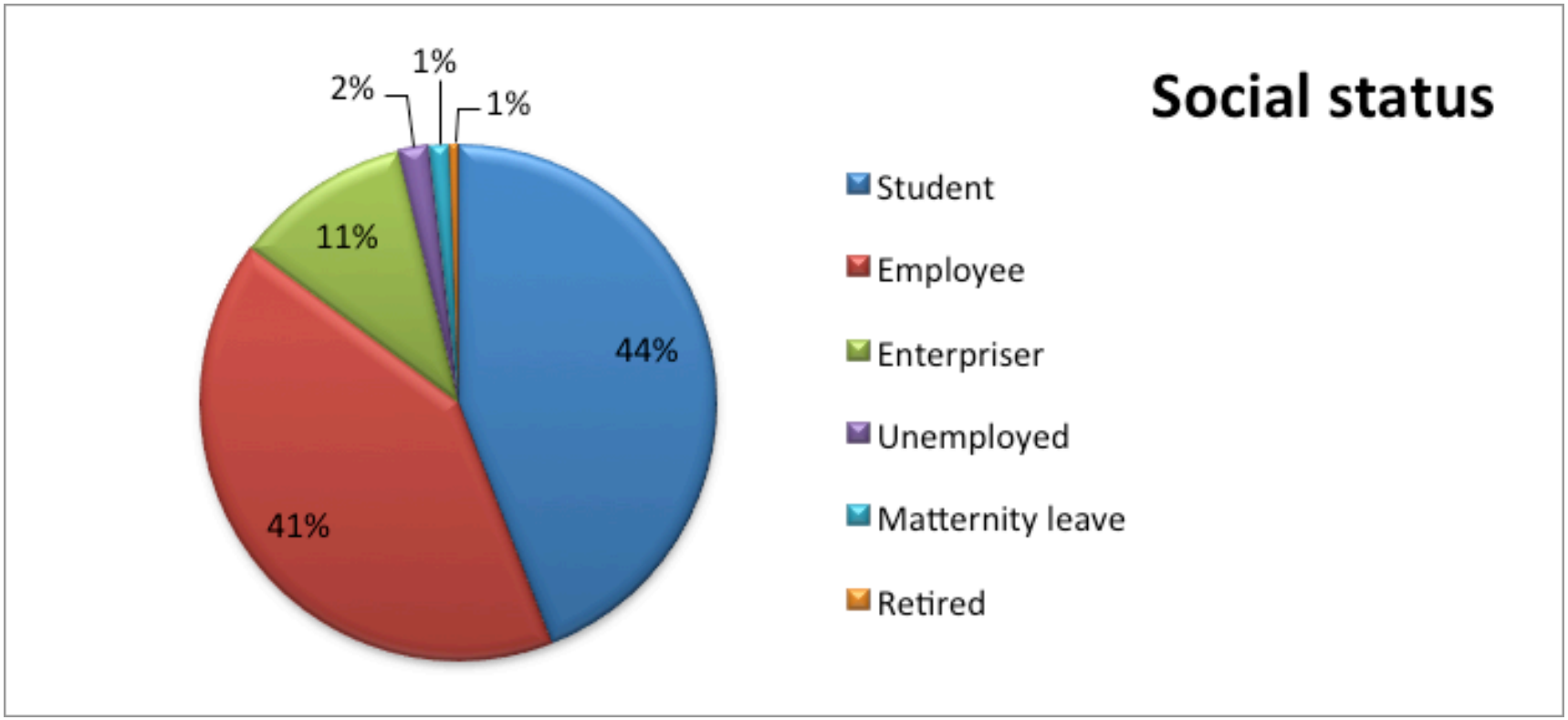
Age distribution – **young drivers** (up to 27 years) represented 70% of the sample. The largest group comprised individuals aged 18-22, who accounted for 41% of the sample, and the 23-27 age category accounted for 29%.

Drivers in the **28-42 age category** comprised 25% of the sample.



3. Sample

More than 50% of the sample is made up of the working population (41% employees and 11% enterprisers) and 44% of the sample were university students.



3. Sample

The mean kilometres driven per year for the whole sample is 15,000 km, total kilometres driven 146,000. The median figures, 10,000 km and 40,000 km driven annually and in total, respectively, seem more reliable. Men drive approximately **3 times more** than women.

