

Fit to Drive

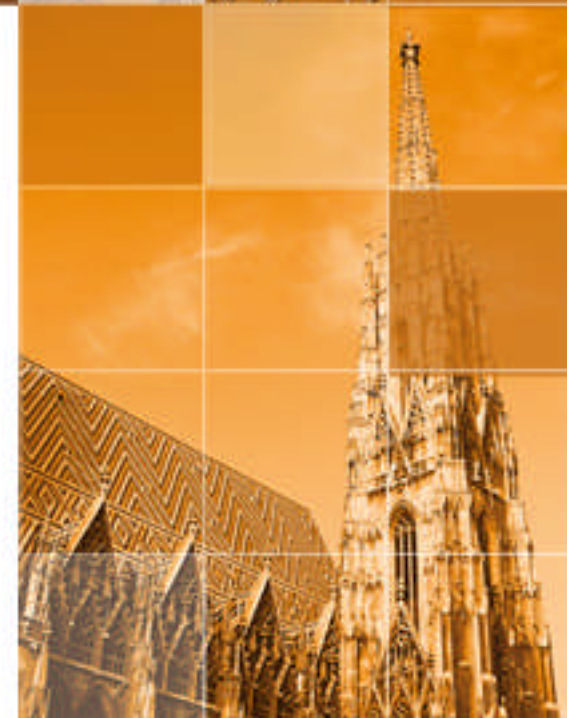
2nd International Traffic Expert Congress
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Welcome

Assessment of the mental performance capacity of older drivers– Aspects of Test fairness / Age fairness

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"Nowhere can the necessary suitability be expressed so easily in terms of a psychological formula, and nowhere can the required ability be tested in experimental form as easily as here; for what is required is the ability to pay attention in many different ways over a long period, and to react fast and safely to changing, often quite unexpected stimuli and events" (Stern, 1918).

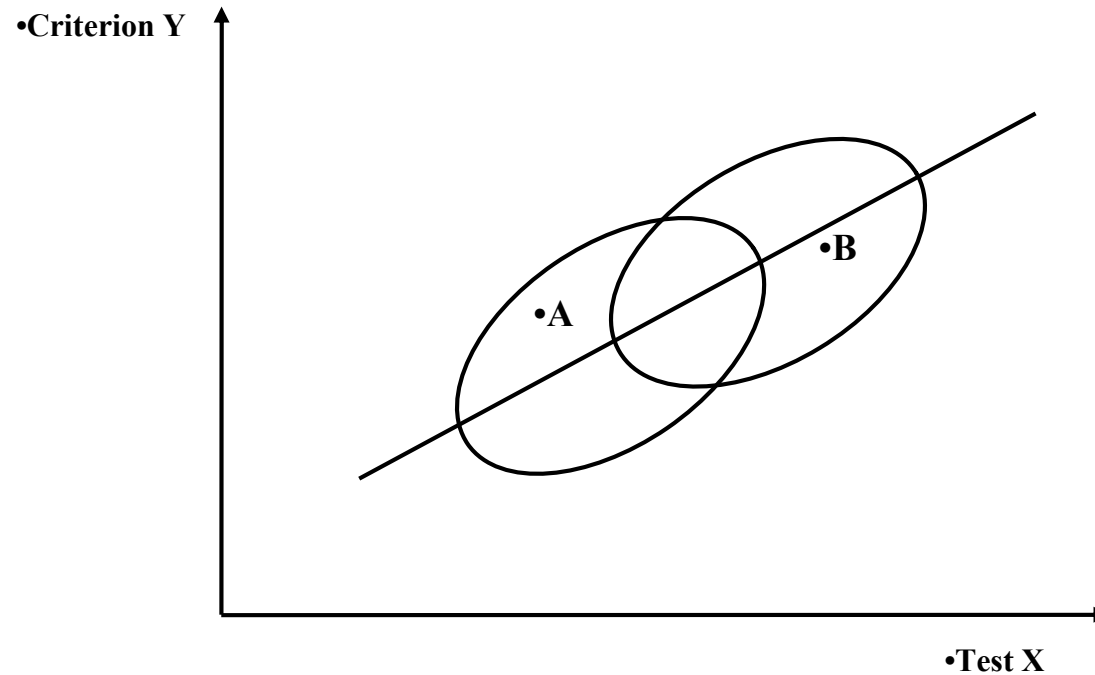


Some psychological functions which are critical in driving competence

- **Selective Attention**
- **Vigilance**
- **Divided Attention**
- **Reaction Time**
- **Short-Term Memory**
- **Long-Term Memory**
- **Problem Solving**
- **Reasoning**
- **Spatial Cognition**
- **Perceptual Style**
- **Language**
- **Learning**

