

Language and communication in MS - patient-reported outcome measures (PROMs) and cross-sectional studies

Presented by

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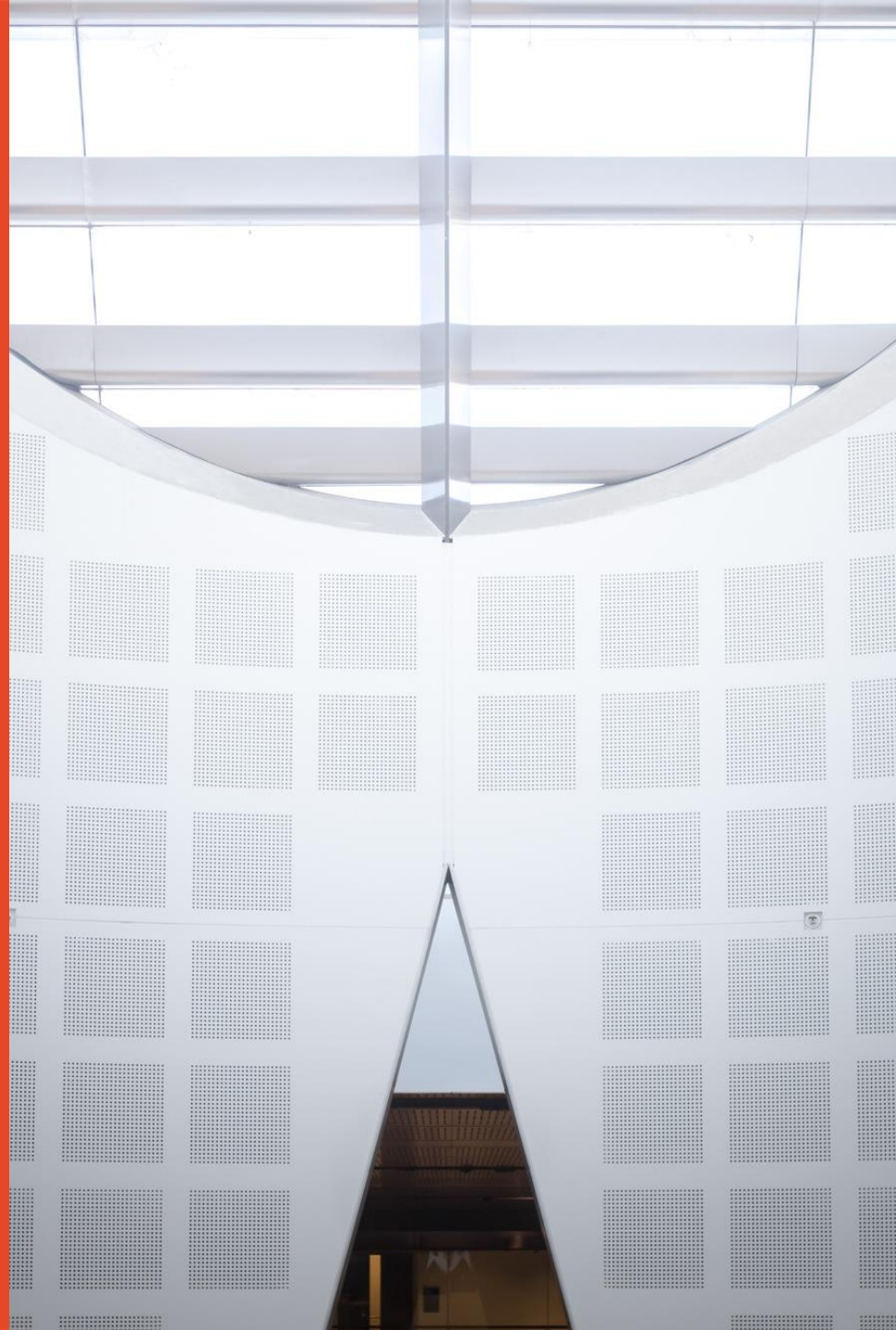
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About me: Sarah

