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Of the 42nd Conference of the International Group
for the Psychology of Mathematics Education

Editors: Ewa Bergqvist, Magnus Österholm,
Carina Granberg, and Lovisa Sumpter

Volume 5

Oral Communications, Poster Presentations

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VALIDATING A QUESTIONNAIRE: CAPTURING THE WAY IN WHICH BELIEFS ABOUT MATH AND STUDENTS' ABILITIES INFLUENCE TEACHERS' ACTIONS IN PROBLEM SOLVING

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The use of Likert scale items to measure beliefs is questioned since it may amplify problems related to social desirability (cf. Di Martino & Sabena, 2010). We argue that the use of Likert scale items may give teachers opportunities to respond to them ideally, not realistically. Therefore, we developed a questionnaire using rank-then-rate items for studying teachers' beliefs on their practice (TBTP). In addition, we also consider students' mathematical abilities as a social context in the classroom in the TBTP. In this paper, we present the final validation of the TBTP.

The TBTP contains ten rank-then-rate items grouped into three themes: (1) the nature of mathematics, (2) the teaching and learning of mathematics, and (3) the practice of problem solving. Each item has three statements, which are – in this order – always associated with the instrumentalist view, the Platonist view, and the problem-solving view described by Ernest (1989), respectively. To answer an item, a respondent firstly ranks the three statements of the item and then rates them.

We have tested the TBTP with a large sample of teachers, and the results show that the TBTP is valid and reliable (reported in Safrudiannur & Rott, 2017). However, since we also need to ensure that the TBTP allows for a valid representation of beliefs and practices, we evaluate the convergent validity of the TBTP as the final validation. We invited four teachers to respond the TBTP, and then we interviewed them and observed their lessons of teaching problem solving.

The results of the evaluation show the consistency between the four teachers' responses to the TBTP with their interviews and lessons. These results confirm the validity of the TBTP. Moreover, we also remark that since we consider teachers' beliefs about students' math abilities in the TBTP, the TBTP seems able to explain the inconsistency between teachers' beliefs of the nature of mathematics and their practice.

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