Cross-domain influences on early word and action learning

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Introduction

Word learning: new object + verbal label; often accompanied by actions (e.g., Matatyaho-Bullaro et al., 2014)

Action learning (e.g., tool use): new object + action; often accompanied by words (e.g., Elsner & Pfeifer, 2012);

Verbal cues can meddle with (Sciutti et al., 2016) or facilitate (Gampe & Daum, 2014) visual goal prediction

How does information from one domain (speech/action) influence processing of information in the other domain?

1. How does different verbal information before action demonstration influence the goal prediction of 14- and 24-month-olds in an eye tracking task?
2. Do infants prefer to associate objects with words or actions? And how does it relate to later language development?

Method

Stimuli & Design Study 1

Two objects: Teddy Car
Two actions: Shaking Pushing
Four object-action-pairings: Teddy-shake / Teddy-push Car-shake / Car-push

DV: Goal anticipation

Noun-Condition “Look, a Teddy/Car”
Verb-Condition “Look, shake/push the Teddy/Car”

14-month-olds and 24-month-olds

Planned: N = 20 per condition and age group

12-month-olds

N = 11

Word-object > action-object
18-month-olds > 12-month-olds

Prediction speed: Noun/Verb/Noun&Verb > Control
Noun&Verb > Noun > Verb

Stimuli & Design Study 2

Two objects: Blue Car
Two actions: Upwards Sideways
Four object-action-pairings: Blue-up / Blue-side Yellow-up / Yellow-side

DV: Gaze Behavior

Training: 8 trials of word-action-object triads
Test: Word-object vs action-object associations
Vocabulary Assessment: Elfra-1
Cognitive / Motor Development: Bayley Scale

Retention after one week

Discussion:

• Action-object association might not be strong in either of the studies
• Words as arbitrary sounds = arbitrary actions?
• Words + reference = goal-oriented actions?

Next steps:

• Adding a bell to the toys to elicit a sound effect during demonstration
• Using multi-step actions with a clear action-goal + action-effect
• Using highly familiar words instead of pseudo words
• Influence of action demonstration on word-object association

Results & Discussion

Study 1:

• Different Verbal cues do not seem to influence imitative behaviour in pilot studies
• A new paradigm with goal anticipation as dependent measure is used to further investigate the possible influence of verbal cues

Study 2:

• 12-month-olds show recognition only for word-object associations
• 18-month-olds? Retention? Correlation? Still to be analysed...

References