Speech pathologist:

Settings: Outpatient, community, and inpatient

Role: aged care and rehab

Location: Bankstown Hospital (Sydney)

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Research methodologies

1

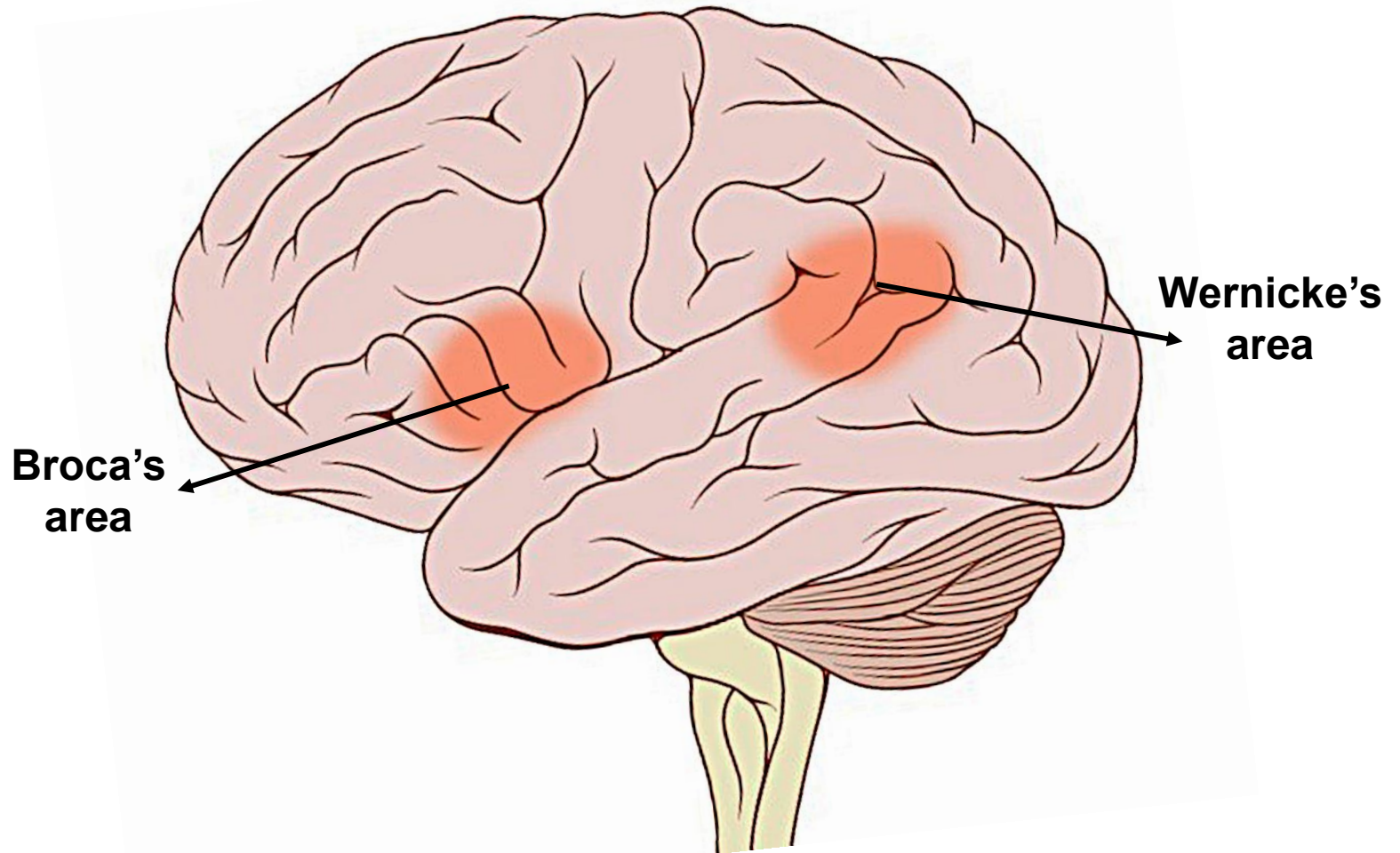
Patient-reported outcome measures (PROMS)

