# Executive function and language development: a reciprocal relationship

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# Elements of executive functioning

**Working memory**

**Inhibitory control**

**Flexible thinking**

# A reciprocal relationship

Language ⟷ Executive function skills
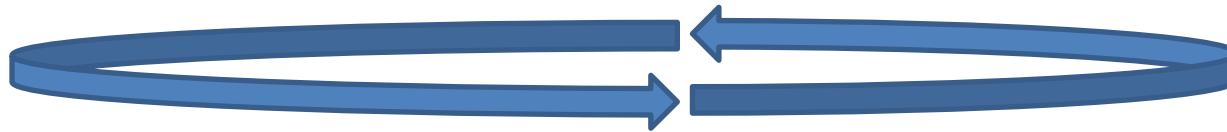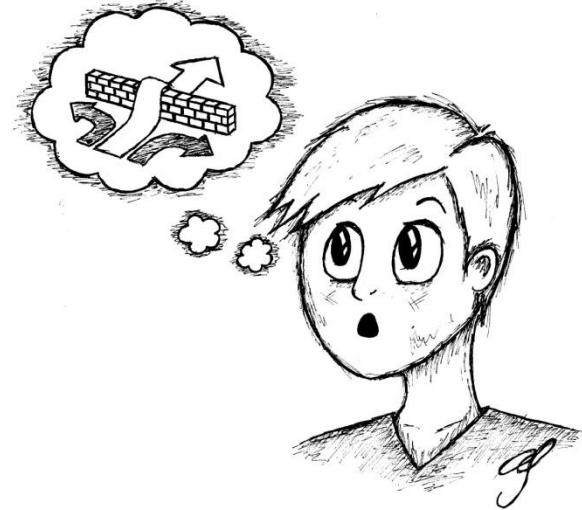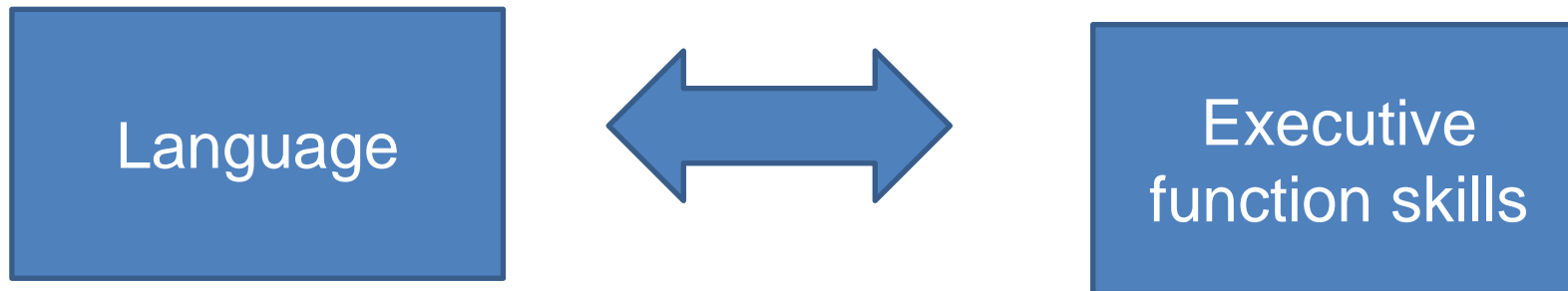
- Metacognitive strategies (self regulation, monitoring, planning and executing tasks) are mediated by language.

- Private speech – internalised as children age

- Social context and academic experiences help shape metacognitive strategies – largely based on language development and use.

- Joint attention skills are crucial for language development

- Preschool years – children use EF skills for storytelling and expressive language

- Reliance on self-talk strategies for tasks involving problem solving

- Reciprocal relationship between EF and language for tasks involving verbal reasoning, making inferences and discourse

- Reflecting on language (metalinguistics) requires EF and facilitates language.

# Language

- Plays a central role in mental development.

- Is one of four major principles of Vygotskian paradigm.

- Is a major cultural tool that enables us to think logically and to learn new behaviours.

- Facilitates the conversion of external experience into internal representations of that experience.

- Influences not just content but also impacts thinking and the acquisition of new knowledge.
(Bodrova & Leong, 2007)

# Speech and thinking

- Initially language communicates wants and needs to others

- Thinking and speech merge between 2 and 3 – thinking acquires a verbal basis and speech becomes intellectual because it is used in thinking and is employed for purposes other than communication

(Bodrova & Leong, 2007)

# Social language

# Social language

- Children also must learn the social rules of communicating— being polite, speaking so the listener understands, and turn-taking; social rules often vary from culture to culture and from one community to another (Trawick-Smith, 2006).

