

THREE MEASURES FOR CONFIDENCE IN MATHEMATICS

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In this poster we shall report some preliminary results of the research project 'Understanding and self-confidence in mathematics'. The project is directed by professor Pehkonen and funded by the Academy of Finland. It includes a two-year longitudinal study for grades 5-6 and 7-8 with two quantitative surveys for approximately 200 mathematics classes and a qualitative study of 40 students. In this poster we will present the instrument and some results of the first survey.

We designed a survey to measure the level of self-confidence and understanding of number concept in a large population. The survey was administered by teachers during normal 45-minute lessons during the fall term 2001. It consisted of five parts: student background, 19 mathematics tasks, success expectation for each task, solution confidence for each task, and a mathematical beliefs questionnaire.

The students' confidence was measured with three different measures. Before the students did the actual tasks, they estimated on a 5-point Likert scale whether they can solve the task or not ('success expectation'). After solving each task they answered on another 5-point Likert scale on their confidence on their solution ('solution confidence'). Furthermore, the 25 items in the mathematical beliefs questionnaire included ten items that were adopted from the confidence scale of the Fennema-Sherman Attitude Scales (Fennema & Sherman, 1976) ('self-confidence'). Success expectation and solution confidence responses tended to be skewed (high confidence), especially for seventh graders. For further analyses we chose eight (most difficult) tasks that produced less skewed responses

As expected, the three confidence measures were correlated. The success expectation and solution confidence had a correlation of 0.67. Self-confidence correlated with the other measures on the level 0.44 – 0.50, weaker correlations being for the fifth grade. Somewhat surprisingly correlations between confidence measures and success in test were weaker, more so among fifth graders and there especially for girls (0.06-0.09).

Another interesting result was found in gender differences. On fifth grade the differences in both success and confidence favoured boys. However, on seventh grade no gender differences were found.

REFERENCES

Fennema, E. & Sherman, J.A. 1976. Fennema-Sherman mathematics attitudes scales. JSAS Catalog of Selected Documents in Psychology, 6, 31 (Ms. No. 1225).