2

Cross-sectional clinical study

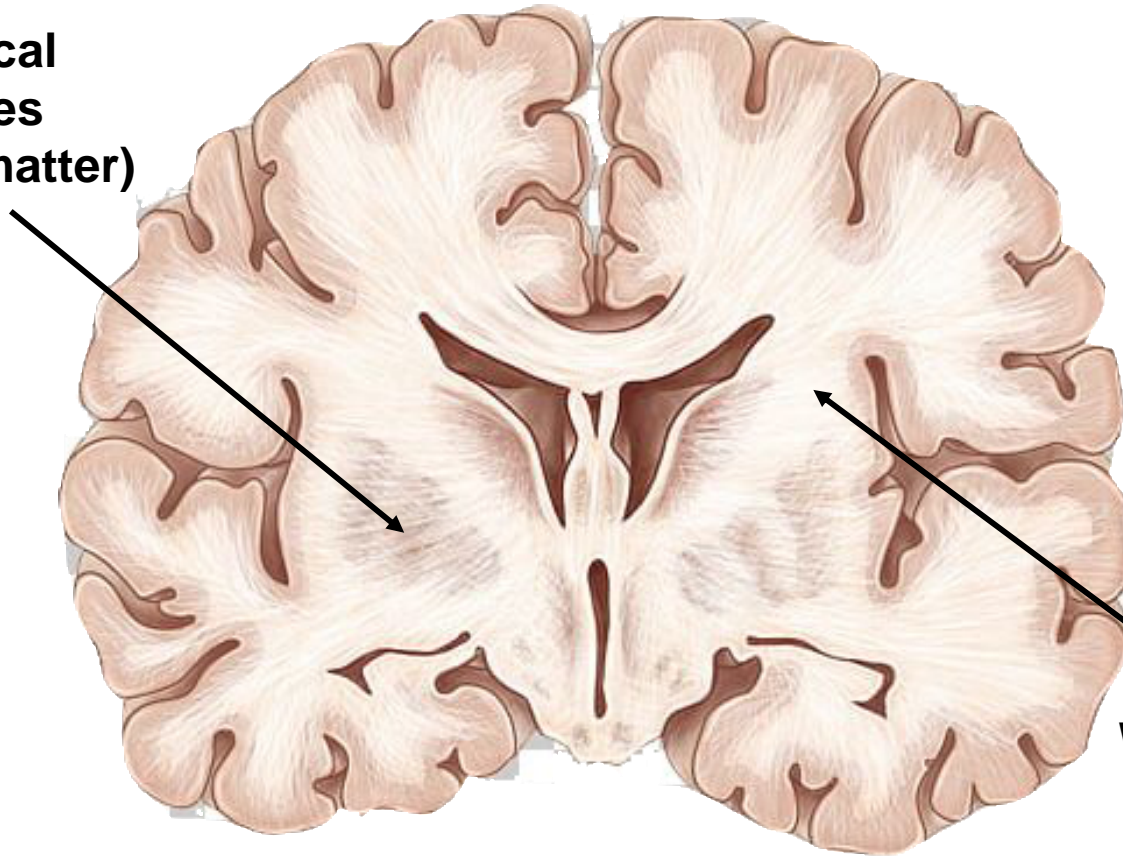
Rationale:

Why should we investigate
language impairment in MS?