Kilometres driven	**Men**		**Women**	
	Km/Year	Km total	Km/Year	Km total
Mean	18 410,00	180 116,80	8 624,22	79 253,23
Median	**12 000**	**60 000**	**3 000**	**12 000**
SD	21 632,67	463 430,34	18 801,14	318 623,50
Min.	30	90	5	50
Max.	250 000	10 000 000	400 000	8 000 000

4. Self-report Data

Other data collected from respondents included those on:

a. Sociodemografics (occupation, family status, education, size of residence)

b. Driving records (e.g. Do you have your own car? What types of vehicles does your licence authorise you to drive? What purpose do you use your car for?)

c. Driving attitudes (e.g. How would you rate your driving skills? Are you a risky driver? Do you follow traffic rules? Do you drive under the influence of alcohol or drugs? What does it mean for you to be a driver?)

d. Accidents and offences (e.g. number of points within the DPS, involvement in accidents, number and types of offences, suspended driving licence, etc.)

5.1 Results – Frequencies

The five most frequently occurring behaviours were:

Q no	Question	Sum	Mean	SD	Behavior	Risk
2	Check your speedometer and discover that you are unknowingly travelling faster than legal limit.	6402	2.49	1.24	UV	B
21	Deliberately disregard the speed limits late at night or very early in the morning.	5752	2.23	1.59	V	C
45	Driving with only "half-an-eye" on the road while looking at a map changing a cassette or radio channel etc.	4249	1.65	1.16	S	C
5	Drive as fast along country roads at night on dipped lights an on full beam.	3956	1.54	1.56	M	B
15	Forget which gear you are currently in and have to check with your hand	3867	1.50	1.30	S	A

*3 out of the 5 most frequent behaviours are associated with speed.

(A – low risk, B – medium risk, C – high risk, UV – unintended violations, V – Violations, S – Slips, M – Mistakes)

5.1 Results – Frequencies

Relationship between frequency and behavioural type:

	Slips	Mistakes	Violations	Unintended violations
Above median frequency	11	5	7	2
Below median frequency	10	4	10	1

Relationship between frequency and risk category:

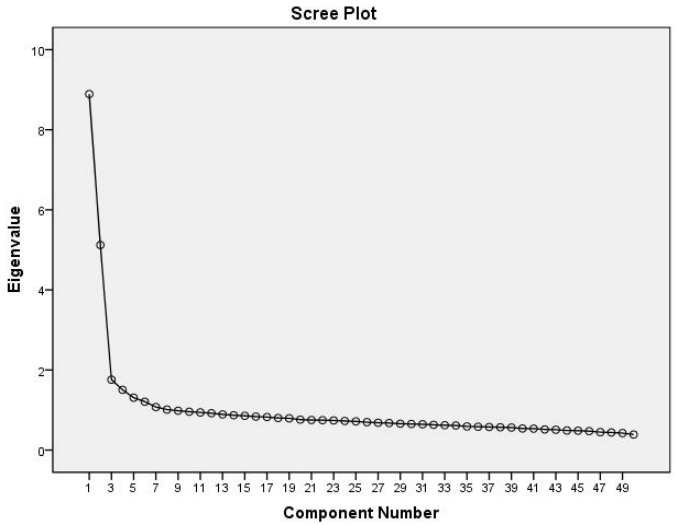
	A	B	C
Above median frequency	9	6	10
Below median frequency	6	2	17

5.2 Results - Factors

The responses to the 50 questions were subjected to principal component analysis using varimax rotation (SPSS v12). The scree plot indicated that the data were best fitted by a three-factor solution. These three orthogonal factors accounted for 31.54% of the total variance.

Factor 1: Deliberate Violations
Factor 2: Dangerous Errors
Factor 3: Non-dangerous Errors

	Total Variance Explained		
Factor	Total	% of Variance	Cumulative %
1	8,892	17,784	17,784
2	5,121	10,242	28,026
3	1,759	3,517	31,544



5.2 Results - Factors

Items with the highest loadings on **Factor 1 – Deliberate Violations** were, almost exclusively, violations involving a definitive risk (C) to other road users.

