

Theory of Mind & Language

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Today

- Discuss what is language
- Review the role language plays in theory of mind
- Discuss empirical studies
- Group discussion

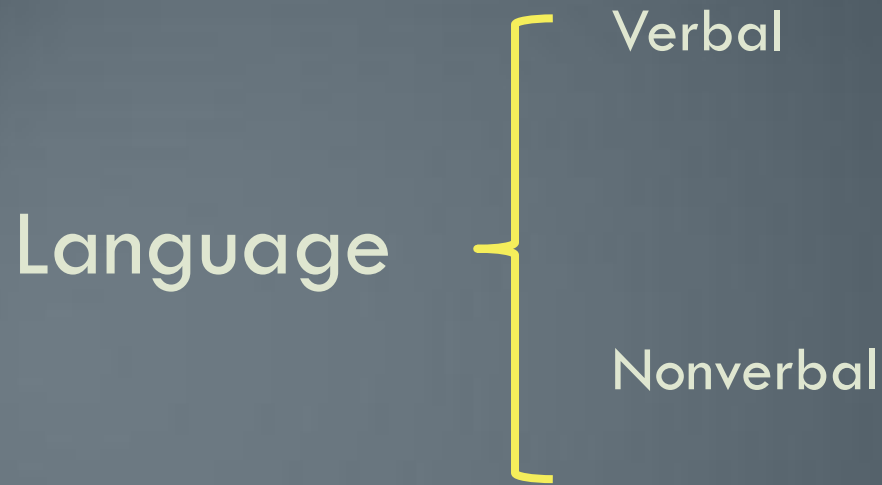
Readings for this week:

- de Villiers, J. G. (2008). The interface of language and theory of mind, *117*(11), 1858-1878.
- Newton, A. M., & de Villiers, J. G. (2007). Thinking While Talking, *18*(7), 574-580.
- San Juan, V., & Astington, J. W. (2011). Bridging the gap between implicit and explicit understanding: How language development promotes the processing and representation of false belief. *The British Journal of Developmental Psychology*, *30*(Pt 1), 105-22.

What is language?

Semantic, syntactic and pragmatic abilities, internal to the child and also the external socio-linguistic environment in which development occurs.

(Astington & Baird, 2005)



ENHANCES the value of social interactions

HOW????

EFFICIENCY
ACCURACY

Could language be the key difference that makes social cognition in humans unique?



Same level of representation needed?

Implicit ToM

: when you do not actively try to learn or even report that you have learned it (automatic)

Learning through observation:

- ✓ About actions
- ✓ About objects
- ✓ About places
- ✓ About agents

(Frith & Frith, 2012)

Explicit ToM

: Able to think and reflect about what you have learned (conscious)

- ✓ Elicited response selection
- ✓ Formation of metarepresentational understanding

(de Villiers, 2008)

?? CAUSAL role of language in False belief understanding???

Correlational findings: between semantic, syntactic and pragmatic aspects of language and explicit FB reasoning.

CORRELATION \neq CAUSATION

So, we know there is a CORRELATIONAL relationship between language and ToM but is there a CAUSAL one?

Where can the evidence be found?

Evidence for CAUSAL relationship...

LONGITUDINAL STUDIES:

Astington & Jenkins, 1999

De Villiers & Pyers, 2002

Slade & Ruffman, 2005 } Bi-directional

TRAINING STUDIES:

Lohmann & Tomasello, 2003 }

Language → FB

META-ANALYSIS:

Milligan, Astington & Dack, 2007

What direction is the relationship?

We have talked about language WITHIN a child but what about the language EXTERNAL to the child?

= SOCIAL LINGUISTIC **ENVIRONMENT**

MOTHER'S use of mental state terms (Ruffman, Slade & Crowe, 2002)

SO

HOW

DOES LANGUAGE INFLUENCE ToM?

Evidence of this?

Medium for representing thoughts

1. Complex language affects FB reasoning by allowing representation of false contents of others minds. The complement forms: functionality of linguistic recursions.

Mental state verbs fall into a special class of verbs in that they take a kind of grammatical argument structure called a **complement**.



Complements...

Complements can be irrealis referring to states not yet achieved or hypothetical, as in:

- Bill said he would come tomorrow.
- Frieda wanted to see the carnival.

OR

realis (usually clauses with an overt present or past tense) and refer to states of affairs that are true or false.

- Marge said that her chair collapsed.
- Marge said that her chair giggled.

