

EYE-TRACKING VISUAL AND TEXTUAL INFORMATION – WHAT MATTERS IN BAYESIAN SITUATIONS?

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INTRODUCTION & THEORY

People's statistical thinking can be analyzed by multiple methods such as questionnaires or tests, but also eye-tracking or think aloud techniques are promising valuable additional insights into people's thinking processes. For instance, Bruckmaier et al. (2019) examined participants' eye movements in Bayesian Reasoning situations based on 2x2 tables filled with natural frequencies, but without providing additional textual information. However, multimedia theory suggests that simultaneously providing text *and* visualization would lead to better performance (multimedia-effect; Mayer, 2021). Furthermore, previous research indicates that when presenting both information formats longer fixation times are expected for the visualizations than for the text (Malone et al., 2020). This leads to the research question which kind of information (and why) participants prefer when statistical information for Bayesian Situations is simultaneously presented textually *and* by visualization (2x2 table). Our corresponding hypotheses are as follows: (H1) The given visualization (2x2 table) is used more intensely in terms of time for information retrieval than the text. (H2) The visualization is preferred to the text because of the already pre-structured data.

METHOD & RESULTS

Participants are given various Bayesian tasks where the information is presented simultaneously as text and visualization (2x2 table). The eye movements are recorded by an eye-tracker as well as participants thinking processes by sound recording (think aloud). The study will be conducted in May 2023 and the results are presented at the PME conference.

REFERENCES

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