IS1404 E-READ: Evolution of Reading in the Age of Digitization

Position paper

Name: Sarah Schuster

WG(s): WG3; Experiential and Emotional Aspects of Reading

1. **Potential research contribution** in light of, or linked to

A. WG interest and Scientific programme:

My previous work has focused on investigating the neural correlates of natural reading (see Schuster et al. 2015; 2016). To illustrate, cognitive (as well as emotional) factors which are known to substantially affect participants' response times and eye movements during reading (e.g., word length, frequency, predictability, valence and arousal), are predominantly assessed in the context of single-word studies (i.e., studies presenting unrelated words in a serial one-by-one fashion). Undoubtedly, neuroimaging studies presenting context-free single words contributed tremendously to our understanding of the neural mechanisms during visual word recognition (see Price 2012; Taylor et al. 2013). Comparably few studies, however, investigated participants' brain responses to words which are presented in context, that is, within sentences and narratives (e.g., Xu et al., 2005; Yarkoni et al., 2008).

In the last years I investigated natural reading by means of simultaneously recording blood-oxygen-level dependent (BOLD) signals and eye movements. This novel technique makes possible to investigate participants' brain activation in relation to their eye movements. In technical terms, the so-called *fixation-related fMRI* approach uses the onset of a first fixation on the stimuli as the marker for modeling the haemodynamic brain response; a technique analogues to the well-established fixation-related brain potentials (FRPs) in the context of electroencephalography (EEG; e.g., Dimigen et al. 2011; Hutzler et al. 2007). In brief, the fixation-related fMRI approach allows researchers to analyze effects on the word-level while presenting whole sentences or paragraphs – thus, providing an ecological scanning procedure for functional magnetic resonance imaging (fMRI). My objective is to further substantiate the applicability of this method for investigating cognitive as well as emotional aspects during natural reading within an interdisciplinary research team. To be specific, I plan to investigate the effects of natural text presentation on immersive and aesthetic processes and the interaction of those processes with basal cognitive factors during reading.

B. Action objectives (pages 7-10 in the MoU):

As yet I mainly worked with eye tracking and functional magnetic resonance imaging (fMRI), as well as the combination of both methods (see above). I am interested in working within an interdisciplinary research team, in which the focus would be on the interaction of emotional and cognitive processes and the development of appropriate methods for ecological valid reading experiments.

2. Interest in

A. organizing and/or participating in a **short-term scientific mission (STSM).**

Optional: pursuing what research questions/projects; where to/with whom; linked to what objective(s) of the Action:

I’m interested in participating in a short-term scientific mission to corporate with people from the field of corpus linguistics and hermeneutics. This should help to generate specific hypotheses about the interaction between emotional and cognitive processes during reading.

B. organizing and/or participating in a **Training School** (please indicate what kind of training [theoretical; methodological; technical]).

Optional: linked to what objective(s) of the Action:

Not applicable.