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### **Title**

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# **“Capturing the relations between metacognition, self-explanation, and analogical comparison: An exploration of two methodologies”**

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**Abstract:** Metacognitive processes such as monitoring and control and sense-making processes such as self-explanation and analogical comparison are each hypothesized to result in effective problem solving, learning and transfer (Chi et al., 1994; Alfieri, et al., 2013; Zepeda et al., 2015). However, little work has examined how these processes relate to one another and their associated learning outcomes. In this study we explored two methodologies to measure and relate these processes to one another by investigating students verbal protocols and task-based self-reports during a learning task. We investigated (1) whether specific metacognitive skills are more likely to occur before, during, or after self-explanation and analogical comparison, (2) individual differences in students’ use of these skills, and (3) whether specific skills results in better learning outcomes. Results from these analyses and their implications will be discussed.