

Fit to Drive

7th International Traffic Expert Congress
25th – 26th April 2013
Berlin



Behavior and Mental Workload **in Driving a Vehicle:** a Portuguese contribution 26/04/2013

- Fátima Pereira da Silva
- Coimbra Polytechnic Institute, School of Education
Portugal



Structure of Presentation

Briefly present of the current Portuguese context



- Methodologies for psychological assessment of drivers



- Learning models of the driving task



- Behavior and mental workload in the driving task *in learners and experienced drivers.*

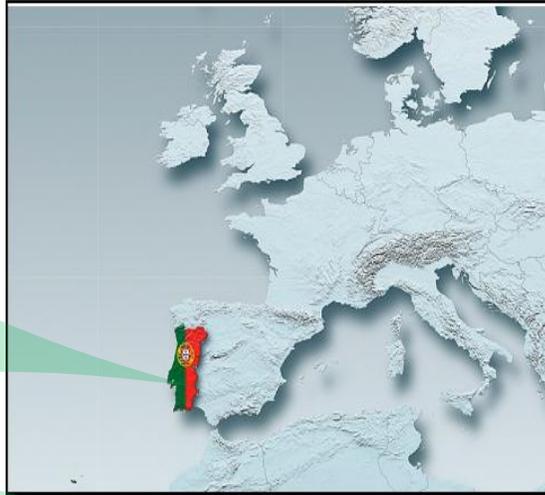


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6 485 148
drivers



- Obligatory psychological assessment on issue of the licence and on renewal from 50 years old onwards.

Number of Qualified Drivers	Driving Licence	Group belonged to
1876	AM	G1
812366	A	G1
909750	A1	G1
821143	A2	G1
6070145	B	G 1
6070087	B1	G1
454308	BE	G1
411273	C	G2
411479	C1	G2
271557	C1E	G2
271469	CE	G2
60464	D	G2
60615	D1	G2
41100	D1E	G2
40922	DE	G2

Number of people qualified to drive in Portugal- IMT (2013)



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National
Authority for
Road Safety

580 people
were killed

2012

2.083 seriously
injured

90 deaths

2013- From 1
January to 7
March

294 seriously injured





Psychological assessment of drivers: the current framework. Decree-Law n° 138/2012 of 5 July

Fields	Abilities and skills	Applicants of Group 1 and drivers of G1 & G2	Applicants of G 2
Perceptual-cognitive	1-Intelligence	Required: Group 1 candidates Optional: drivers of Group 1 and 2	Required
	2-Attention and concentration	Required	Required
	3-Movement estimation	Required	Required
Psychomotor	4-Bimanual Coordination	Required	Required
	5-Choice Reactions	Required	Required
Psychosocial	6-Multiple and discriminative reactions	Required	Required
	7-Personality factors:		
	Psychological maturity and responsibility	Required: psychological interview	Required: interview and survey or projective test
	Emotional stability		
	Psychopathological screening	Optional: survey or projective test	
	Attitudes and risk behaviors in relation to traffic safety		
	Social abilities		

Aptitudes and competences related to functions where doubts arise

Fields	Abilities and skills
Perceptual-cognitive	1 – Memory
	2 – Perceptive integration
	3 – Vigilant resistance to monotony
Psychomotor	4- Gestural safety
	5-Manual agility
	6- Capacity to multi-task



COMPLETELY DIVERGENT PRACTICES



•Any Psychologist and Doctor can carry out the assessment

•Supply in private psychological intervention has grown exponentially

•No requirement for specific training in the field



•Now over 200 companies and consultancies of psychological assessment operating in this sector
- low cost of the service has become the rule

•Uncontrolled growth of companies

• In 2010, psychological assessments of drivers was estimated to have reached 90 000.

