A Matter of Memory

Syntax Comprehension in Mild Cognitive Impairment

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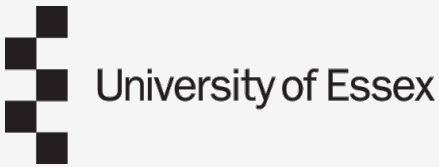

Contents

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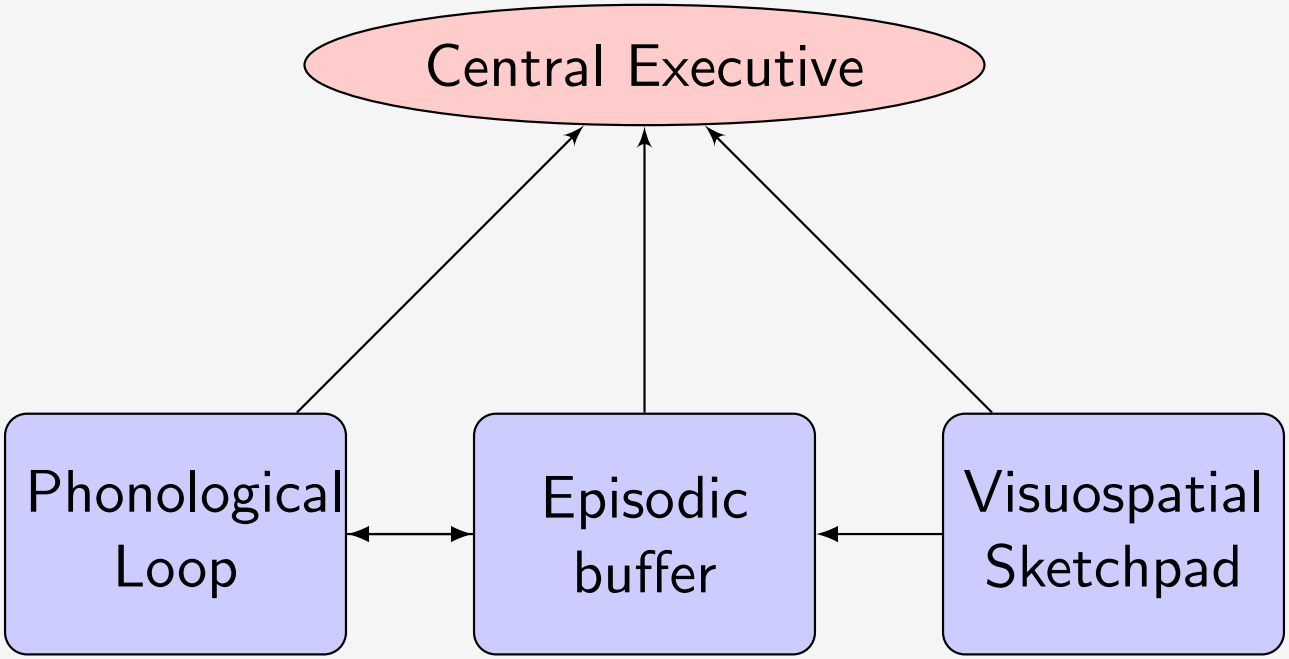
    $\rightarrow$ if so, how come?
- To investigate, we must look at memory...

Working Memory and Language

- Baddeley's (1992) model of WM



Working Memory and Language

Examples

The PhD student —— that was laughed at by his supervisor started crying.

The man —— that I saw walking around Colchester town centre last week at the Lion Walk shopping centre shouted at me.

WM Limitations

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- Dementia patients have notoriously impaired memory!

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    - Limitations on sentence-picture matching task?

Later AD/MCI Work

In-depth syntax studies of MCI do not exist (Jokel et al., 2019). However, some studies include a syntactic component and much can be derived from AD studies:

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- AND: Mueller et al. (2018) found MCIs differ in **use** of syntax opposed to HCs.
- Lambon Ralph et al. (2003): Lament heterogeneity of MCI group. MCIs performed well on TROG despite clear deficits in WM.

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→ This is what my three experiments aim to answer!

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The butcher shoots the nurse

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Who did I meet?

- NP1: the friend; or NP2: the singer. People with low WM spans may attach more to NP2 (Swets et al., 2007)
- Does that make sense? NP1 may be encoded earlier and thus better retained!
- A clear case where MCI patients can contribute to processing theories.

