

Construction of writing tasks

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Welcome

- on behalf of COST Action IS0703
„The European Research Network on Learning to Write Effectively“ (ERN-LWE)
- gratitude to the local organizers

Keystroke logging and eye tracking

- ... are methods
- ... are offers to answer questions
- ... record human action and behavior
- ... indicate psychological processes
- ... are modern and technical
- ... are discrete measures

Some methodological basics (I)

- The kinds of expectations
 - hypotheses about correlations
 - correlation/regression
 - contingency tables
 - path analyses
 - structural equation modelling
 - hypotheses about differences
 - statistical tests of significance
 - dependent or independent samples
 - hypotheses about changes
 - repeated measurement analysis

Some methodological basics (II)

- Two kinds of validity (intepretation of results)
 - internal validity
 - Do the observed results depend on the considered conditions and variables?
 - e.g. previous knowledge rather than experimental variation is responsible for the observed differences
 - randomization/parallelization/matching
 - external validity
 - Do the observed results generalize?
 - variables
 - sample
 - context
 - classroom research vs. laboratory research

Some methodological basics (II)

- Three kinds of variables (in causal designs)
 - independent variables
 - manipulation of characteristics
 - all other influential variables are held constant or controlled or randomized
 - minimum design: treatment yes/no (control group)
 - dependent variables
 - characteristics are measured
 - cause precedes effect (\neq correlation)
 - good operational indications for theoretical factors
 - covariates
 - relevant, but not manipulable variables
 - correction/adjustment of influences

Writing as language production

- high level processes (cognition)
 - idea/argument generation
 - information selection
 - linearization
 - considering audience demands
- medium level processes (cognition → language)
 - establishing coherence
 - vocabulary
- low level processes (language → verbal execution)
 - articulation/grapho-motoric execution
 - motor system (speech/handwriting/typing)
 - orthography
 - morpho-syntactic encoding

Different research interests

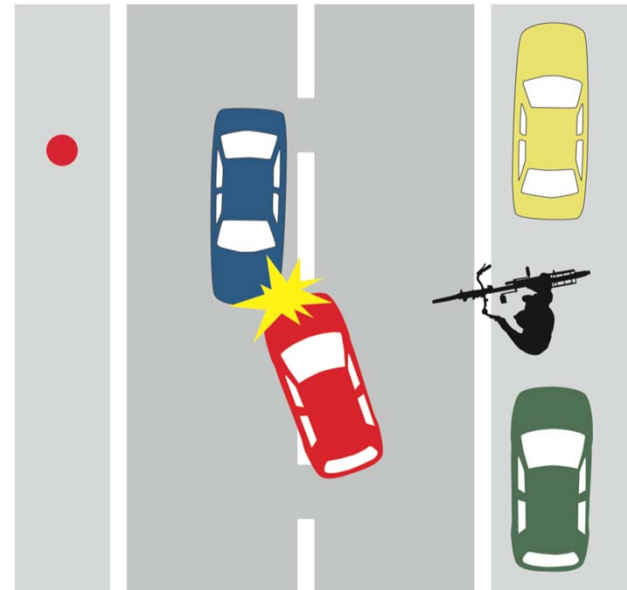
- **focus: text product**
 - product measures dependent on
 - personality/skill variables
 - task/context variables
 - person × context variables
- **focus: writing process**
 - process measures or indications
 - pauses/temporal progression analysis (e.g., bursts)
 - dual/triple tasks
 - meta-cognition
- **focus: strategy**
 - using resources
 - large-scale temporal progression
- **focus: writing skill**
 - typing speed/handwriting speed
 - correctness of writing
 - effectiveness of typing
 - navigation within software

Control of previous knowledge

- comparable preconditions
 - homogeneous events or situations
 - driver license test
 - wedding ceremony
 - christmas evening
 - room description
- induced knowledge (prompts)
 - verbal
 - renarration
 - summary
 - nonverbal
- (partially) irrelevant
 - copy tasks

Induced knowledge

- Report:
How did the accident occur?
- Argument:
Who is responsible for the accident?
- Eye tracking:
on-line vs. off-line inspection?



Induced knowledge

- Instruction:
How to cook pasta?



Copy tasks

- copying from memory
 - fluency measures
 - accuracy measures
 - e.g. Berninger's alphabet task
- copying from text
 - visual/grapho-motoric coordination
 - bio-mechanical constraints (early typewriting research)
 - position of original
 - visibility/legibility
 - strategic skills
 - formal constraints (allographic constancy, line constancy)

Sense and effectors during writing

- **hand(s)**
 - holding pen/using keyboard
 - using mouse?
- **eyes**
 - control of keyboard/hand movements
 - control of written traces (screen; sheet)
 - reading/inspecting materials/instructions/text
 - coordination
- **ears**
 - free
 - listening to instructions
 - listening to text
 - listening to secondary task presentation
- **vocal tract**
 - speech accompanying writing and planning
 - reaction to secondary task
 - thinking aloud upon prompt/interruption
- **legs/feet writing**
 - free
 - reaction to secondary task (e.g. central executive load)