[Image: <https://radiopaedia.org/cases/brocas-and-wernickes-areas-illustration>](https://radiopaedia.org/cases/brocas-and-wernickes-areas-illustration)

**Subcortical
structures
(deep grey matter)**



**White matter
pathways**

- **Clinical studies:** people with MS can have impaired performance on language tasks e.g. difficulty with non-literal language tasks, verbal reasoning tasks, spontaneous speech (e.g. shorter sentences, less content), and word finding tasks.

(Carotenuto et al., 2018; Laakso et al. 2000; Lethlean & Murdoch, 1994, 1997; Mackenzie & Green, 2009; Renauld et al., 2016).

- **Limitations of previous studies:**
 - Do not provide explanatory information as to why people with MS experience difficulty with language tasks.
 - No information on the prevalence of language impairment in MS or its association with health-related quality of life (HRQoL).
 - Do not consider other factors, such as general cognition and motor speech skills as potential confounding variables.

Research gaps

- No information on the prevalence of language impairment in MS and its association with HRQoL in an international population.
- No validated PROM specifically designed to measure language and communication in MS.
- The underlying cause/s of language impairment in MS remains unknown. Is it due to:

**Damage to
language-specific
areas of the brain?**

**And/or impaired
general cognitive
skills (e.g. memory,
attention)?**

**And/or (conflated
by) motor speech
impairment?**

Rationale: Why should we investigate this symptom in MS?

- **Further research is needed:** this will help to better understand why people with MS experience language impairment to determine the best treatment options e.g. mixed intervention approach vs. domain specific approach
- **Impact of language impairment:** social isolation, loss of vocational standing, frustration, loss of autonomy, and reduced participation in everyday activities

(Klugman & Ross, 2002; Yorkston et al. 2014).

Study 1 and Study 2: PROMS

Study 1:

Prevalence of self-reported language impairment in MS and the association with HRQoL

Aims

1

To determine the prevalence and nature of self-reported language impairment in MS using a validated MS-specific PROM.

2

To identify the demographic and clinical variables associated with PwMS with self-reported language impairment.

3

To determine the association between self-reported language impairment and self-reported HRQoL.

Method

- **Questionnaire:** Participants completed an online questionnaire, which comprised of:
 - 4 language items of the *Speech pathology-specific questionnaire for persons with MS (SMS)* to assess language. 5-point Likert scale with anchors ‘never’ to ‘almost always’.
 - 12-Item Short Form Survey (SF- 12) to assess HRQoL.
- **Participants:**
 - Respondents: 160 PwMS responded to the questionnaire.
 - Recruitment: internationally through professional MS bodies, neurology clinics, and MS support groups.
 - Inclusion criteria: (1) over 18 years, (2) have MS, and (3) be English-speaking.

Results

- 75% (120 out of 160) PwMS self-reported a language impairment.
- 65.7% reported difficulty with word retrieval
“I find myself searching for the right word to express my thoughts”
- 53.8% reported difficulty with expressive language
“When talking, I have difficulty conveying precisely what I mean”
- 49.4% reported difficulty with confrontational naming
“I find myself calling a familiar object by the wrong name”
- 40.6% reported difficulty with receptive language in spoken dis- course.
“I find it difficult to make sense out of what people say to me”

El-Wahsh, S., Ballard, K., Kumfor, F., & Bogaardt, H. (2019). Prevalence of self-reported language impairment in multiple sclerosis and the association with health-related quality of life: An international survey study. *Multiple Sclerosis and Related Disorders*, 101896.

Results

- Statistical analyses revealed that **age, sex, educational status, country of residence, disease duration, age at time of diagnosis, MS subtype, and medication management**, were **NOT** associated with the prevalence of **self-reported language impairment**.
- Participants with **self-reported language impairment** had **lower HRQoL** than those without language impairment, scoring lower on both the SF-12 **mental** ($t(158) = 4.0$; $p < 0.001$) and **physical** ($t(158) = 4.9$; $p < 0.001$) summary scores, with medium to large effect sizes (Cohen's $d = 0.66 - 0.83$).
- Participants with **self-reported language impairment** had **higher** rates of **unemployment** than those without language impairment ($\chi^2 = 18.2$; $p < 0.001$).
- Of the **120 participants** reporting a language impairment, only **1 participant** was **receiving speech pathology** intervention.