- EF links - inhibitory control, memory, shifting attention

# Listening (Receptive Language)

Requires

1. Hearing

2. Awareness of others

3. Self-control

4. Processing ability

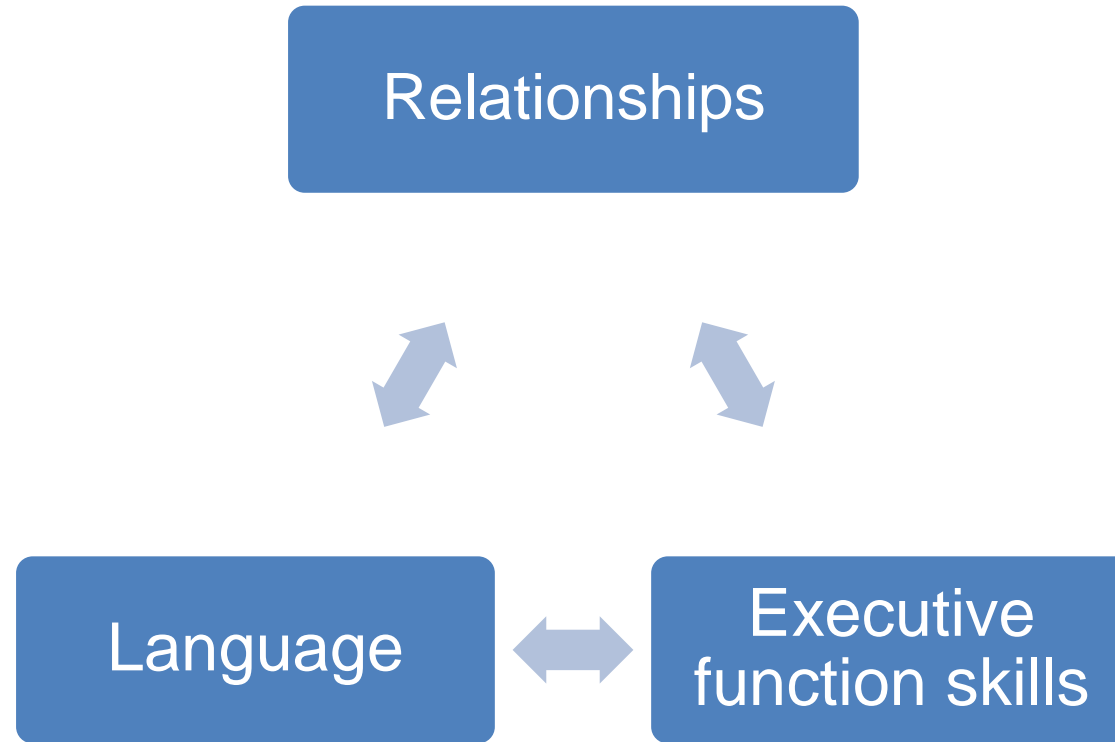5. Sustained focus

6. Confidence and language to respond

   Connections with relationships, inhibitory control, cognitive flexibility, working memory.

# One more step:

Relationships

Language ↔ Executive function skills

# The role of relationships

- Language progress and emergent-literacy skills are predicted by the sheer amount of verbal **interaction** (in the home) (Berk 2001, p62)

- Language development is essential for brain development Lnt and is achieved through **social interactions** (Nagel, 2012, p134)

- "Environments that foster executive functioning are characterized by **adult child relationships**…that guide children from complete dependence on adult support to gradual assumption of the "executive" role for themselves." (Centre for the Developing Child, 2011)

# EF skills and language in the early education setting – what's happening?

| Experiences | Language | Executive function | Relationships | Possibilities/ next steps |
|---|---|---|---|---|
| Play | | | | |
| Transitions | | | | |
| Adult initiated | | | | |
| Child's favourite activity | | | | |
| Group times | | | | |

# Building language and executive function

- Make believe play

- Oral language – repeatedly listening to and participating in narrative conversations > develop mental scripts for the organisation of narratives (Berk, 2001, p.62)

- Dialogic reading – integrates the elaborative, narrative style of conversation (Berk, p.63)

- Encouraging private speech to regulate thinking

- Language based cognitive games – e.g. What is it?,  What's changed?

- **Storytelling**

# Storytelling

- Beneficial for language development and creativity

- Promotes the development of deliberate memory, logical thinking and self regulation

- When children retell or create new stories, they are not absolutely free in their choice of episodes – the story must make sense to others

- ie storytelling is similar to play – both lead children from spontaneous to deliberate behaviours                    (Bodrova & Leong, p155)

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