The items loading most highly on this factor were: *Get involved in unofficial "race" with other drivers* (.698), *"Race" oncoming vehicles for a one-car gap on a narrow or obstructed road* (.698) and *Stuck behind a slow-moving vehicle on a two-lane highway, you are driven by frustration to try to overtake in risky circumstances* (.687).

Factor 1 accounted for **17.78%** of the variance.

5.2 Results - Factors

Factor 2, accounting for **10.24%** of the variance, is best characterized as **Dangerous Errors.**

The defining items are mostly **slips and mistakes** in the **highest risk category.**

The highest loadings on this factor were: *Misjudge your crossing interval when turning right and narrowly miss collision* (.610), *Fail to check your mirror before pulling out, changing lanes, turning, etc.* (.598) and *Fail to notice pedestrians crossing when turning into a side-street from a main road*.

5.2 Results - Factors

Factor 3 Non-dangerous Errors accounted for **3.52%** of the variance.

The factor is primarily defined by slips and lapses causing only embarrassment and inconvenience to their perpetrators.

The highest loadings on this factor were: *Miss your exit at the motorway and have to make a long detour* (.640), *Fail to read the sign correctly, and exit roundabout on the wrong way* (.590) and *Plan your route badly, so that you meet traffic congestion you could have avoid* (.572).

5.3 Results – Factor Score Predictors

Using factor scores, multiple regressions were calculated to establish which of the **items self-reported by the respondents** (sociodemographics, driving records, driving attitudes, accidents and offences) provide the best predictors for all 3 factors.

5.3 Results – Factor Score Predictors

With regard to Factor 1 (Deliberate Violations):

- *men reported more violations than women,*
- *younger drivers reported more violations than older drivers,*
- drivers who reported *more traffic offences, a higher level of accident involvement and accident culpability and those with a record of demerit points* reported more violations,
- drivers with *higher yearly mileage* reported more violations.

On the other hand, items *social status* and a self-report on *"how good a driver they are"* did not correlate with Factor 1.

The above predictors accounted for **24%** of the variance.

5.3 Results – Factor Score Predictors

With regard to Factor 2 (Dangerous Errors):

- *women reported* more dangerous errors than men,
- *younger drivers* reported more dangerous errors than older drivers,
- drivers with a *record of demerit points* reported more dangerous errors,
- drivers with *fewer traffic offences* and *fewer kilometres per year driven* reported more dangerous errors,
- *students* reported more dangerous errors than employees or enterprisers.

On the other hand, items *accident involvement, accident culpability* and a self-report on *"how good a driver they are"* did not correlate with Factor 2.

The above predictors accounted for **10%** of the variance.

5.3 Results – Factor Score Predictors

With regard to Factor 3 (Non-dangerous Errors):

- *women* reported more non-dangerous errors than men,
- *older drivers* reported more non-dangerous errors than younger drivers,
- drivers who reported more traffic offences and a higher level of accident culpability also reported more non-dangerous errors,
- drivers who considered themselves good drivers reported fewer non-dangerous errors.

On the other hand, items *accident involvement, kilometres per year driven, social status and a record of demerit points* did not correlate with Factor 2.

The above predictors accounted for **7%** of the variance.

6. Conclusions

- The results of the presented study fully correspond with the original Reason's (1990) study conducted in the UK (as regards the number of factors, loadings of factors, and partly factor score predictors).

- 3 out of the 5 most frequent behaviours are associated with speed.

- Low-risk behaviour is reported more frequently than high-risk behaviour.

- Slips and mistakes are reported more often than violations.

- Our results suggest a 3-factor solution (Deliverable Violations, Dangerous Errors and Non-dangerous Errors), with 31.5% of the total variance.

6. Conclusions

- Factor 1 is loaded with violations involving high risk, the typical driver is a young man with high mileage driven per year, with traffic offences and an accident involvement record.

- Factor 2 is loaded with dangerous errors involving high risk, the typical driver is a young woman, with low millage driven per year and fewer traffic offences. Students score high in this factor.

- Factor 3 is loaded with non-dangerous “silly” errors involving low risk, the typical driver is an older woman who self-rated herself as not a very good driver and with a record of traffic offences and accident culpability.

Literature

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Thank you for listening!

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