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Eleventh-grade high school students' accounts of mathematical metacognitive knowledge: explicitness and systematicity.

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Summary: Theoretically, it has been argued that a conscious understanding of metacognitive knowledge requires that this knowledge is explicit and systematic. The purpose of this descriptive study was to obtain a better understanding of explicitness and systematicity in knowledge of the mathematical problem-solving process. Eighteen 11th-grade pre-university students solved two kinds of complex mathematical thinking problems that included the finding of a solution and the writing of mathematical texts and arguments. They also answered open-ended questions to obtain reasoned and reflective accounts regarding their metacognitive knowledge. Content analysis indicated 4 levels of explicitness and 5 levels of systematicity. Quantitizing of the accounts provided for a strong positive correlation with mathematical performance. It is concluded that explicitness and systematicity appeared to be potential indicators of the participants' understanding of effective problem-solving strategies.

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