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AUTHOR Meyer, Ruth A.
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ABSTRACT

Presented is a discussion on the negative attitudes of elementary school teachers toward mathematics and some of the research done in this area. Results of an attitudinal questionnaire, given to 120 perspective elementary teachers, are also presented. Fifty-three females and 8 males responded that they liked mathematics, while 55 females and 4 males indicated a dislike for mathematics. Implications for teacher education are discussed. (MK)

ATTITUDES OF ELEMENTARY TEACHERS TOWARD MATHEMATICS

by Ruth A. Meyer

Some elementary teachers not only have inadequate backgrounds in mathematics content and methods, they also have negative attitudes toward the subject. These teachers may dislike every aspect of mathematics and are unwilling to do anything to change their attitudes. They may refuse to enroll in any course which may provide them with better backgrounds. Their complaints are loud and clear when their school district insists that they attend workshops to improve their mathematics teaching. After all, they know sufficient mathematics to teach early elementary students.

These teachers may accept their present mathematics status, nevertheless, national and state assessment tests have demonstrated that students' scores in mathematics are going down. Therefore, since students are not performing as well as they should, something must be done to help elementary teachers to become better mathematics teachers.

A first step is that of finding out why many of these teachers dislike mathematics. Identifying the sources of negative attitudes may lead to ways for generating positive attitudes. Only then will teachers willingly begin to improve their mathematics teaching.

This present article is taking this first step by presenting some of the sources for negative attitudes toward mathematics.

Banks (1964) commented about factors which may contribute to attitudes toward arithmetic:

> An unhealthy attitude toward arithmetic may result from a number of causes. Parental attitude may be responsible...Repeated failure is almost certain to produce a bad emotional reaction to arithmetic. Attitudes of his peers will have their effects upon the child's attitude. But by far the most significant contributing factor is the attitude of the teacher. The teacher who feels insecure, who dreads and dislikes the subject, for whom arithmetic is largely rote manipulation, devoid of understanding, cannot avoid transmitting her feelings to the children... . On the other hand, the teacher who has confidence, understanding, interest and enthusiasm for arithmetic has gone a long way toward insuring success. (pp. 16-17)

Analyzing a questionnaire administered to 75 future teachers, Ernest (1976) found that 26% of these prospective teachers were indifferent towards mathematics; whereas, another 14% stated that they actually disliked or hated it. A similar questionnaire was administered by Ernest to students enrolled in lower division undergraduate courses. These students were asked to indicate their

attitudes toward mathematics by marking one of the five possibilities (love it, like it, indifferent to it, dislike it, hate it). Students were asked to indicate what they felt were the major influences determining their attitudes. Among those indicating extreme attitudes (either loving or hating it), a particular teacher they had had in their prior schooling was one of the most mentioned.

Donady and Tobias (1977) commented about the influence of teachers on attitudes toward mathematics:

> In our counseling of hundreds of adults, mostly women, we have found that interviewees often ascribe the major influence determining extreme attitudes toward mathematics to the attitudes of a particular teacher. One woman remembered with perfect clarity after 30 years that her pretty fourth-grade teacher, whom she wanted to emulate, made it clear that she disliked math. Another recalled that as a reward for good behavior the class was told that there would be no math that day. The exciting teacher and the supportative teacher are also remembered and are not mentioned as the reason for continuing or for reconsidering studying math now. (p. 73)

The comments of Banks (1964) and Donady and Tobias (1977), and the results of Ernest's survey (1976) prompted me to ask two open-ended attitudinal questions of 120 prospective elementary teachers at Western Michigan University.

The questions and tabulations of the responses follow:

1. How do you feel about mathematics in general?

	Males (12)	Females (108)
Like math	8	53
Dislike math	4	44
Afraid of it		5
Get Frustrated		2
Unsure in math		2
Have a mental block		1
Lack comprehension		1

2. What do you think accounts for your particular feelings toward mathematics?

Positive Feelings

Males	Females
Teachers (2)	Teachers (28)
Did well (2)	Useful and relevant (13)
Easy (1)	Parents (4)
Feeling of accomplishment (1)	Challenging (4)
	Enjoy thinking (3)
	Good feeling (3)
	Good grades (3)
	Success (3)
	Easy (2)
	Father (2)
	My confidence (2)
	Look on math as a game (1)
	Brother (1)
	Accomplishment and understanding leads to good grades (1)

