

Driving the Future: The Relation between Driving and Prospective Memory in Adults with an Autism Spectrum Disorder

Citation for published version (APA):

Ross, V., Jongen, E. M. M., Brijs, K., Vanroelen, G., Van Vlierden, K., van Beers, M., Brijs, T., Wets, G., & Altgassen, M. (2017). *Driving the Future: The Relation between Driving and Prospective Memory in Adults with an Autism Spectrum Disorder*. Poster session presented at International Convention of Psychological Science 2017, Vienna, Austria.

Document status and date:

Published: 01/03/2017

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

<https://www.ou.nl/taverne-agreement>

Take down policy

If you believe that this document breaches copyright please contact us at:

pure-support@ou.nl

providing details and we will investigate your claim.

Downloaded from <https://research.ou.nl/> on date: 14 Jul. 2024

Open Universiteit
www.ou.nl





Driving The Future

The Relation Between Driving and Prospective Memory in Adults With an Autism Spectrum Disorder

Veerle Ross¹, Ellen M. M. Jongen¹, Kris Brijs¹, Giovanni Vanroelen², Altgassen, A. Mareike³, Karin Van Vlierden¹, Martijn van Beers⁴, Tom Brijs¹, and Geert Wets¹

¹ Transportation Research Institute (IMOB), School for Mobility Sciences, Hasselt University; ² Faculty of Applied Engineering Sciences, Hasselt University; Diepenbeek, Belgium

³ Donders Institute for Brain, Cognition and Behaviour, Centre for Cognition, Radboud University Nijmegen; ⁴ Faculty of Psychology and Neuroscience, Maastricht University, The Netherlands

Driving

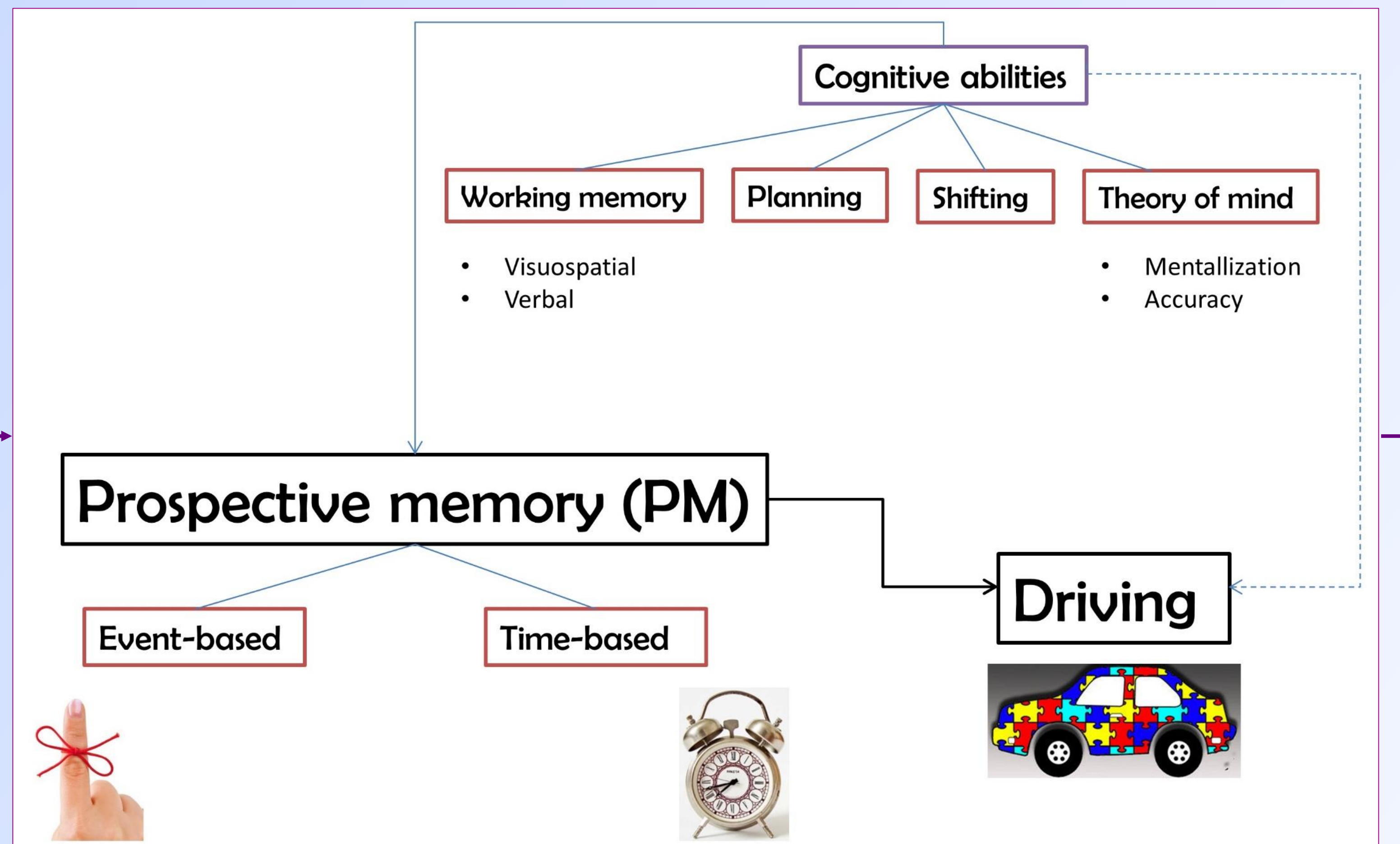
- Important to gain autonomy
- Complex goal-directed task
- Requires multitasking
- Involves situations of increased cognitive load
- Beside vehicle handling, navigation through different environments while remembering appointments and obeying a schedule

