

March 9, 2010

WEEK 8: MORE EXPERIMENTS IN LANGUAGE DEVELOPMENT

REACTION TIME TASKS

- these are tasks which measure reaction times; how long it takes for a person to respond at a particular stimulus (milliseconds)
- they are mainly on-line tasks, meaning that they are acted out on a computer with the use of particular software designed to measure time between segments/elements of the task
- participants are usually asked to press a *Yes* or *No* button as soon as they see and/or hear a picture/word which is displayed on the screen

LEXICAL DECISION TASKS

- word/non-word decision
 - could be designed as an on-line reaction time task (*lexical decision reaction time task*)
 - participants have to decide whether what they see or hear is a word or not
 - words are presented in isolated instances (a) or in sentences (b)
- (a) table (b) The young woman had always wanted to work in a bank.
vanue **towpath**
daughter **money**
tasp **brogit**
coref
hunter

CATEGORY VERIFICATION TASKS

- word/non-word decision
- could be designed as an on-line reaction time task
- participants have to decide whether the statement they see/hear is True or False
 A canary is a bird → T / F
 The earth is a planet → T / F
- participants verify the category of the noun/verb in question

WORD ASSOCIATION TASKS

- could be designed as an on-line reaction time task
- participants are given one word; asked to say the first word that comes to their mind
- people typically tend to think in terms of *antonyms*, *synonyms* and *superordinates*

- also people tend to replace items of one category with elements of the same category
 - wet – dry → *antonym*
 - swift – fast → *synonym*
 - petal – flower
 - apple – fruit → *superordinate*
 - shoot – gun

GRAMMATICALITY JUDGEMENT TASKS

- it can be an on-line or off-line task
- the participants are asked to decide / judge whether a particular sentence or phrase is grammatically correct or not.
 - (A) The boy eats three cookie.
 - (B) The boy eats three cookies.
 Which one is correct? (A) / (B)

USE AND USE...

- arguably a suitable tool for second language learners and impaired populations
- but reaction time is probably not a good way to investigate children's knowledge
- possibly age-dependent as regards data value; great for processing speed and so on
- reaction time studies don't measure syntactic/semantic constraints in knowledge
- also, reaction time measures don't show whether sentences are unambiguous
- problem for statistical analysis underlying reaction time studies (groups, outliers...)

DISCRETE AND CONTINUOUS VARIABLES

- reaction time measures don't reveal what the specific analyses are subjects assign
- discrete variables: each response = instance of one of a limited set of values (e.g. TVJ)
- continuous variables: subjects' responses fall somewhere along a continuum (RT!)
- RT studies measure time but don't categorize responses into discrete classes

CONCRETE EXAMPLES

- *preferential looking paradigm*: dependent measure is gaze duration (Hirsh *et al.* 1995)
- 3-year-olds looked longer at matching display than non-matching one (conclusion)
- problem: if children lacked Principled B, both interpretations would be consistent
 - (1) Child: <sentence, {meaning₁, meaning₂}> / Adult: : <sentence, {meaning₁}>
- *cross-modal priming*: auditory sentence presentation, visual response display (Y/N)
- problem once more: children may allow interpretation excluded in adult grammar
- *closer look*: RT is problematic where linguistic competence is an issue but can be revealing regarding processing routines (tied to knowledge, child-adult equivalent)

Additional Reference

McKee, C. 1996. On-line methods. In McDaniel *et al.* (eds.), *Methods for Assessing Children's Syntax*, 189-208 (chap. 9).