Research Project Title: Investigating the Role of the Superior Temporal Sulcus in the Kuleshov Effect

In recent years, studies have been conducted to explore the 'Kuleshov effect', in which individuals attribute their own emotional reactions to stimuli such as a movie scene onto the face of an actor (Mobbs et al., 2006). The role of the superior temporal sulcus (STS) has been recognised in the perception of facial expressions (Haxby, Hoffman, & Gobbini, 2000) and activity in the STS has been related to the integration of contextual and facial cues, indicating the influence of top-down signals on face perception (Wieser & Brosch, 2012). Consequently, fMRI studies exploring the Kuleshov effect have shown activity in the STS for neutral faces paired with emotional videos, suggesting context influences facial perception.

However, research on this topic has been limited to neuroimaging studies showing the correlation between STS activity and the Kuleshov effect. This exciting topic is a relatively new field of research and I believe it has not been explored to its full potential and deserves to be studied further. Thus, the aim of my research project is to fill a gap in the literature by investigating the possible causation between the STS and the Kuleshov effect using transcranial magnetic stimulation (TMS).

There will be three conditions, two of which will be controls in which participants would complete the experiment without TMS, and with TMS delivered to the vertex. In the experimental condition, TMS will be delivered to the STS. To ensure the project is successful, I will run a pilot study, making necessary amendments before running the experiment. Over the summer of 2020, the behavioural component of this study will be conducted (the control condition without TMS). The study will run on an online testing facility. Stimuli will include happy, neutral and fearful contextual videos, priming participants for the presentation of an emotionally ambiguous face. The dependent variable will be participants' rating of the emotion perceived in the emotionally ambiguous face.

Potential results from this study include an emotional attribution based on context to an emotionally ambiguous face. If this is true, this behavioural experiment can be used in conjunction with TMS, where an impairment in emotional attribution based on context is expected when TMS is applied to the STS compared to the control conditions. This would suggest the STS uses top-down processes using contextual cues in face perception. This could have various implications as STS plays a role in expectations which is important in social interactions such as using context to understand people's emotions, motion prediction and language acquisition. The results of this study could provide avenues for future research into other brain regions involved in the Kuleshov effect, the role of STS in expectation and application to cases with damaged or impaired STS or neurologically atypical patients that show impairments of top-down processes.