- Fairness in Selection and Prediction

There is extensive agreement that a test is fair, if the prediction instrument (test) which is used for the criterion does not lead to systematic over- or underestimation of the criterion value in any of the groups to be compared



Example of a linear test criterion relationship, in which the same regression line $E(y/x) = \alpha + \beta + x$ applies for all groups



Staplin et al. (1997)	Eby et al. (1998)	The British Psychological Society (2001)
<ul style="list-style-type: none">• Selective Attention/ Vigilance• Divided Attention• Reaction Time• Working Memory Capacity• Reasoning / Decision Reasoning• Spatial Cognition / Wayfinding• Field Dependence	<ul style="list-style-type: none">• Sustained Attention (Vigilance)• Divided Attention• Selective Attention• Short-Term Memory• Long-Term Memory• Problem Solving• Spatial Cognition• Perceptual Style• Reaction Time	<ul style="list-style-type: none">• Perception visuo-spatial ability three-dimensional shape perception• Ability to monitor cognitive processes and behaviour• ability to anticipate, plan ahead, make decisions• Attention• Language• Memory and Learning

The study of the literature gives indications that the following psychological functions lead to an infringement of test fairness :

- **Vigilance**
- **Reaction Time**
- **Spatial orientation**
- **Problem solving**

There were no indications, or only slight indications, for the following functions:

- **Selective attention**
- **Divided attention**

The following functions are used in Germany in order to assess mental performance capacity:

- **Visual orientation**
- **Ability to concentrate**
- **Attention**
- **Ability to react**
- **Resistance to stress**

Is it "Fair" to make use of the psychological functions "Resistance to stress" and "Ability to react" for assessment of the performance capacity of older drivers?

