

Analysis: Copy Task

Description	The copy task analysis provides a carefully designed set of perspectives to explore and characterize a participant's motoric keyboard interaction. The default copy task - already available for a set of languages - is designed in such a way that it is possible to adequately address these characteristics, and use them in further analyses (e.g., as a co-variate in variance analyses, or in regression and multilevel analyses).
Characteristics	<p>The copy task analysis addresses the following bigram characteristics:</p> <ul style="list-style-type: none"> Frequency Adjacency Repetition Hand combination
Bigram Frequency	<p>In the copy task word and sentence combinations are designed in such a way that it is possible to isolate - language specific - high and low frequency bigrams in the analysis. The frequency is based on large corpora (e.g., Subtlex or CELEX).</p> <ul style="list-style-type: none"> High frequency: 30 % highest bigram percentiles Low frequency: 50 % lowest bigram percentiles
Bigram adjacency	When two keys are next to each other on the keyboard (left, right, up, down) they are labelled as 'adjacent'. this labelling is keyboard specific. Therefore, the identification of the keyboard lay-out at the start of each session is crucial.
Repetitive bigrams	When a bigram is produced by pressing the same key twice, we consider it as a repetitive bigram.
Bigram hand combination	<p>To produce a bigram, the following hand combinations could be used, taking into account the order:</p> <ul style="list-style-type: none"> Left - Right hand combination Right - Left hand combination Left - Left hand combination Right - Right hand combination

Remark: The midzone of the keyboard is not included in the analysis, as - dependent on the typing expertise - the hand that is used to type these keys could vary (more often).



Reported measures

For every sub analysis within the copy task analysis, the following descriptive measures are reported:

- Count (targeted): number of characters typed that correspond to a character that was prompted in one of the respective copy task components
- Count (not targeted): number of characters typed that do not correspond to a character that was prompted in one of the respective copy task components
- Mean interkey interval (IKI): arithmetic mean (in milliseconds) of the targeted bigrams within the scope of the respective analyses
- Standard deviation: standard deviation of the targeted bigrams within the scope of the respective analyses
- Median: median (in milliseconds) of the targeted bigrams within the scope of the respective analyses
- Log mean trimmed: 95% log converted trimmed geometric mean of the targeted bigrams within the scope of the respective analyses
- Coefficient of variation: calculated coefficient of variation (based on mean and stdev) of the targeted bigrams within the scope of the respective analyses
- Characters per minute (CPM): calculation of (theoretical number of) characters per minute based on the mean IKI, viz. 60 000 (ms) / mean IKI (ms)
- Absolute CPM: time based calculation of (theoretical number of) characters per minute based on an extrapolation of the time on task within a copy task component (e.g. for the default sentence copy task, participants are required to type for 45 s. In that case the time between the first and the last key, i.e. approximation of 45 s is used to calculate a time based extrapolation of the CPM).

Session information

The copy task analysis starts with some meta information about the participant and the session. This report is based on the questions that are presented at the beginning and end of the copy session: participant information, hard and software used, handedness score, language and education.

Copytask Analysis	
Meta Information	
Logfile	Autred_Murthen_Dutch_30-03-2018.idfx
Log Creation	30/03/18 10:03:23.5
Log GUID	596568e6-5875-4c9c-9683-cac17ac6e38d
Logging Program Version Number	6.1.2.0
Analysis Creation	01/04/18 11:36:38
Analysis GUID	9bbc7119-230d-4565-915c-15135501861b
Analysis Program Version Number	7.1.0.53
Session Identification	
Participant	Autred_Murthen
Text Language	NL
Age	23
Gender	V (vrouw)
Keyboard	AZERTY
Handedness Score	87.5
Computer	desktop
Keyboard Familiarity	vertrouwd
Browser	Google Chrome
Dominant Languages	Engels, Nederlands
Disorder	False
Education	bachelor
Repetition	False

Report overview The copy task analysis provides a detailed analysis split up in the following sections:

- Correctness score
- Synthesis of InterKey intervals (IKI)
- Individual Component analysis
- Aggregated characteristics

Correctness When executing the copy tasks, participants strive to find an optimal trade-off between speed and correctness (cf. also basic instruction). The copy task analysis opens with a summary of correctness scores, comparing the targetted bigrams (in the prompted texts) with the characters actually typed.

The analysis first reports the correctness scores for each component separately and then an aggregated synthesis is reported, both overall and for the group of selected components (see asterisks in component analysis).

Example:

Correctness Scores			
Correctness per component			
Component	Count (targetted)	Count (not targetted)	Correct
Typing Speed	151	0	100.0%
Zin	91	7	92.9%
Woorden 1*	130	3	97.7%
Woorden 2*	128	15	89.5%
Woorden 3*	130	4	97.0%
Woorden 4	110	4	96.5%
Medeklinkers	19	2	90.5%
Statistics			
	Overall	Selected Components	
Aggr Targetted	759	388	
Aggr Not Targetted	35	22	
Aggr Correctness	95.6%	94.6%	
Mean	94.9%	94.8%	
Stdev	3.7	3.7	
Median	96.5%	97.0%	
Min	89.5%	89.5%	
Max	100.0%	97.7%	

Synthesis The 'Overall Synthesis of the InterKey Intervals (IKI)' in the output summarizes the overall performance of the copy task.