Autism spectrum disorder (ASS)

- Difficulties with coordinating and sequencing activities, and with planning ahead
- Indications of prospective memory deficits

Prospective memory

- Ability to remember to carry out intended actions in the future while being engaged in other ongoing activities
- Two subtypes of PM are event-based PM (EBPM) and time-based PM (TBPM)



Participants and procedure

- 19 ASS (official diagnosis) & 20 control:
 - → data collection ongoing
 - No difference gender or age
 - Diagnosis confirmed by SRS and AQ-10
 - Age: 18-62 years old
 - At least 20 hours of driving experience
- All tasks counterbalanced (2 hours)
- Reward of 15 euro

Virtual reality (VR) PM city task

- 4 EBPM (2 strong 2 weak link intention and act)
Eg. Stop at gas station for fuel
- 2 TBPM
Eg. Indicate when 5 min. have passed
- Standard driving measures (e.g., lights, hazard)



Computer tasks assessing cognition

- Working memory: visuospatial and reversed digit span
- Planning: Tower of London
- Shifting: Trail making test – B
- Theory of mind: Triangle task

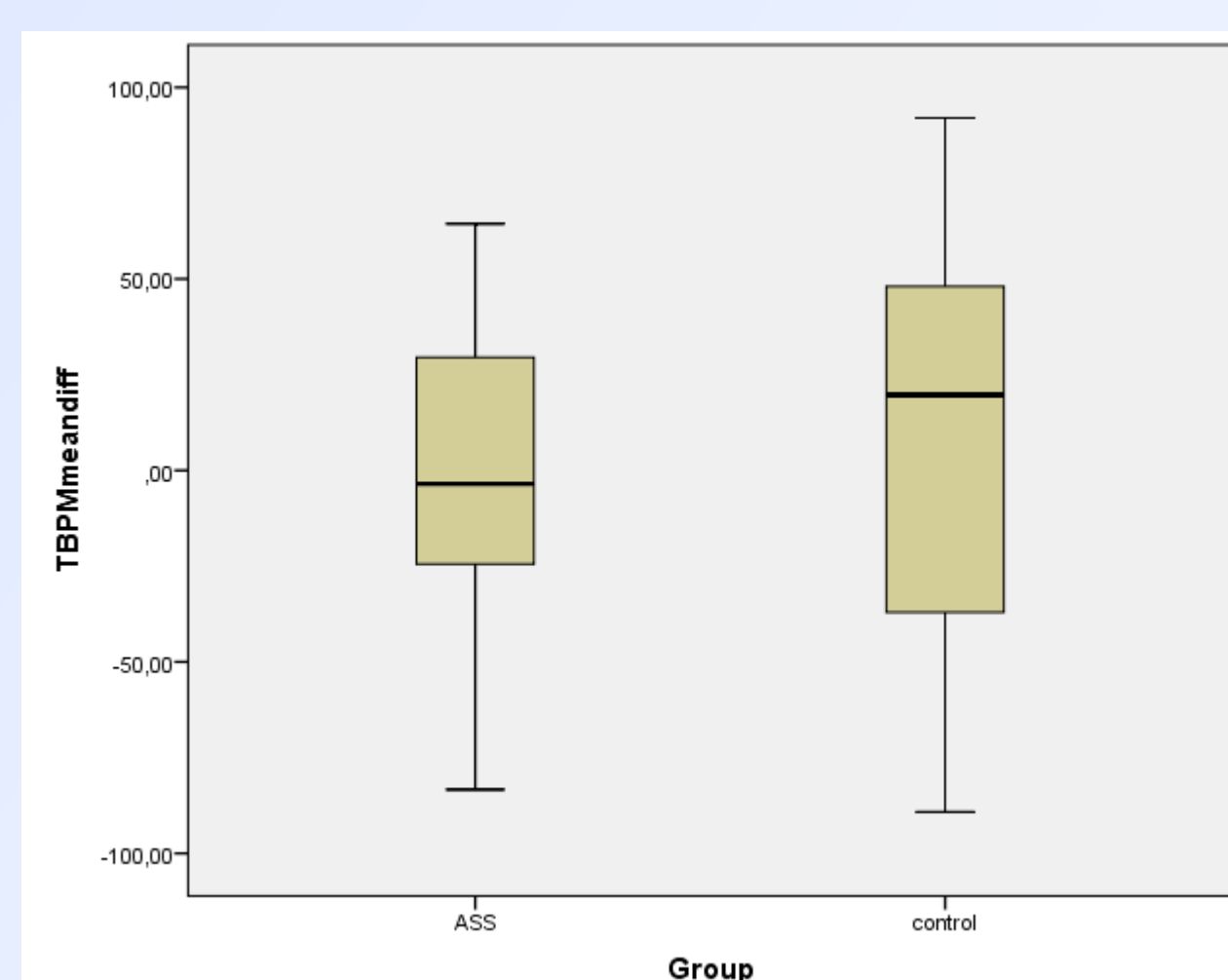


PM performance

- EBPM
 - No differences
- TBPM
 - Group differences
 - ASS responds earlier (but also closer to target time)
 - Interaction group planning
 - ASS: not dependent on planning ability
 - Control: dependent on planning ability

Driving performance

- Yellow light
 - Young age → light running
- Crashes
 - ASS crashed more
 - Interaction group and shifting
 - ASS: not dependent on shifting ability
 - Control: dependent on shifting ability



Presented results are preliminary but indicate subtle group differences in both PM and driving performance

Next steps

- Additional data collection
- Analyses of additional PM simulated drive
 - Contextualized PM tasks
 - Eg. EBPM: Remember to take an exit after a distracting event (exit = cue)
 - Eg. TBPM: Ask for route information after 3 minutes