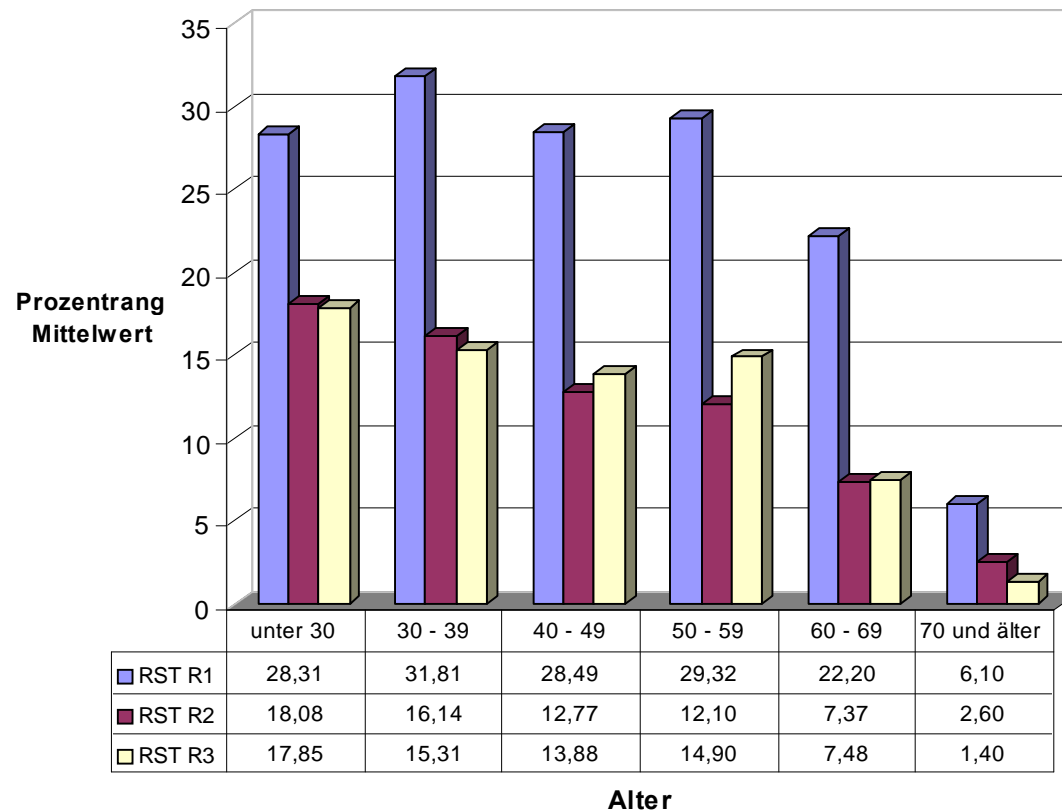


Age distribution of sample

Age	Number	Per cent
below 30	13	06.47 (38.48)
30 – 39	37	18.41 (25.14)
40 – 49	51	25.37 (21.60)
50 – 59	42	20.90 (10.14)
60 – 69	48	23.88 (04.27)
70 and older	10	04.98 (00.37)
Total	201	100.00

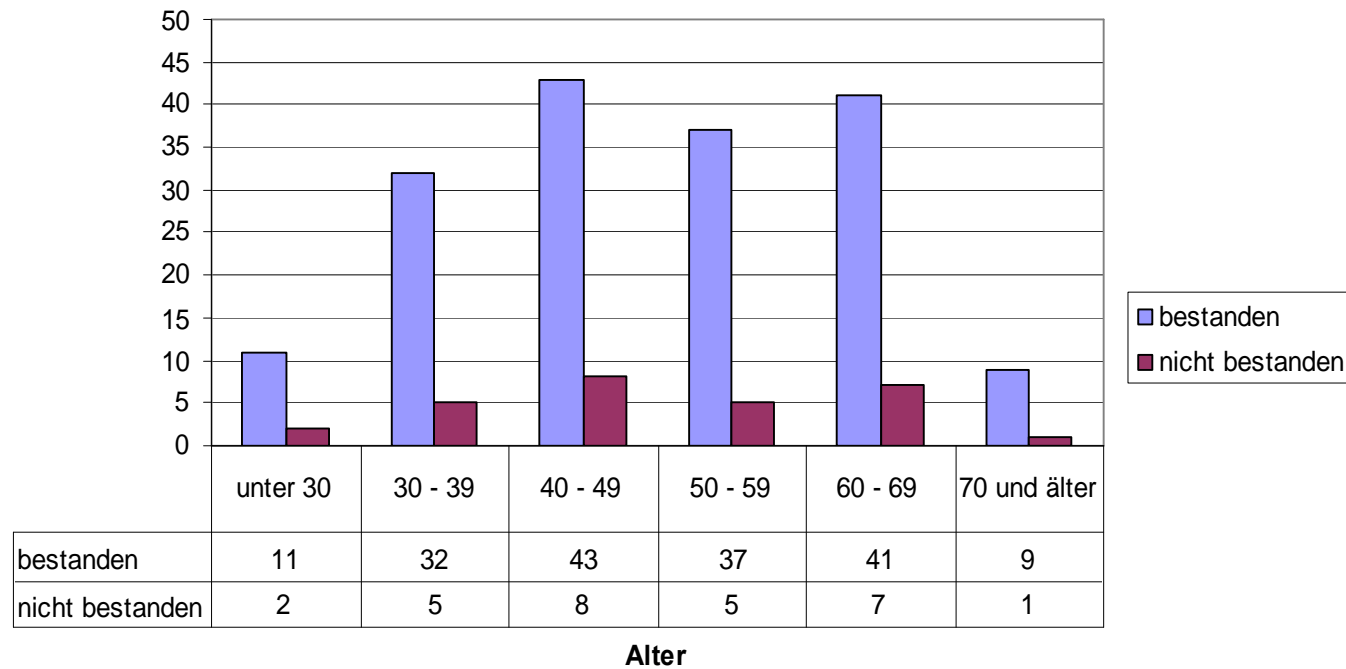


Averages of the percentage rates achieved in the age groups for the RST test characteristic "Correct" in Test Phases 1 - 3 (R1 - R3)





Results of driving behaviour study





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Thank you for your attention