Limitations

- Language ability was assessed using 4 questionnaire items only.
- This may be considered a brief measure of language ability.
- The study findings underline the need to further investigate language impairment in MS given its high prevalence and association with lower HRQoL.

Conclusions

- Language can be compromised in PwMS regardless of clinical and demographic characteristics.
- Language impairment in MS is associated with lower HRQoL.
- Language impairment in MS is associated with lower employment rates.

Recommendations

- Frontline healthcare providers need to be aware of language impairment in MS and should ask their patients about this symptom.
- PwMS with self-reported language impairment should be referred to a speech pathologist for further evaluation.

Study 2:

Development and validation of
a self-report questionnaire to
measure communication and
language impairment in MS

Aim

1

To develop and validate a self-report tool to measure language and communication ability in PwMS.

Method

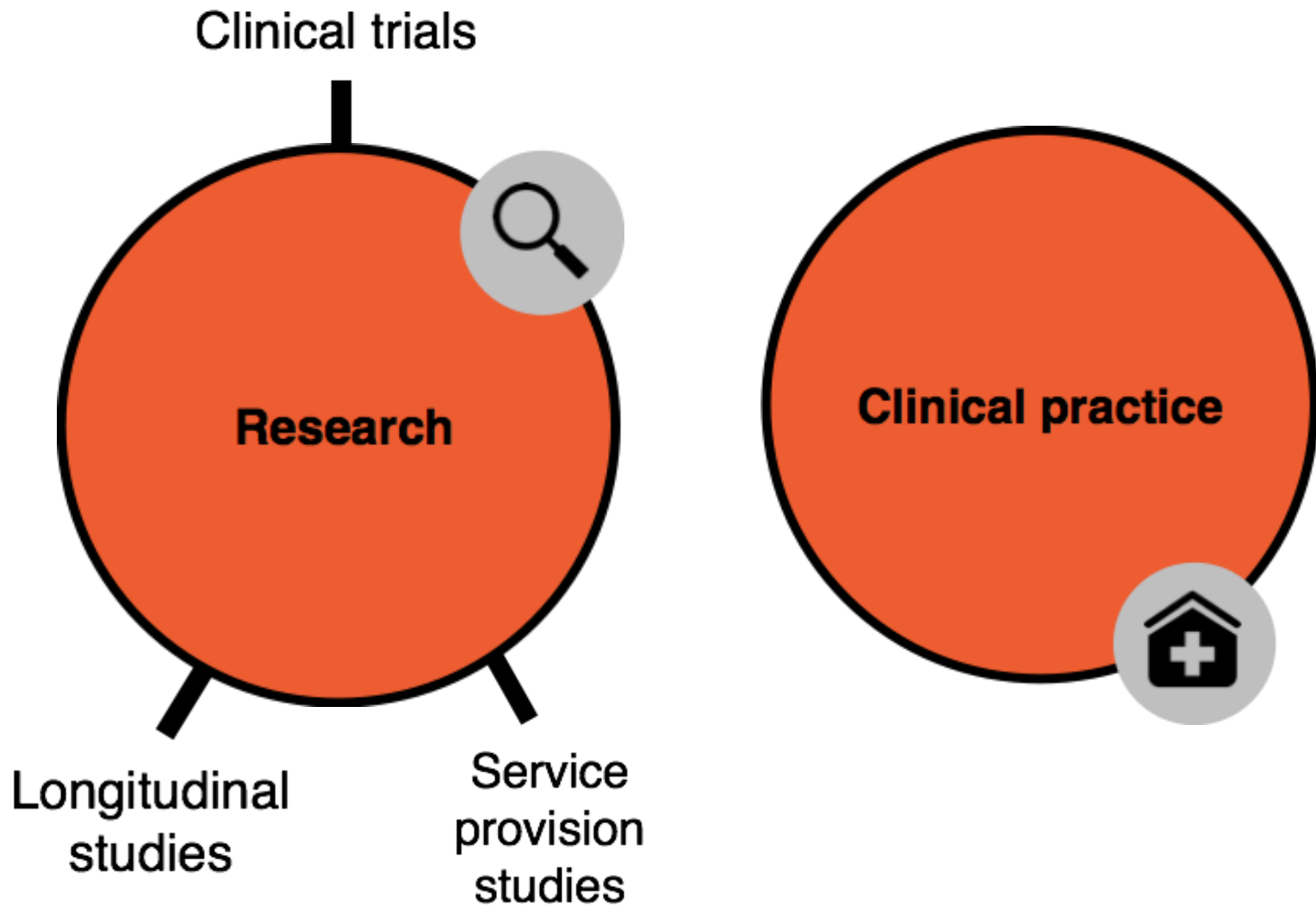
- **Questionnaire:** initial questionnaire item pool includes 40 items generated from the:
 - La Trobe Communication Questionnaire (LCQ)
 - Speech pathology-specific questionnaire for persons with Multiple Sclerosis (SMS)
 - The literature describing communication and language in MS
- **Participants:**
 - Recruitment: internationally through professional MS bodies, neurology clinics, and MS support groups.
 - Inclusion criteria: (1) over 18 years, (2) have MS, and (3) be English-speaking.
 - Respondents: 215 PwMS responded to the questionnaire.