Ruffman, Garnham & Rideout, 2001

“I wonder...”

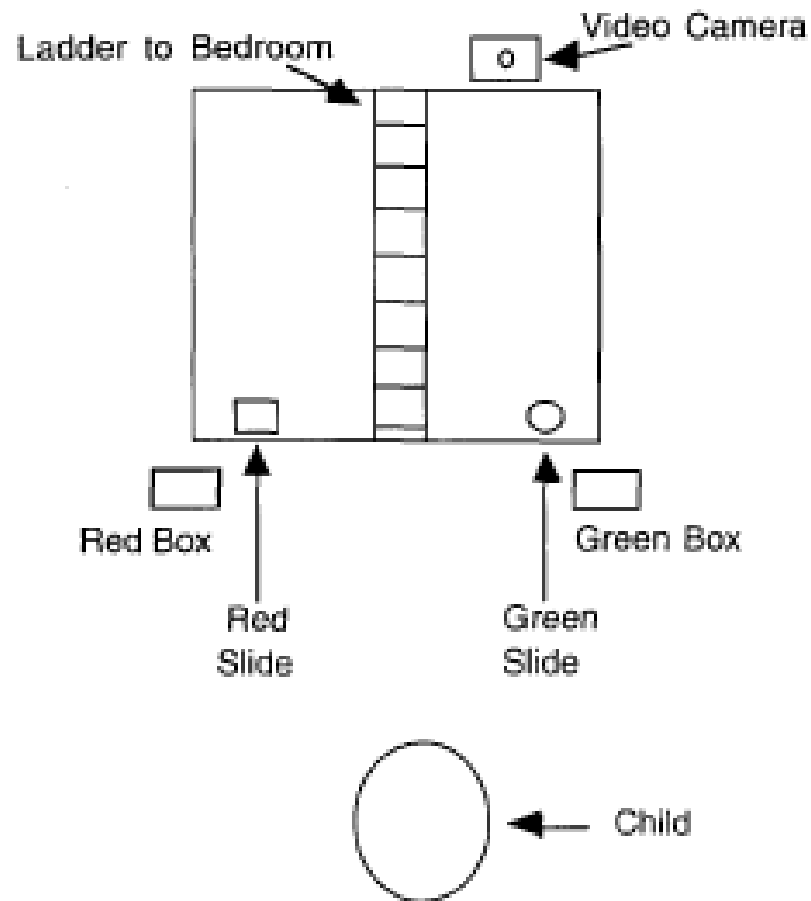


Figure 1. Apparatus used for Desire-Behavior and control tasks.

Con't

- 2. Language provides the child with abstract concepts: involvement in control mechanisms in EF (inhibit prepotent responses). Having verbal LABELS help keep two things in mind at once and help remember instructions.

“Want” precedes learning of ‘think’ and ‘believe’ (develops in 3rd year of life)

I/You/he/she/here/there = helps switch reference

Look/see/touch- sensory words

3. Assists in representational redescription of knowledge (Karmiloff-Smith, 1992) Implicit knowledge is redescribed into linguistic symbols to make it available for explicit decision-making (Bloom, & Keil, 2001). Allows *reflective* thinking.

4. Universal medium for combining and integrating the outputs of distinct modules in the mind (Spelke, 2003). For example:

“to the left of the blue wall”

Engagement of language in cross-modular thinking.

Other findings:

Kobayashi et al, 2007

Some aspects of language (e.g. grammar) may be independent of ToM but other aspects (e.g. pragmatics and reading communicative intentions) may profoundly affect ToM throughout development.

Let's revisit bilingualism:

Pros:

- Executive control- constant monitoring of the target language in order to minimise interference from the competing language. Strengthens executive control system
- Better performance in FB tasks (precocious success- as young as 3, Goetz, 2003)

Cons:

- Smaller vocabulary than monolingual counterpart
- Underperform in word retrieval tasks (partly due to interference from other language)



hola - hello
por favor - please
gracias - thanks
friend - amigo
how are you - cómo está

Bilingual children need to develop an early sociolinguistic sensitivity to the language knowledge of their interlocutors because they must use their language accordingly.



- Pat Kuhl (TED Talks) from approx 5:33

http://www.ted.com/talks/patricia_kuhl_the_linguistic_genius_of_babies.html

http://video.ted.com/talk/podcast/2010X/None/PatriciaKuhl_2010X.mp4

DISCUSS

Now how about INNER language?

