

Driving assessments on-road : A critical perspective on standardization

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Impact of driving evalautions

- Freedom and individual decision-making
- Loss and institutional decision-making
- How can we improve the balance?



Standardization- is that even possible?

3

P-Drive: Implementing an Assessment of On-Road Driving in Clinical Settings and Investigating Its Psychometric properties

- How it all started
- Theoretical ground in an activity analysis (Kielhofner) and decision-making (Michon, 1985)
- From observation to scoring- how do we make that right







(1) PSYCHOMETRIC PROPERTIES (2)PREDICTIVE

WITH A NEUROLOGICAL DIAGNOSIS SWEDEN 134 OLDER AND IMPAIRED

DRIVERS- AUSTRALIA

Psychometrics-Rasch analysis

- Item fit and unidimensionality
- Person fit and separation
- Hierarchy among items
- Internal validity and reliability



Rasch analys is based on repsonse patterns

ltem/ person	Steering	Keeping distance	Attend and act to other road users
А	4	4	3
В	4	2	2
С	3	3	1

Matrix

ltem/ person	Steering	Keeping distance	Attend and act to other road users	Sum
А	4	4	3	11
В	4	2	2	8
С	3	3	1	7
Summa	11	9	6	

Rasch dataanalys-matrix

Expected response patterns

Exempel 1:

Person A 44434332333233211

1.27 logits (logg-odds probability units) interval data Exempel 2:

Person B 33222122311221111

0.32 logits

Unexpected patterns of responses

Item Obeying stopp: 4414331333111111

1,06 logits MnSq 2.1

More 5	able	dr	ive	ers	More +	dif	ficult	ite	ems	
			ΡI	 	 					
4	P	P	P I I	 	 					
		Ρ	ΡI	2	 					
3	P P P P P	P P	P H P H		 					
2	ΡP	P P	P H P H P H		 					
	ΡP	P	P H P H	? ?	 					
1	9 9 7 9 7 7 9 7	PPP	P H P H P H P H	P. P. F.	 					
0	F F F F F F	FFF	F H F H F H F H		10 12 18 20 14	25 21 19 23 15	27 2 5 24 6 16 17	8		
-1	FF	F		יין אין דיין דיין דיין דיין דיין דיין	1 13 7 11 22 	3 26			P-Drive items (1-27) 1.Steering 2. Changing gears 3. Using pedals 4. Contr. speed, too slow 5. Contr. speed, too fast 6. Using indicator 7. Reversing 8. Follow instruct 9. Finding the way 10. Proving the model	 Dbeying stop regul Follow speed regul Att. and act. ahead Att. and act. to right Att.and act. to left Att.and act. to mirrors Att. to warn/probation sign Att. to information sign Att. to information sign Att. to follow
-2				 	 +				 11. Keeping distance 12. Planning 13. Yielding right-of-way 14. Yielding 	 Reacting Focusing Solving problems

Less able|Easier

Namn Efternamn

Results

- A unidimensionell scale.
- Valid measures for drivers with MCI, stroke, dementia and older adults
- Can separate drivers
- Logic item hierachy (Michon, 1985)
- Cut-off etablisehd for data in Sweden and Austraila (to be used with causion)



To summarize

- Used in Sweden, Switzerland, Australia, US, New Zeeland, Singapore, Norway...
- Stay critical to the process
- Use the manual- to make sure scoring becomes correct
- Stay person-centered as the person has much at stake
- Everything is on the individual- how can we take more responsibility to the outcomes- other alternatives

References

Patomella AH, Tham, K, Kottorp, A. (2006) P-Drive: An Assessment of Driving Performance after Stroke. Journal of Rehabilitation Medicine, 38:273-279. PMID: 16931456 <u>https://www.ncbi.nlm.nih.gov/pubmed/16931456</u>

Patomella A-H, Tham K, Johansson, K., Kottorp, A. (2010) P-Drive on-road: Internal scale validity and reliability of an assessment of on-road driving performance in people with neurological disorders. Scandinavian Journal of Occupational Therapy,17:86-93. PMID: 19565409 <u>https://www.ncbi.nlm.nih.gov/pubmed/19565409</u>

Patomella A-H and Bundy, A (2015). P-Drive: Implementing an Assessment of On-Road Driving in Clinical Settings and Investigating Its Internal and Predictive Validity. American Journal of Occupation Therapy, 69 (4): 6904290010. PMID: 26114466 <u>https://www.ncbi.nlm.nih.gov/pubmed/26114466</u>

Cheal, B., Bundy, A., & Patomella, A. H. (2025). Performance analysis of driving ability (P-drive): investigating construct validity and concordance of Australasian data. OTJR: Occupational Therapy Journal of Research, 45(1), 95-104.