•No obligation to use approved equipment

•Without control/supervision, there is an increased risk of failure to meet the legal norms required



•THE DRIVING TASK

•Groeger,
(2002)

•Silva (2011)

•Gomes
(1993)

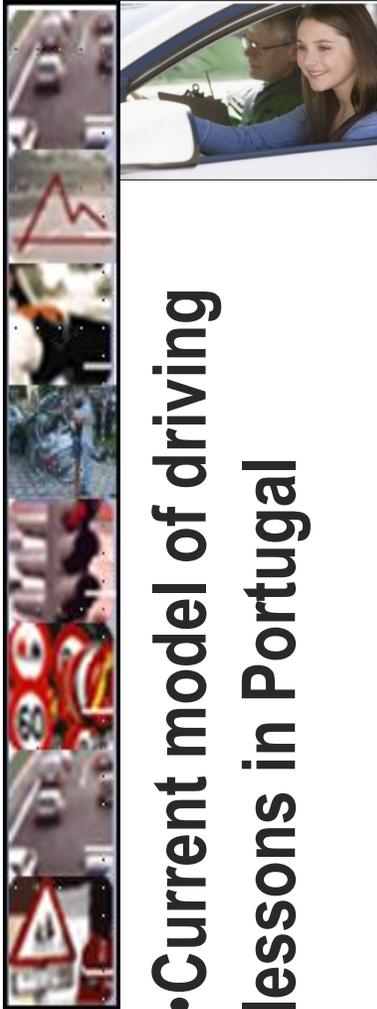
•Matthews
& Desmond,
(2001)

•The task of driving is a relatively recent; Lewins-Evans; de Waard; Jolij and Brookhuis (2012) : involves many individual actors interacting in a road system

• Common and shared space where we adopt very varied behaviors that dictate our safety and that of all who are participants in the same road scenario

•As a culture, traffic has a history, its own language, of symbols, myths and rites

•Allowing the development of appropriate perceptions of possible situations of risk, as well as regulating motivational states, modeling behavior related to decision-making (e.g., in overtaking) and road safety



•Current model of driving lessons in Portugal

- The driving test (theoretical test and practical test) is the end of the process of enabling provisional drivers to obtain the driving licence or to drive another category of vehicle if they are already drivers.
- After successful completion of the test, the ex-learner is subject to a probationary period, at the end of which he is considered a driver without any restrictions.
- “The likelihood of managing to confirm the competences in the driving tests, is very limited, considering the short period of contact between the learner driver and the examiner, and so it is considered that such competences could/should be developed in training”
(Paulino, 2012, p.25)



• **BEHAVIOR AND MENTAL WORKLOAD IN DRIVING A VEHICLE**



☐ **Method**

▪ **Participants**

- ✓ Total sample : 30 participants ($n=30$)
- ✓ Sub-samples 1:15 learner drivers enrolled in a driving school
- ✓ Sub-samples 2 - 15 experienced drivers held a driving licence for over three years and driven over 10.000 km.

▪ **Material**

- ✓ Rating scale for mental effort (RSME)
- ✓ Film camera which was set up on the vehicles' dashboards
- ✓ Written support documents

☐ **Method**

▪ **Procedure**

- ✓ The study was carried out in Coimbra (Portugal)
- ✓ The three routes:
 - Same distance and presented different characteristics
 - All taking an average of 5 minutes to cover
 - An average distance of 2kms
 - Each assessment lasted on average 30 minutes





Results

- In learners, we found high relationships in comparing the three routes. The greater the mental effort felt by the learners on one route, the greater it was on another.
- The experienced drivers, there were no statistically significant differences in comparing the three routes covered. However, the values of the Pearson coefficient show that the greater the mental effort made on one route, the greater it was on another.
- Regarding the mental effort exerted between learners and experienced drivers over the various routes defined, we found a statistically significant multi-variate effect. The variability in self-assessment of mental effort felt by participants on the three routes was due to the absence or presence of driving experience.



CONCLUSIONS



- Driving contexts where the number and level of demands call for permanent management of multiple information, imply greater mental effort to carry out the tasks.
- Minimizing the mental effort exerted, through facing multiple and diversified contexts, will mean improved performance.
- A transnational curriculum of competences must urgently be defined for professionals operating in the sector, with specialized training in the area of Traffic Psychology being vital.
- Development of projects and partnerships at the European and global level will be one of the routes to follow.
- As Crosby (1979) argues, the aim to reach “zero defects”, in this area will be the aim to reach “zero accidents”, through a culture of road safety shared by all actors involved.





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•Thank You!

mpereira@esec.pt



fatimapereirasilva0808@gmail.pt

