

The Development of Congeneric Elicited Writing Tasks to Capture Language Decline in Alzheimer Patients

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Abstract : People diagnosed with probable Alzheimer disease suffer from an impairment of their language capacities; a gradual impairment which affects both their spoken and written communication. Our study aims at characterising the language decline in DAT patients with the use of congeneric elicited writing tasks. Within these tasks, a descriptive text has to be written based upon images with which the participants are confronted. A randomised set of images allows us to present the participants with a different task on every encounter, thus allowing us to avoid a recognition effect in this iterative study. This method is a revision from previous studies, in which participants were presented with a larger picture depicting an entire scene. In order to create the randomised set of images, existing pictures were adapted following strict criteria (e.g. frequency, AoA, colour, ...). The resulting data set contained 50 images, belonging to several categories (vehicles, animals, humans, and objects). A pre-test was constructed to validate the created picture set; most images had been used before in spoken picture naming tasks. Hence the same reaction times ought to be triggered in the typed picture naming task. Once validated, the effectiveness of the descriptive tasks was assessed. First, the participants (n=60 students, n=40 healthy elderly) performed a typing task, which provided information about the typing speed of each individual. Secondly, two descriptive writing tasks were carried out, one simple and one complex. The simple task contains 4 images (1 animal, 2 objects, 1 vehicle) and only contains elements with high frequency, a young AoA (<6 years), and fast reaction times. Slow reaction times, a later AoA (≥ 6 years) and low frequency were criteria for the complex task. This task uses 6 images (2 animals, 1 human, 2 objects and 1 vehicle). The data were collected with the keystroke logging programme Inputlog. Keystroke logging tools log and time stamp keystroke activity to reconstruct and describe text production processes. The data were analysed using a selection of writing process and product variables, such as general writing process measures, detailed pause analysis, linguistic analysis, and text length. As a covariate, the intrapersonal interkey transition times from the typing task were taken into account. The pre-test indicated that the new images lead to similar or even faster reaction times compared to the original images. All the images were therefore used in the main study. The produced texts of the description tasks were significantly longer compared to previous studies, providing sufficient text and process data for analyses. Preliminary analysis shows that the amount of words produced differed significantly between the healthy elderly and the students, as did the mean length of production bursts, even though both groups needed the same time to produce their texts. However, the elderly took significantly more time to produce the complex task than the simple task. Nevertheless, the amount of words per minute remained comparable between simple and complex. The pauses within and before words varied, even when taking personal typing abilities (obtained by the typing task) into account.

Keywords : Alzheimer's disease, experimental design, language decline, writing process

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