Data analysis is represented at three levels:

- Targeted bigrams: selects all bigrams that are targeted by one of the prompts in the corresponding copy task
- High frequency bigrams: selects all high frequency (HF) bigrams targeted by one of the prompts in the corresponding copy task
- Selected components bigrams: limits the analysis of targeted bigrams to those occurring in the selected components of the corresponding copy task (see documentation on 'Copy task creator'). For the default copy tasks these selected components refer to the three HF bigram word combination tasks.

Example:

Overall Synthesis of the InterKey Intervals (IKI)								
	Count (targetted)	Count (not targetted)	Mean IKI	StdDev	Median	LogMean (trimmed)	Coef. of Variance	CPM
Targetted Bigrams	784	29	141.1	105.1	120	119.7	58.1 %	425
High Frequency Bigrams	609	15	130.2	91.4	112	112.6	54.5 %	461
Selected Components' Bigrams	393	15	128.7	93.9	110	111.5	53.8 %	466

Component analysis

In the component analysis the following elements are reported:

- Overall analysis: analysis of all the produced characters produced in each copy task component
- Trial cut > 2: analysis of all the produced characters produced in each repetitive component task, excluding those in the first two trials
- Time filtered 10%: analysis of all the produced characters produced in each component task, excluding the first 10% time period of each task execution
- Trial report: analysis of all the produced characters produced in each trial within a component task.

Example:

Components									
Overall									
	Count (targetted)	Count (not targetted)	Mean IKI	StdDev	Median	LogMean (trimmed)	Coef. of Variance	CPM	Absolute CPM
Tapping task	121	1	121.3	40.1	128	113.9	38.2 %	495	488
Sentence	142	3	123.0	63.8	120	110.4	48.7 %	488	284
Words 1	130	2	122.6	86.0	105	105.9	56.0 %	489	307
Words 2	132	12	128.3	96.8	116	113.7	48.0 %	468	248
Words 3	131	1	135.2	97.9	104	115.0	57.1 %	444	282
Words 4	109	8	186.2	126.6	152	150.8	72.9 %	322	165
Consonants	19	2	402.0	231.0	375	348.8	58.4 %	149	94

Characteristics

In the characteristics analysis the following elements are reported:

- Frequency: overall analysis of all intra bigram intervals for resp. high and low frequent bigrams (HF and LF)
[Definition of high and low frequent bigrams: see above/link.](#)
- Frequency (Trial Cut >2): overall analysis of all intra bigram intervals for resp. high and low frequent bigrams (HF and LF), excluding those produced in the first two trials of each repetitive component
- Frequency (Only repetitions & Trial Cut >2): overall analysis of all intra bigram intervals for resp. high and low frequent bigrams (HF and LF) in repetitive copy task components, excluding those produced in the first two trials of each of those components

Example:

Characteristics								
Frequency								
	Count (targetted)	Count (not targetted)	Mean IKI	StdDev	Median	LogMean (trimmed)	Coef. of Variance	CPM
HF	609	15	130.2	91.4	112	112.6	54.5 %	461
LF	33	5	370.0	185.8	337	337.2	43.4 %	162
Frequency (Trial Cut >2)								
	Count (targetted)	Count (not targetted)	Mean IKI	StdDev	Median	LogMean (trimmed)	Coef. of Variance	CPM
HF	419	8	128.4	74.9	112	112.9	53.1 %	467
LF	27	3	376.2	200.3	320	338.8	46.4 %	159

- Hand combination : overall analysis of all intra bigram intervals for the different hand combinations needed to produce a bigram, resp. left-right hand combination (LR), right-left hand combination (RL), left-left hand combination (LL) and right-right hand combination (RR).
[Definition of high and low frequent bigrams: see above/link.](#)
- Hand combination Frequency (Trial Cut >2): overall analysis of all intra bigram intervals for the different hand combinations needed to produce a bigram, excluding the first two trials of the repetitive components.
- Adjacency: overall analysis of all intra bigram intervals for non-adjacent (False) and adjacent (true) keys.
- Adjacency (trial cut >2): overall analysis of all intra bigram intervals for non-adjacent (False) and adjacent (True) keys, excluding the first two trials of repetitive components.
- Repetition: overall analysis of all intra bigram intervals for non-repetitive (False) and repetitive (True) keys.
- Adjacency (trial cut >2): overall analysis of all intra bigram intervals for non-repetitive (False) and repetitive (True) keys, excluding the first two trials of repetitive components.