Negative Feelings

Males	Females
Teachers (3)	Teachers (34)
Poor Grades (1)	Poor background (9)
Poor Background (1)	Lack of understanding (7)
Lack of understanding (1)	Too difficult (4)
	Forced into classes (3)
	Not useful (2)
	Nervousness (2)
	Attitude of father (1)
	Teacher discouraged girls (1)
	Family attitude (1)
	Mental block (1)
	Poor grades (1)
	Stressful (1)
	Bad experiences (1)
	Feeling of being left behind (1)
	Too much homework (1)
	Lack of time for problems (1)
	Never did well (1)
	I have always been in the slow group since second grade (1)

Of the 120 prospective teachers surveyed, 53 females and 8 males responded that they like mathematics; whereas, 55 females and 4 males indicated a dislike for the subject. The factors which contributed to the positive and negative attitudes, with teachers the most significant contributing factor, are those found in related literature.

Inherent in the concern over attitudes is that there

is a relationship between attitude and achievement. Interestingly, statistical studies have found it difficult to confirm any relationship between attitudes toward mathematics and achievement. Fox (1977) in an extensive review on attitudes commented:

> Attitudes towards mathematics, as measured by expressed liking on more complex questionnaires are generally found to have a low, but significant, correlation with achievement in mathematics at the elementary, secondary, college, and post-graduate levels (Aiken, 1963; 1970a; 1970b; 1976; Aiken and Dreger, 1961; Anttonen, 1969). (p. 27)

Webb (1972) found that attitude is an important predictor of achievement. Jackson (1974) concluded from his study that only very positive or very negative attitudes affect achievement and aptitude is more important than attitude for predicting achievement for the middle range of attitudes.

Quantitative research may not confirm that a causal relationship between teacher and student attitudes and student achievement exists, nonetheless, one may not ignore surveys such as that of Ernest (1976) and the present one which indicates without doubt that many prospective elementary teachers dislike mathematics and past teachers are blamed for the negative attitudes. Also, for these prospective teachers, there appears to be a relationship between attitudes and mathematics achievement, at least,

because of their inadequate background, they believe this relationship exists.

If the cycle inadequate mathematics background - negative attitudes - blaming past teachers is to cease, teachers, both pre- and in-service, and mathematics educators must cooperate. College and university mathematics educators should provide the best possible program for preparing elementary mathematics teachers. Teachers must be willing to do everything they can to become better mathematics teachers. Only with this cooperation will mathematics teaching improve.

References

Aiken, L. Personality correlates of attitudes toward mathematics. The Journal of Educational Research, 1963, 56 (9), 476-480.

Aiken, L. Non-intellective variables and mathematics achievement: Directions for research. Journal of School Psychology, 1970a, 8 (1), 28-36.

Aiken, L. Attitudes toward mathematics. Review of Educational Research, 1970b, 40 (4), 551-596.

Aiken, L. Update on attitudes and other affective variables in learning mathematics. Review of Educational Research, 1976, 46 (2), 293-311.

Aiken, L. & Dreger, R. The effect of attitudes on performance in mathematics. Journal of Educational Psychology, 1961, 52 (1), 19-24.

Anttonen, R. A longitudinal study in mathematics attitude. Journal of Educational Research, 1969, 62 (10), 467-471.

Banks, J.H. Learning and teaching arithmetic. Boston: Allyn & Bacon, 1964.

Donady, B. & Tobias, S. Math anxiety. Teacher Magazine, November, 1977.

Ernest, J. Mathematics and sex. American Mathematics Monthly, 83 (8), October, 1976.

Fox, L. The effects of sex role sociolization on mathematics participation and achievement in Women and Mathematics: Research Perspectives for Change, Washington: The National Institute of Education, 1977.

Jackson, R. The attitudes of disadvantaged students toward mathematics (Doctoral dissertation, Indiana University, 1973). Dissertation Abstracts International, 1974, 34 3690A. (University Microfilms No. 74-380)

Webb, R. A study of the effects of anxiety and attitudes upon achievement in doctoral educational statistics courses (Doctoral dissertation, University of Southern Mississippi, 1971). Dissertation Abstracts International, 1972, 32, 4997A-4998A. (University Microfilms No.72-9103)