What is it?

Do we have it?

Do we use it?

When do we use it?

How do we test if someone is using it?



What is inner speech?

Silent, verbal self-talk that goes on in our heads.

Charles Fernyhough distinguishes between:

MONOLOGIC



DIALOGIC

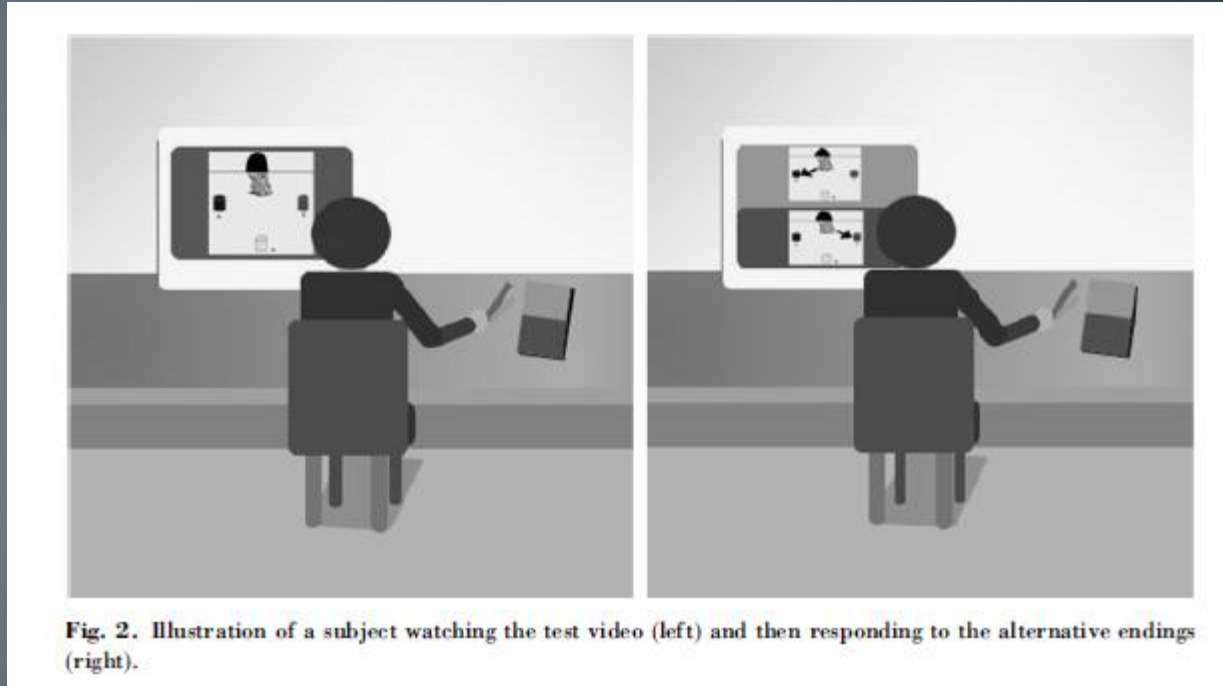
forms of inner dialogue

Inner speech and language

Articulatory Suppression: how?



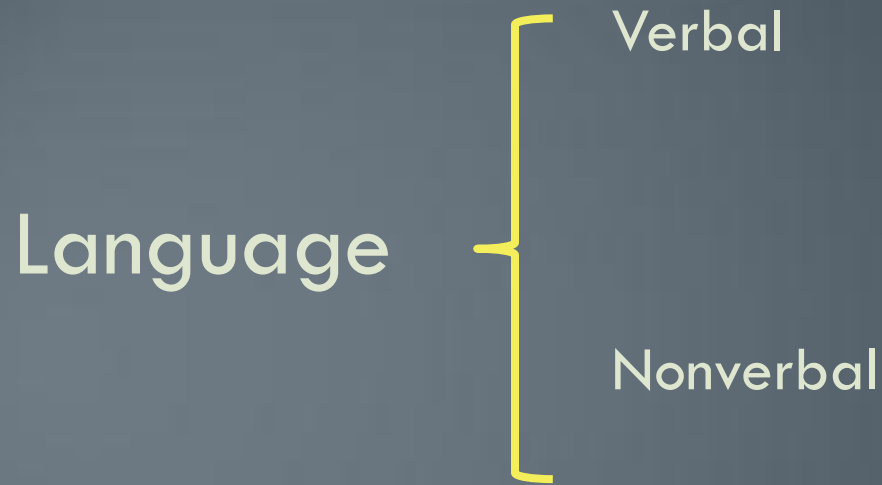
Newton & de Villiers (2007)



Activity



Topic: describe your favourite food without actually naming it.



