L2 revision behaviors, written text quality, and working memory capacity: A mixed methods study

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While there is an increasing amount of research available on L2 writing processes, considerably less research has investigated how L2 writing processes may relate to the product of L2 writing or text quality. It is also underexplored how working memory may influence writing processes, text quality, and their relationships. To help address these gaps, we examined the revision processes in which L2 writers engage, and how these might predict linguistic complexity and accuracy. In addition, we assessed whether the revision processes, text quality indices, and their relationships were influenced by individual differences in phonological short-term memory and executive functioning.

The study utilized an innovative combination of research methods, employing keystroke logging, eye-tracking methodology, computer-based text analyses, and stimulated recall. Thirty advanced Chinese L2 users of English first performed a version of the IELTS Academic Writing Task 2. Immediately after completing the task, twelve participants also took part in a stimulated recall session. Finally, they all participants completed a series of working-memory assessments (Chinese Digit Span, Chinese Non-word Span, Colour Shape Task, Corsi Block Forward-/Backward, Stop Signal Task, and Operation Span). All tasks were computer-delivered. During the writing task, participants' key strokes were logged by the software InputLog to capture revision behaviours. Using Tobii Studio, participants' eye-gaze data were also recorded to enable the examination of reading processes during writing. The data analysis involved triangulating results from (a) the keystroke-logs, (b) the eye-gaze recordings, (c) metrics of linguistic complexity and accuracy, and (d) the working memory scores.

The complex set of results that emerged will be discussed in relation to cognitive models of writing. The methodological contribution of the research will also be considered. We will discuss the value of examining the various data sources on their own and in combination, and highlight some challenges that arose in the triangulation process.

Keywords: linguistic complexity, working memory, second language writing, key-stroke logging, eye-tracking.