Sentence Disambiguation (2)

Target:

The police arrested the friend of the singer that I met

Non-interfering load:

stone | bird | map

Interfering load:

performer | cop | prison

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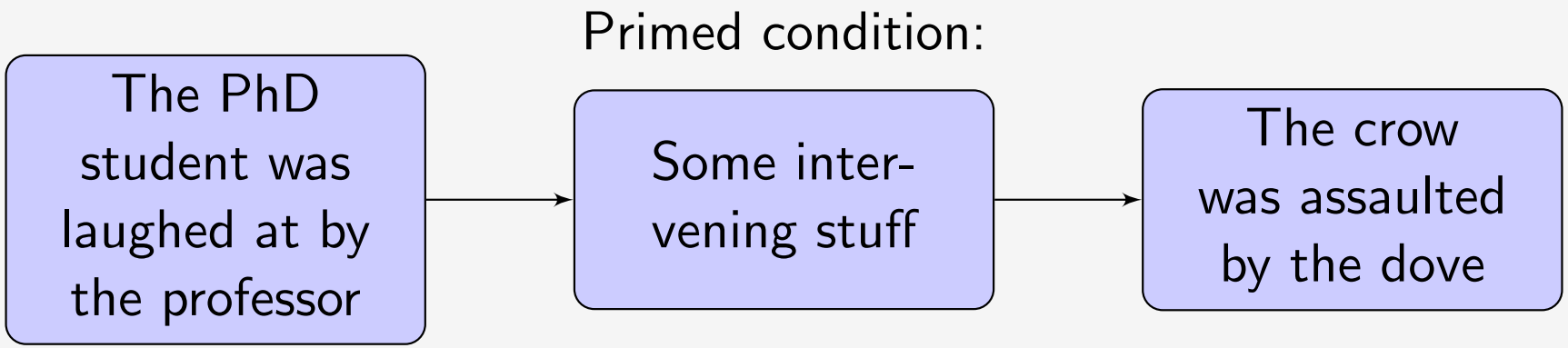

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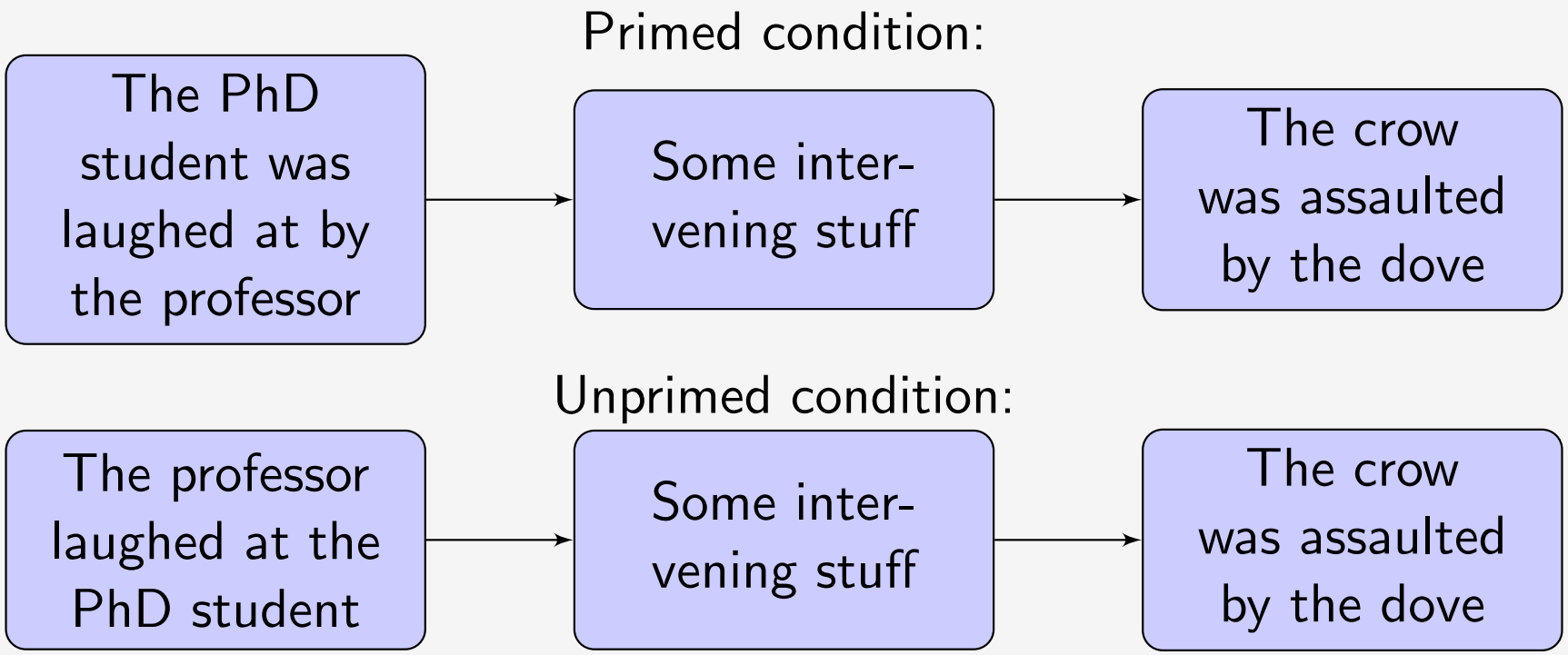

Priming (2)

But how does priming work? How could it be impaired?

- Priming may result from short-term increased activation of structural representations (Tooley & Traxler, 2018).
- OR: priming could be a type of implicit learning (Chang et al., 2012).
- Priming does not rely on WM, so if syntax is unimpaired, activation should be normal.

