

# Why did the cat get up the tree?

## What picture descriptions can tell us about conceptualisation deficits in aphasia.

Inga Hameister<sup>1,2</sup> | Lyndsey Nickels<sup>1</sup>

1| ARC Centre of Excellence in Cognition and its Disorders, Department of Cognitive Science, Macquarie University, Sydney, Australia  
2| International Doctorate of Experimental Approaches to Language and Brain (IDEALAB, Universities of Trento (IT), Groningen (NL), Potsdam (DE), Newcastle (UK) and Macquarie University(AU))

inga.hameister@students.mq.edu.au



### BACKGROUND

- Thinking and speaking are **highly interlinked** processes (e.g., Slobin, 1996; Dipper, Black, & Bryan, 2005)
- Conceptualisation** = transforming general thought about an event into a form that can be verbally expressed (Levelt, 1989) by e.g.:
  - Selecting information
  - Ordering information
- Case studies on **conceptualisation deficits** in people with aphasia (PWA) report: difficulties in **selecting** the most important **information** and **assigning it to foreground & background** (Marshall, 2009; Cairns, 2006)

### AIM

- To investigate the **prevalence of conceptualisation deficits in PWA** by identifying possible key symptoms in a picture description

### WORKING HYPOTHESES

- Compared to healthy controls PWA with conceptualisation difficulties will produce...
  - Fewer main concepts**
  - Fewer inferences**
  - A different concept order**

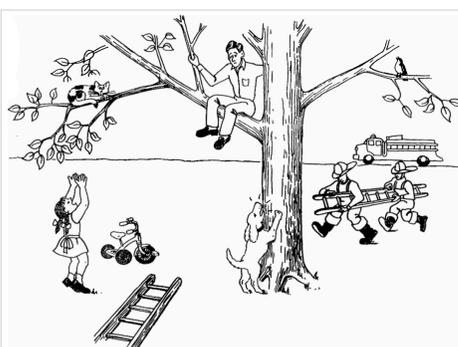
### METHODS

#### Participants:

- 50 healthy participants** (mean age: 72;8 ± 5;9, 21♀)
- 50 PWA** (mean age: 69;3 ± 11;4, 25♀)
  - Randomly selected from the AphasiaBank database (MacWhinney, Fromm, Forbes, & Holland, 2011)
  - Severity (Western Aphasia Battery): **3x severe, 28x moderate, 19x mild** impairments
  - Majority of PWA classified with either **Broca's aphasia** (38%), **conduction aphasia** (22%) or an **anomic variant** of aphasia (30%)

#### Concept Analysis:

- Analysis of "Cat Rescue" picture descriptions
- Identification of:
  - 25 relevant** concepts (produced by ≥ 10% of controls)
  - 10 main** concepts (produced by ≥ 60% of controls)
- Analysis of:** number of main concepts, order of concepts, number of inferences



#	Main concepts
1	The man climbed/ is in/ is stuck in the tree
2	The man wants to get the cat [*motivation to climb the tree]
3	Any mention of the girl [*concerned/ playing/ wants the cat back]
4	The cat climbed/ is in/ is stuck in the tree
5	The ladder was lost
6	Any mention of the dog [*comes/ barks/ is worried]
7	The fire brigade comes
8	The fire brigade rescues/ helps them
9	The fire brigade brings a ladder
10	Someone called the fire brigade

Figure 1: Stimulus picture "Cat Rescue" (Nicholas & Brookshire, 1993) & the identified main concepts

### RESULTS

#### Number of Main Concepts:

- 94% of controls produced **7/10 main concepts**
- 25/50 PWA** produced **significantly fewer** main concepts than controls ( $p < .05$ , Crawford-Howell)
- 8 main concepts** produced by significantly more controls than PWA

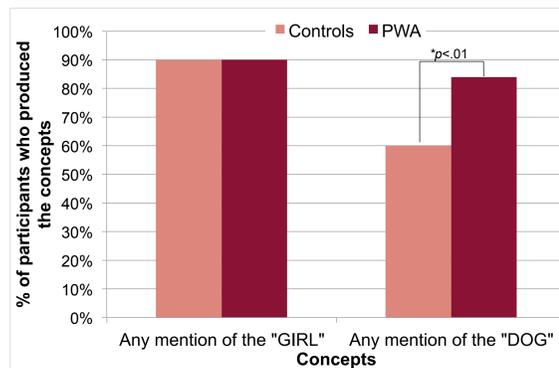


Figure 2: Concepts that were produced by the same number of controls and PWA ("Any mention of the "GIRL") or by more PWA than controls ("Any mention of the "DOG")

#### Number of Inferences:

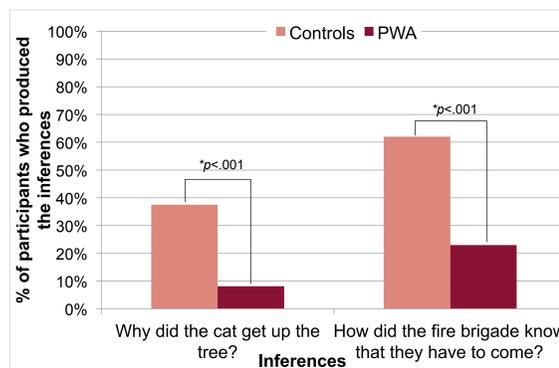


Figure 3: Percentage of participants who produced a main concept about the "CAT" and/or the "FIRE BRIGADE" and made an inference about these concepts

#### Order of Main Concepts:

- Typical beginning** of the picture description



Figure 4: Entities that were mentioned within the first 3 concepts in the majority of healthy controls' picture descriptions

- Order produced by **84% of all controls** but only **52% of all PWA** who produced a concept about the "CAT", "GIRL" and "MAN":

### DISCUSSION

- Small number of main concepts suggest **conceptualisation difficulties** in some PWA
  - High number of PWA produced "DOG" concept → Possible **effect of frequency** on lexical selection influencing concept production
- Fewer inferences and different concept order suggest **difficulties in identifying relationships** between individual concepts &/or **foregrounding concepts** (e.g., Cairns, 2006)
- Causal relation** between found symptoms and conceptualisation deficits will be **further investigated**