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Illusion of Knowing-Same or Different Emotional Responses Compared to Knowing?

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Introduction

Illusion of knowing, IK, is a phenomenon that may hinder effective learning since participants do not know when they have missed critical information. One explanation given for the illusion is that participants do not get a signal of error—a signal corresponding to that something is not understood. It is predicted that there are emotional responses signaling and that emotional responses are different in participants with IK and participants who correctly comprehend the text.

The IK refers to a phenomena occurring when participants who are reading a text rate their subjective comprehension of the text high, while at the same time an objective measure shows that they in fact did not comprehend the text (Glenberg, Wilkinson & Epstein, 1982). This phenomenon might be a huge obstacle when learning from text. One explanation for the illusion is that unless there is no signal of error telling us that we do not understand, we assume that we comprehend the text (ibid.). Another explanation is that the text is misunderstood and poorly integrated to a coherent interpretation (Schommer & Surber, 1986). We predict that there are emotional signals present in the IK.

The purpose of the current study is to test the hypothesis that the IK occurs because participants do not get a signal of error. Previous studies of the IK determined comprehension by letting the participants rate their subjective and objective comprehension. We extend the objective comprehension measure by incorporating emotional responses-physiological measures of skin conductance and pupil dilation and error detection behavior-detection of a manipulation inserted by the experimenter, gaze duration and number of regressions, as online measures.

Participants who looked at a complex visual stimulus and who later identified it showed significantly increased emotional responses in skin conductance, pupil size and increased attention allocation on critical area (Lindström & Holmqvist, in preparation). Eye movements can show when comprehension is interrupted, for example increased reading time (Grabe, Antes, Kahn, & Kristjanson, 1991) and increased number of regressions (Vauras, Hyönä, & Niemi (1992). The hypothesis is that there is a difference in error detection behavior and emotional responses between participants with IK compared to participants who correctly comprehends the text.

Method

67 participants were seated in the SMI HiSpeed 240 Hz eye tracker with skin conductance electrodes attached to the non-dominant hand. The task in condition 1 is to control the text and either mark the incongruence or clearing the text by clicking the “ok”-button. In condition 2, the task is “read the text like it is a newspaper”. 17 texts were presented one at a time, followed by subjectively judging comprehension, answering a gist question, and two distraction questions.

Results and discussion

Initial analysis shows an 18.4% occurrence of IK vs. 42.2% when reading a normal vs. a manipulated text. Fixation duration on the manipulated word vs. the responding normal word yields a significant longer duration for participants who correctly comprehend the text (259 ms vs. 227 ms), p<.009. There was no significant difference for subjects with the IK either for the manipulated or the normal word (251 ms vs. 261 ms). The increased duration on the manipulated word may show that subjects who correctly comprehend the text regulate their cognitive processing more accurately compared to subjects with the IK. Further analysis is currently undertaken.

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References