<https://redcap.sydney.edu.au/surveys/?s=PCR8ND4T9D>

Analysis

1. **Principal component analysis:** to explore variability in the 40-items and to cluster related items into homogenous subscales.
2. **Internal consistency:** to evaluate how correlated items are in each subscale.
3. **Test-retest reliability:** to determine if scores are consistent over time.
4. **Criterion validity:** to correlate the tool with an established PROM: the communication participation item bank (CPIB).
5. **Floor and ceiling effects**

Implications



Results

Communication and Language Assessment questionnaire for persons with **M**ultiple **S**clerosis (CLAMS)

Study 3:

Solving the puzzle: language impairment in MS and the complex interplay of factors
(A multi-pronged cross-sectional study)

Aims

1

To determine whether language impairment in MS is due to impaired general cognitive skills (e.g. attention, working memory) and/or impaired language-specific skills (e.g. word meaning, speech sounds).

2

To identify how language symptoms in MS are associated with neuropathology (e.g. lesion size, lesion location, whole brain volume).

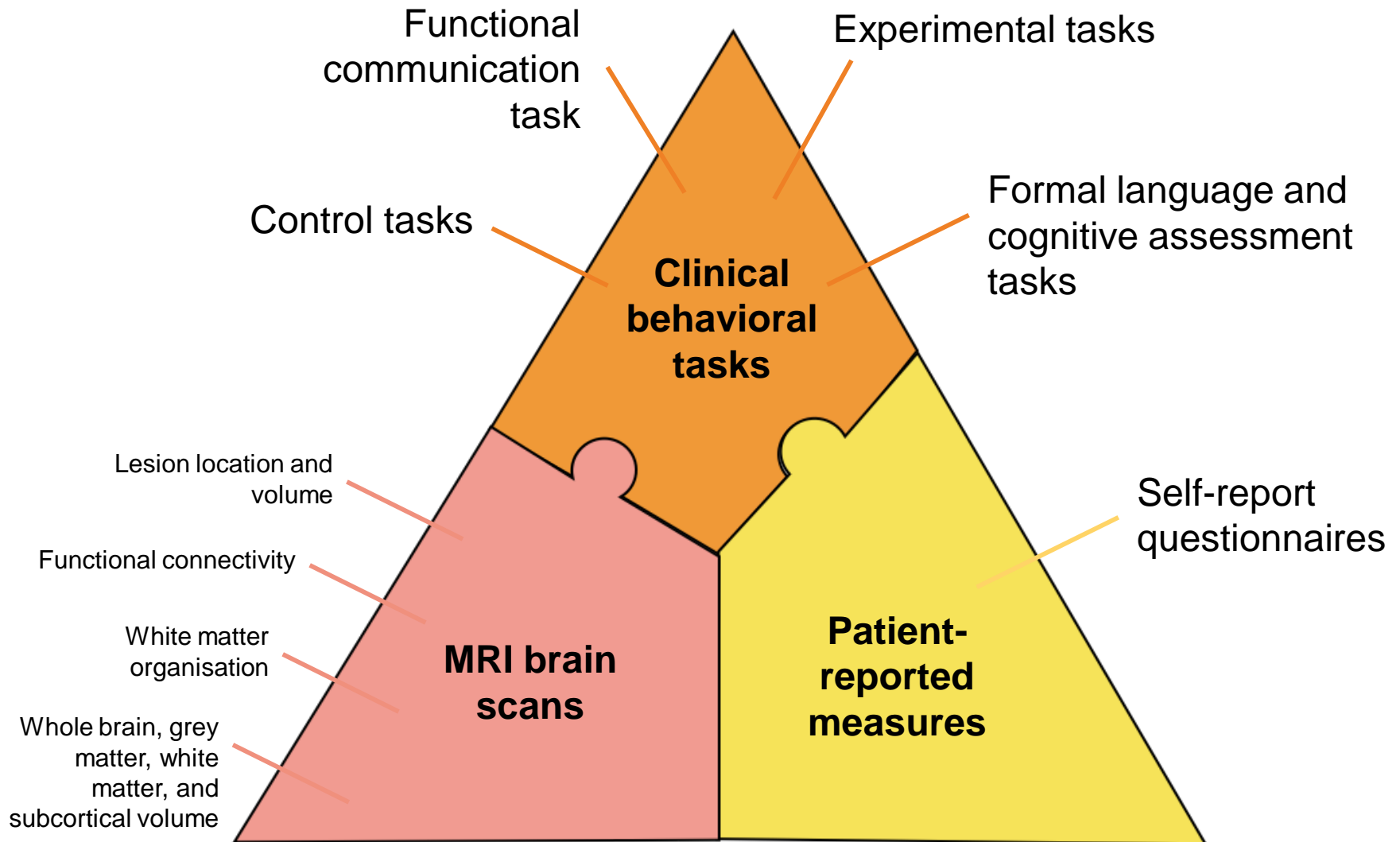
3

To investigate the association between language tasks and self-reported questionnaires: HRQoL, depression, communication-related participation, social support networks, and employment status.

4

To (a) identify characteristics of spoken discourse in MS different from healthy matched controls and (b) whether linguistic deficits in spoken discourse are related to specific brain neuropathology patterns.

Methods



Participants

Patients with MS:

- Westmead Hospital
- MS clinic run by Prof. Steve Vucic

Controls:

- Family members of patients with MS
- Community volunteers

Analysis

Purpose	Method of analysis
To analyse neuropathology on MRI brain scans	Voxel based morphometry (VBM) using Functional MRI of the Brain Software library (FSL)
To explore differences between groups (i.e. participants with MS and controls) (e.g., demographic, clinical, and MRI variables)	Parametric and non-parametric statistical tests
<p>To determine the relative contribution of different predictor variables on the prevalence and severity of language impairment</p> <ul style="list-style-type: none">• Demographic variables (e.g., age, sex)• Clinical variables (e.g., disease duration, age at time of diagnosis, MS subtype)• MRI neuropathology variables (e.g., brain atrophy, lesion volume)	Multivariate analysis (logistic regression)

Results

To come...

References

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Questions