

Why did the cat get up the tree? What picture descriptions can tell us about conceptualisation deficits in aphasia.

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BACKGROUND

- Thinking and speaking are **highly interlinked** processes (e.g., Slobin, 1996; Dipper, Black, & Bryan, 2005)
- **Conceptualisation** = transforming general thought about an event in to a form that can be verbally expressed (Levelt, 1989) by e.g.: 1. Selecting information

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

2. 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...
 - **1. Fewer main concepts**
 - 2. Fewer inferences
 - **3.** A different concept order

METHODS



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:



- Equal numbers of PWA and controls produced "GIRL" concept
- "DOG" concept was produced by significantly more PWA than controls
- PWA make significantly fewer inferences about the descriptions they produce than controls

Example:

significantly fewer PWA who mentioned the "CAT" & "FIRE BRI-GADE" concepts, made an inference about them

Participants:

- **50 healthy participants** (mean age: 72;8 \pm 5;9, 21 $^{\circ}$)
- **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 $\geq 10\%$ of controls)
 - 10 **main** concepts (produced by $\ge 60\%$ of controls) 2.
- **Analysis of:** number of main concepts, order of concepts, number of inferences Main concepts The man climbed/ is in/ is stuck in the tree The man wants to get the cat [*motivation to climb the tree] Any mention of the girl [*concerned/ playing/ wants the cat back] The cat climbed/ is in/ is stuck in the tree 5 The ladder was lost Any mention of the dog [*comes/ barks/ is worried] The fire brigade comes 8 The fire brigade rescues/ helps them 9 The fire brigade brings a ladder 10 Someone called the fire brigade

Why did the cat get up the How did the fire brigade know Inferences that they have to come? tree?

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



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

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

References: Cairns, D. (2006). Processing Events: Investigating Event Conceptualisation in Aphasia. (Doctor of Philosophy), City University London, London, London, I Dipper, L. T., Black, M., & Bryan, K. L. (2005). Thinking for speaking and thinking for listening: The interaction of thought and language in typical and non-fluent comprehension and production. Language and Cognitive Processes, 20(3), 417-441. | Levelt, W. J. M. (1989). Speaking : from intention to articulation. Cambridge, Massachusetts.: MIT Press. | Marshall, J. (2009). Framing ideas in aphasia: the need for thinking therapy. International Journal of Language Communication Disorder, 44(1), 1-14. | Slobin, D. I. (1996). From "Thought and Language" to "Thinking for Speaking". In J. J. Gumperz & S. C. Levinson (Eds.), Rethinking Linguistic Relativity (pp. 70 - 96). Cambridge: Cambridge University Press. | MacWhinney, B., Fromm, D., Forbes, M., & Holland, A. (2011). AphasiaBank: Methods for studying discourse. Aphasiology, 25(11), 1286-1307.







