Working Memory (WM), the ability to hold information in short-term memory is vitally important for many aspects of life including language and problem-solving. Research has established that WM can be limited by one's ability to ignore distracting information in a scene (McNab & Klingberg, 2008; Vogel et al., 2005).

McNab and Dolan, (2014) used a smartphone game to collect WM performance data, revealing the ability to ignore distracting information during encoding and maintenance are two separate bases for WM. At present, the mechanisms behind these bases for WM are unknown. Understanding these mechanisms could, alongside previous and future research, help to manage the impact of declining WM including independence and quality of life. This project aims to identify these mechanisms, fitting with the university's Health and Wellbeing research theme.

We will investigate the effect of distractor saliency when presented during encoding and maintenance. Should encoding be affected by the salience of distractors, we suggest a selective attention constraint on WM for determining relevant/irrelevant stimuli. If the mechanism of ignoring distraction during maintenance is general to all visual stimuli, no information will be processed, and saliency will have no impact on performance. Studying saliency effects offer insight into how WM mechanisms operate – distractor saliency might affect encoding because relevant and irrelevant information must compete for attention.

A selective attention paradigm within a WM task would be used. The saliency of distracting information will be manipulated and presented alongside task relevant information (encoding) or during a delay period (maintenance). Participants would be asked to remember the positions of red circles displayed on a grey grid, clicking on those positions when the circles disappear. In the encoding condition, these red circles would be presented alongside circles of another colour which participants are told to ignore – either yellow (salient) or light grey (non-salient). In the maintenance condition, these different coloured circles would be presented during a delay period between the participants seeing the red circles and clicking on their positions. This will allow the comparison of WM performance during encoding and maintenance when the distractors are salient vs non-salient

This project will introduce a novel insight into the mechanisms behind WM, building upon previous research to fill a prominent gap in the current literature. The research would be a collaboration of attention and WM research, enabling the study of attention network constraints on WM performance.

My preference for the leadership in action experience for the second summer would be a leadership expedition.

References

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