

Changes in writing processes caused by post-stroke aphasia or low-grade glioma

Akademisk avhandling

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Avhandlingen baseras på följande delarbeten

- I. Antonsson, M.¹, Johansson¹, C., Hartelius, L., Henriksson, I., Longoni, F., & Wengelin, Å. (2018). Writing fluency in patients with low-grade glioma before and after surgery. *International Journal of Language and Communication Disorders*, 53:3: pp. 592-604. ¹ joint first authors
- II. Johansson-Malmeling, C., Hartelius, L., Wengelin, Å. & Henriksson, I., (2019). Text writing and its relationship to writing processes and spelling ability in post stroke aphasia. *Submitted for publication*.
- III. Johansson-Malmeling, C., Wengelin, Å. & Henriksson, I., (2019). Lexical features of narrative texts written by persons with post-stroke aphasia – analysis of word use and errors. *Submitted for publication*.
- IV. Johansson-Malmeling, C., Wengelin, Å & Henriksson, I. (2019). Aphasia and spelling to dictation – analysis of spelling errors and editing. *Manuscript*

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Abstract:

Background: Writing is a cognitively and linguistically complex task, therefore sensitive to impairment caused by the presence and surgical removal of low-grade glioma or presence of post-stroke aphasia. Purposes: The overall aim of the thesis was to investigate the changes in writing processes, text characteristics and spelling caused by post-stroke aphasia or low-grade glioma.

Methods: In study I, 20 consecutive participants with presumed low grade glioma wrote a copytask and a narrative text and were tested with test of spoken lexical retrieval before and three months after tumour resection. The aim was to investigate writing fluency before and after surgery and whether writing fluency was related to oral lexical retrieval difficulties. In study II, the 15 participants with aphasia and a matched reference group wrote two narrative texts and were tested with single word spelling tests. Text characteristics and aspects of the writing process were compared between groups and relations between different writing processes were investigated for both groups. Relations between spelling in text and dictation tests were examined for the study group. In study III, the aim was to investigate the lexical features of two types of narrative texts, and the words containing errors, written by 16 participants with aphasia and compare to texts written by a matched reference group. Corpus linguistic analysis methods were used. In study IV, 16 participants with aphasia were tested for word spelling, phonological de-coding, reading ability and phonological spelling. Spelling ability and editing was analysed and related to reading and phonological abilities. The writing tasks in all studies were written in a keystroke logging program to enable analysis of the final texts as well as the writing process behind the texts.

Results and conclusions: Study I: Aspects of writing fluency were affected both before and after surgery and typing speed was an important factor behind the pre-surgery differences. A decline in overall productivity and an increase in pause frequency before words after surgery could be related to a lexical deficit. Study II: All aspects of productivity in text writing was affected for the group with aphasia. There was a relation between editing and productivity for the persons with aphasia, but not for the reference group. Scores in spelling tests cannot predict spelling in free texts. Study III: Texts written by persons with aphasia contained a less varied vocabulary and they tended to avoid using long words. The misspelled words were more likely to be content words, long words and low frequent words for the persons with aphasia than for the reference group. Lexical features in text writing were affected by aphasia, but this was dependent on the type of text writing task. Study IV: The most common error type was letter omission and there was evidence of aphasia specific writing errors. Both spelling and editing difficulty was related to word frequency and word length. Successful editing was related to phonological spelling scores, but not to phonological de-coding or reading ability. Specific editing strategies could be identified.

Keywords Aphasia, writing, writing process, spelling, keystroke logging, low-grade glioma

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