**University of Leicester**

**BBSRC MIBTP Studentship Project 2024-5 entry.**

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| **Project Reference** |  |

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**Section 2 – *Project Information***

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| **Project Title** | Failures to detect language errors during older age: Evidence of cognitive decline?  |
| **Project Summary**  |
| Healthy ageing is associated with well-recognised cognitive decline across multiple domains from age 50 onwards (e.g., working memory, processing speed). Effects on language processing, however, are more diverse and complex. On one hand, many of the cognitive processes that underlie language processing are adversely affected by ageing (e.g., declines in working memory are likely to create difficulties in storing and integrating linguistic information). On the other, we become cumulatively more experienced with language, and so some aspects of our language skills (e.g., our vocabulary knowledge) progressively improve.  Intriguing recent evidence suggests that one area of language processing that may be particularly susceptible to age-related decline is in the failure to stop “autocorrect” errors. These are errors which occur when individuals are tasked with reading aloud sentences containing malapropisms (words that sound similar to the original, but are inappropriate given the context; e.g. “The player scored the final *paint*” rather than “point”). Even when instructed to read sentences exactly as they are written, participants frequently autocorrect to the original word (“*point*”). Healthy older adults make more autocorrect errors than young adults (Gollan & Goldrick, 2019); and cognitively healthy older adults with biomarkers for preclinical Alzheimer’s disease make even more (Gollan et al., 2020). This suggests that autocorrect errors may be a useful indicator of very early cognitive decline, even among adults who are not showing any diagnostic markers for dementia.  The aims of the project are to:  1) Examine how autocorrect errors, and similar language errors, change in frequency and prevalence with age. 2) Examine the relationship of such errors with behavioural indices of cognitive functioning (e.g., working memory abilities; executive function; processing speed; overall cognitive function) 3) Determine the locus of such errors (e.g., deficits in correctly encoding the malapropism, or in failing to inhibit the original word) **Methods** We will investigate these questions within a series of experiments with young and older adults. As our focus is healthy cognitive aging, we will use screening tools to exclude those with cognitive impairment. Experiments will combine techniques to investigate language processing (e.g., eye tracking) with behavioural measures of cognitive abilities (e.g., tests of working memory).  The student’s experiments will therefore initially focus on evaluating the presentation of autocorrect errors and related errors in groups across the lifespan (aim 1), and administering behavioural tests in order to examine relationships between these variables and autocorrect errors (aim 2). Later experiments will then seek to identify the factors contributing to these error rates, i.e., roles of inhibition, encoding and retrieval, and attention, in order to draw conclusions about how autocorrect errors may be associated with very early changes in cognition in typical ageing (aim 3). Techniques that will be undertaken during the projectData collection with young and older adults Experimental techniques to investigate language processing (e.g., eye tracking) Administration of tests assessing cognition Stimuli creation Complex statistical analyses using R  |
| **References** |
| Gollan, T.H., & Goldrick, M. (2019). Aging deficits in naturalistic speech production and monitoring revealed through reading aloud. *Psychology and Aging, 34*(1), 25-42. Gollan, T.H., Smirnov, D.S., Salmon, D.P., & Galasko, D. (2020). Failure to stop autocorrect errors in reading aloud increases in aging especially with a positive biomarker for Alzheimer’s Disease. *Psychology and Aging, 35*(7), 1016-1025.  |

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