ENHANCES the value of social interactions

HOW????

EFFICIENCY
ACCURACY

During a productive discourse, speakers will automatically tend to *align their posture, their speech rate, their choice of words, and their syntactic forms* (Garrod & Pickering 2009). This alignment enhances communication (e.g., Adank et al. 2010).

(From Frith & Frith, 2012, p. 295)

Hearing impairment

If language is so important, what does it mean for people with hearing impairment?



Hearing impaired children born to native signing parents (deaf children with deaf parents)

- : no language delay (matched with TD hearing children)
- : matched with hearing children on ToM tasks (no delays in FB acquisition)

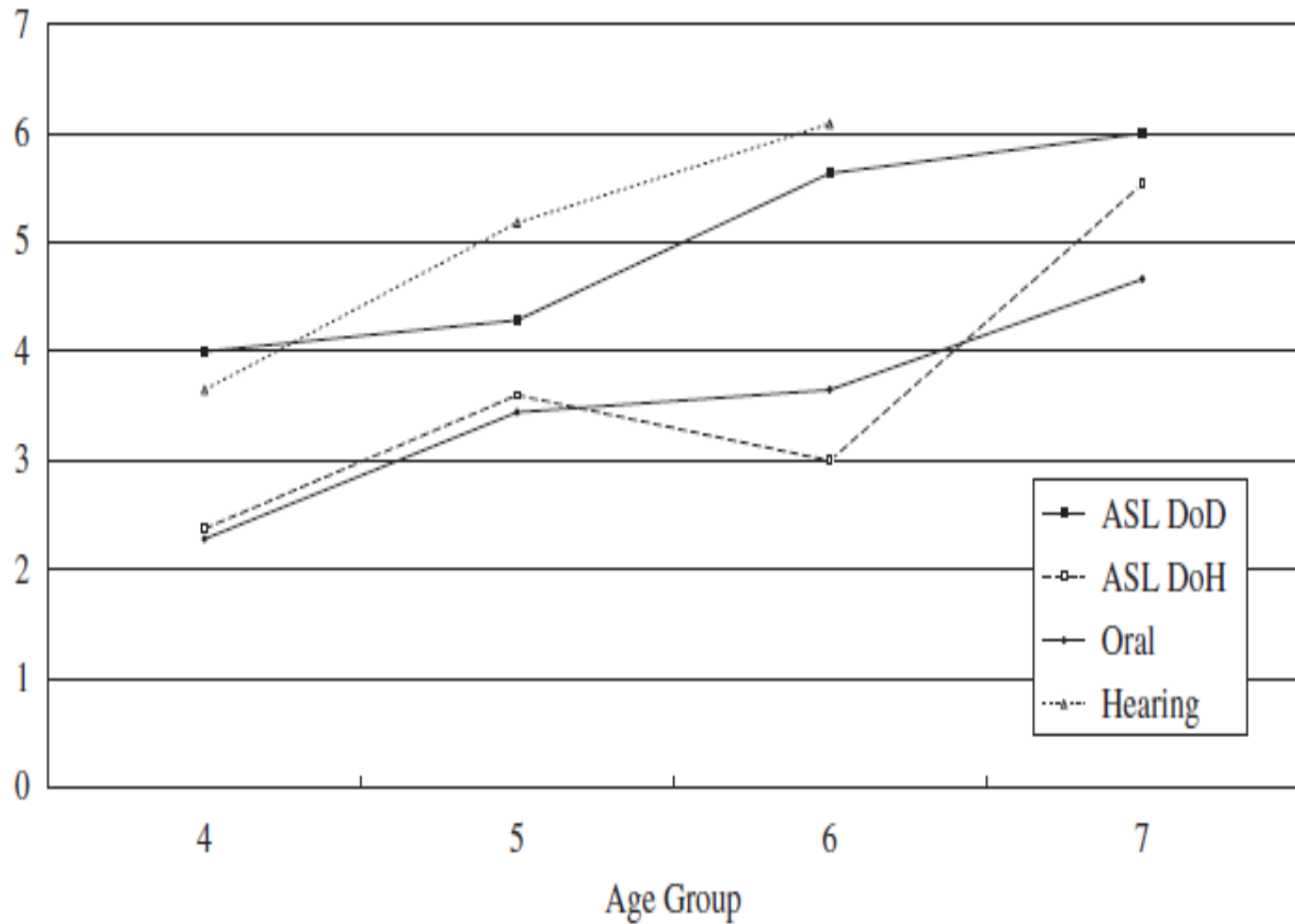


Hearing impaired children born to non-native signing parents (deaf children with hearing parents)

