

ASSESSING PROCESSING SPEED IN MULTIPLE SCLEROSIS: past and future

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Disclosures

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Cognitive Functions

- Cognitive impairment is frequent, affecting up to 70% of individuals with MS (Chiaravalloti et al, 2008)
- Information processing speed (IPS)
 - One of the most prevalent cognitive difficulties (Rosti-Otajärvi et al, 2013)
 - And is hypothesized, by some authors, as the key deficit underlying cognitive dysfunction in MS (DeLuca et al, 2004; Demaree et al., 1999; Forn et al 2008)



Study aims: understand **HOW IPS** has been assessed during 10 years of research

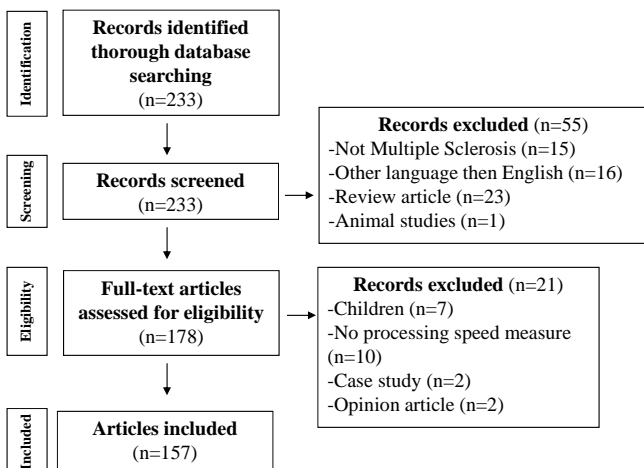
- **The methods** applied to assess information processing speed (IPS) in individuals with MS
 - Sample characteristics
 - Frequency of reporting confounding variables
 - Behavior measures used to assess IPS
- **The theories** applied to study information processing speed in individuals with MS
 - IPS definitions of the construct
 - Theories about IPS



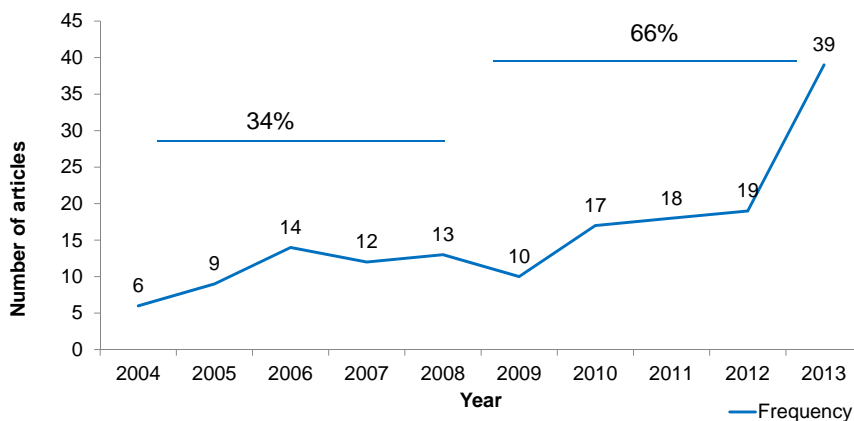
Review: Methods

PubMed search

1. January 1, 2004 and December 31, 2013.
2. "Processing Speed" AND "Multiple Sclerosis"



The evolution of IPS study in MS: Frequency of articles by year



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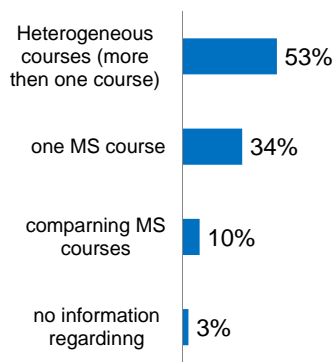
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Samples Characteristics

- What do we know about IPS and disease courses?
- Articles included were divided into 3 categories
 - 1) heterogeneous MS course, in which the study sample(s) is (are) composed of a combination of different disease courses.
 - 2) one MS course, with the focus on understanding one disease course;
 - 3) comparing multiple MS course, with the focus on comparing more than one disease course;