NHS Approval

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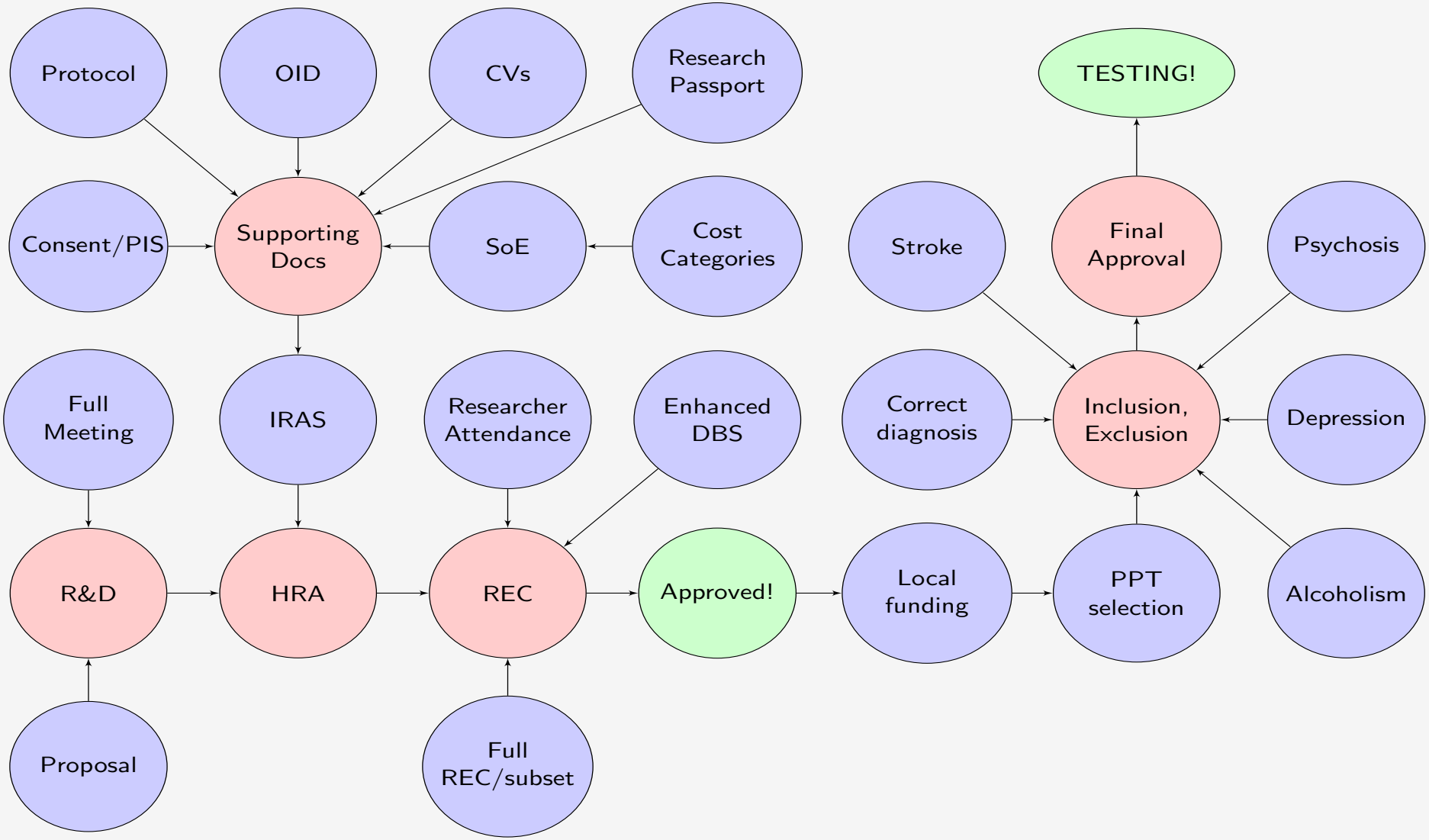

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- In all seriousness, selection is a highly important issue.
- Starting with Whitaker (1976), several papers do not control accurately.
- So: 1) rely on clinicians' knowledge; 2) age- and edu-match properly.
- "Ruthlessly" exclude confounding conditions.

Hypotheses

- SP-Matching
  - Syntax impaired? $\rightarrow$ error patterns

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- SP-Matching
  - Syntax impaired? $\rightarrow$ error patterns
- Sentence Disambiguation
  - WM capacity/quality limits may impact attachment
  - NP2 could be preferred $\rightarrow$ or perhaps NP1 (encoding?)
  - Testing the quality of WM operations with interference
- Priming.
  - Priming does not seem to rely on impaired parts of WM
  - If priming is typical, then perhaps syntax really is not impaired?

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- Research on chronically understudied clinical group
- Potential impact on linguistics, clinical diagnostics, processing models
- Methodological/selectional hurdles (not to mention HRA/REC approval)

Further Reading

- Baddeley, A. (1992). Working memory. *Science*, 255(5044), 556-559.
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