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Research results on mathematical talent, gender and motivation

Problem statement: In Germany, girls are decidedly under-represented in programs that foster mathematical talent at primary school age. Thus, it is of interest to ascertain aspects of improving their identification and support.

Purpose: Two studies were conducted to clarify the significance of motivational factors as determinants for the identification of talent by comparing girls and boys who were identified to be mathematically talented (imt) as well as girls and boys who were not (n-imt). The first study focused on self-concepts, attributions and general interests, the second on attitudes and mathematics interest.

Method: Children of the 3rd and 4th grade were asked using standardized questionnaires. The first study's sample covers N=288 (132f, 156m), including n=165 imt children (66f, 99m); the second one's N=162 (71f, 91m), including n=83 imt children (32f, 51m). The data have been evaluated by an analysis of variance with the factors being talent and sex.

Results: The characteristics of all examined motivational factors were more advantageous with imt children and n-imt boys than with n-imt girls.

Conclusion: Disadvantageous motivational factors seem to be important aspects of explaining the infrequent identification of girls' talent. Boys' talents might be identified more often because - independent of talent-identification - they might tend to have a strong preoccupation with mathematics, and teachers might perceive their talent more easily. Future research should focus on the significance of motivational factors as determinants for talent-development.

Practical consequences: Any gender-stereotyping of mathematics should be avoided. It seems to be important to develop girls' motivational factors consciously to support their talents.

Keywords: mathematical talent; mathematical giftedness; motivation; gender