Samples Characteristics

Samples Characteristics



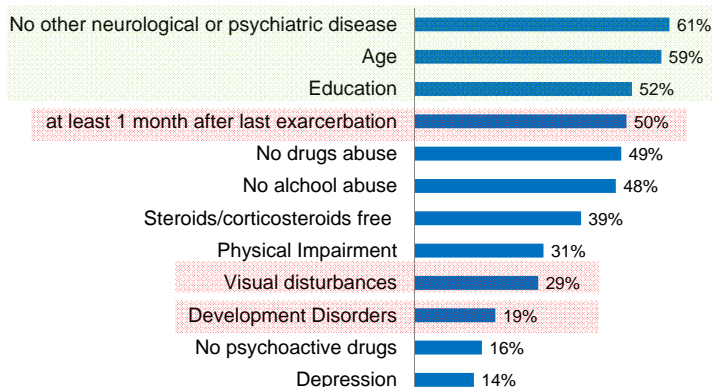
Results summary

- HC > MS
- RR > SP
- RR = CIS
- SP < CIS
- PP < RR / PP = RR
- PP > SP / PP = SP

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Frequency of reporting confounding variables



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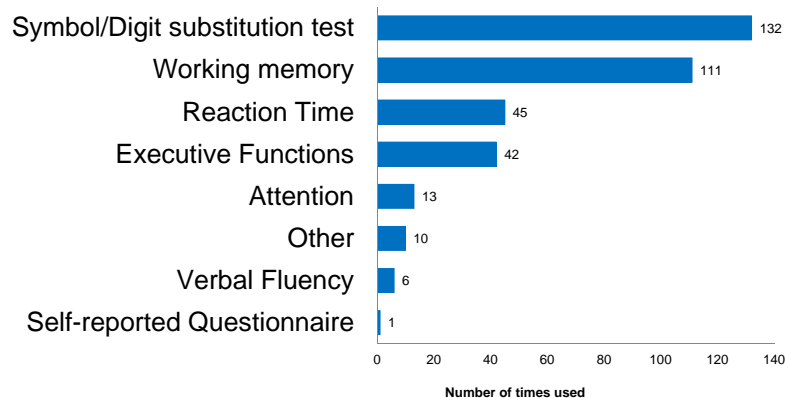
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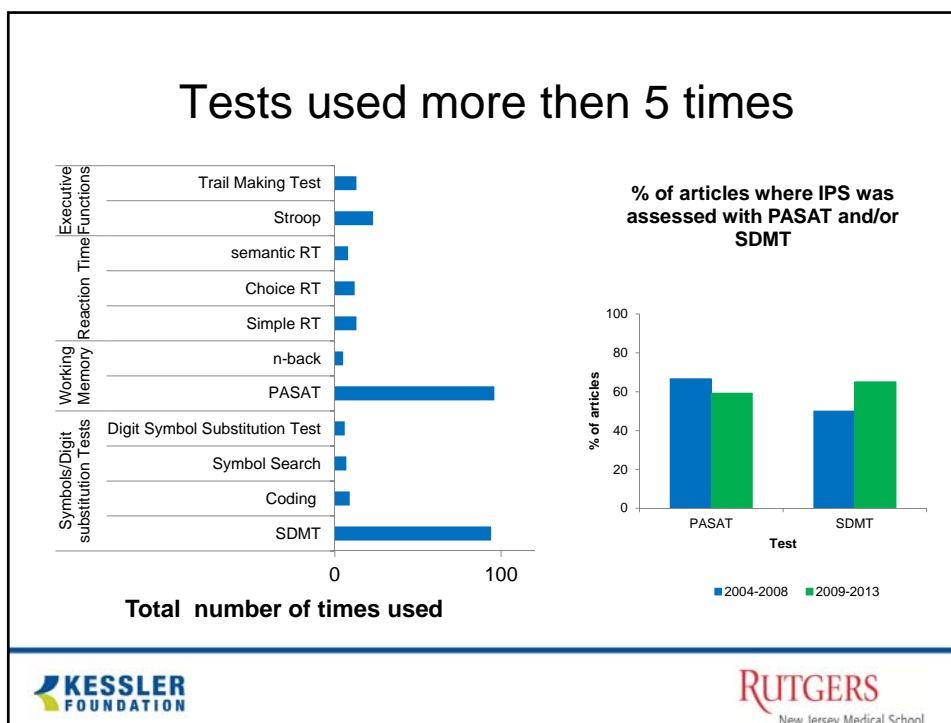
Tests used to assess IPS in MS