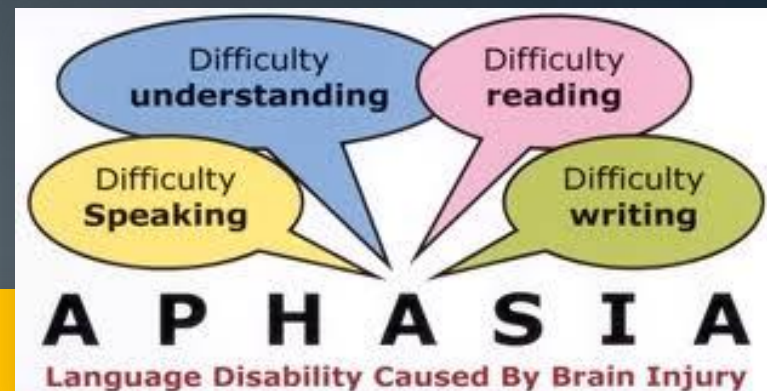
- : language delay
- : delayed in understanding about beliefs and knowledge states



Language and Theory of Mind



Or people who suffer from aphasia?

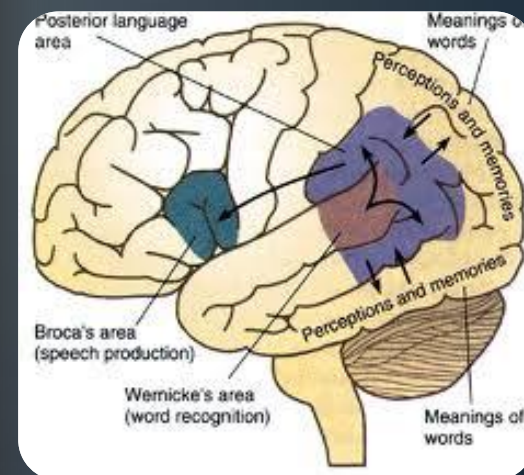


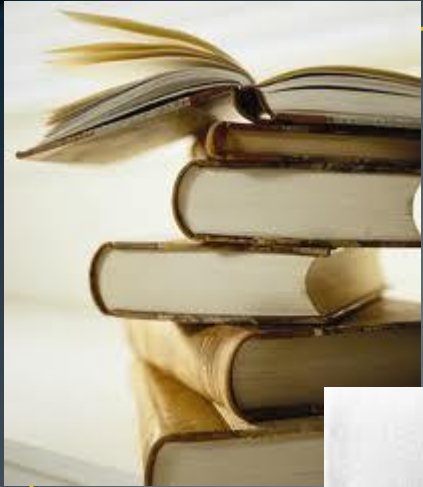
What is Aphasia?

Aphasia means problems with **communication** e.g. speaking, understanding, reading and/or writing

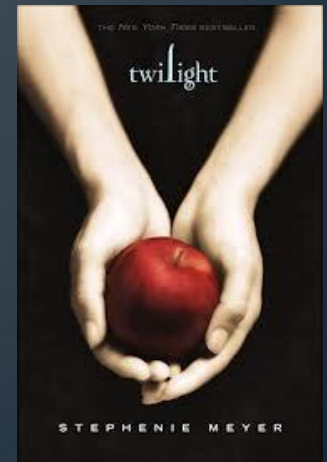
People with Aphasia can have:

- Difficulties getting their message across (some people lose their **speech** completely)
- Problems understanding everything that is being said to them
- Difficulties **reading** text e.g. books, newspapers, recipes or shopping lists
- Problems **spelling** and **writing** things they could easily **write** before
- Problems with **numbers** or handling **money**





WHAT ABOUT
READING? Does reading
add value to our
development of ToM?





Summary

Language components and its contributions:

- verbal
- non-verbal
- silent, inner self-talk
- reading
- bilingualism

Language is crucial for ToM – how?

What about people who can't see or hear and those with brain damage? How does this affect their ToM?