Eye Tracking Gives Insight into the Processes of Diagnostic Reasoning

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When finding a best explanation for observed symptoms a multitude of information has to be integrated and matched against explanations stored in memory. Although process models exist that make assumptions about ongoing memory processes during diagnostic reasoning (e.g., the construction of a situation model consisting of preassigned explanations) little process data exists that would allow to sufficiently test these assumptions.

In order to explore memory processes in diagnostic reasoning, 29 participants were asked to solve a visual reasoning task (the Black-Box paradigm) where critical information had to be retrieved from memory. This study presents new prospects to assess reasoning processes by different eye tracking measures such as monitoring the gaze over time or memory indexing, a method that allows exploring memory processes in complex cognitive tasks by utilizing the human ability to spatially index information held in memory.

By applying these eye tracking methods on a memory based reasoning task we were able to gain new process data that provide insights into ongoing memory processes (i.e., automatization, the construction of a situation model).

It will be discussed to which extend this methods are able to improve our understanding of diagnostic reasoning.