- We grouped assessments into 8 cognitive task categories based on their methodological approach:
 - 1) symbol/digit substitution (e.g. SDMT);
 - 2) working memory (e.g. PASAT);
 - 3) reaction time (e.g. visual reaction time or choice reaction time);
 - 3) executive functions (e.g. STROOP);
 - 4) attention (e.g. Test of Attentional Performance);
 - 5) other (e.g. Picture Naming Test);
 - 6) verbal fluency (e.g. Word List Generation Test);
 - 7) self-reported questionnaires (e.g. Processing Speed Difficulties Scale).



Tests used to assess IPS in MS



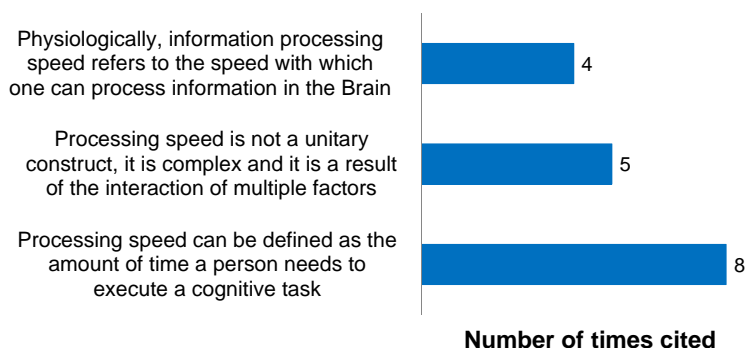


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IPS: defining the construct

- Only 9.6% of the articles under review define IPS.

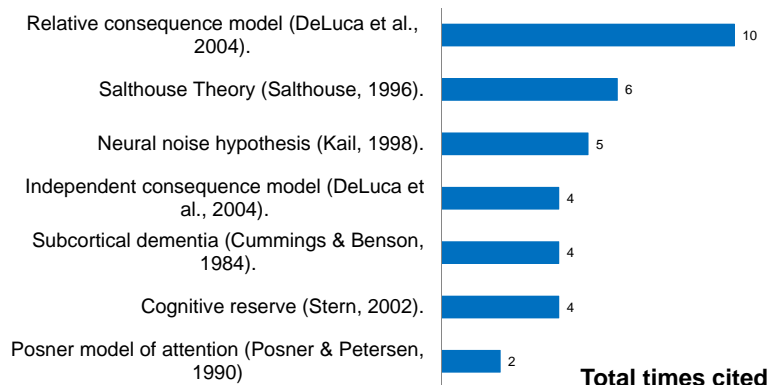


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Theories about IPS

- Only 21% of the articles under review discuss theories of IPS .



Assessing IPS in Multiple Sclerosis

Past	Future
Mostly cross-sectional/prospective studies (only 10% of articles included were longitudinal studies)	Longitudinal studies are in need
Heterogeneous samples (more than one disease course)	Studies design to assess IPS between disease courses
Studies often don't report <ul style="list-style-type: none"> time since last exacerbation, sensorial disturbances (e.g. vision) history of developmental disorders 	Detail inclusion and exclusion criteria are strongly encouraged
Use of diverse measures to assess IPS Construct rarely defined Focus on hypothesis driven research and not theory driven	A clear definition and theoretical model of IPS in MS would be of great importance for assessment and further understanding IPS deficits in MS

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THANK YOU!

