

Math Anxiety: Elementary Teachers Speak for Themselves

Is it true that most elementary teachers hate and fear mathematics? Do male teachers at the elementary level have more positive attitudes toward math than their female counterparts? Did many of these teachers choose their profession at least partly because no "higher" math was required? Do these teachers perpetuate the "math is for boys" myth? Do they pass on animosity toward math to their students?

These and other questions intrigued us as we studied the literature in math anxiety,¹ worked with preservice and inservice teachers, and counselled bright and successful college graduates who nevertheless identify with math anxiety—"a non-rational distaste for and avoidance of math and math-related subjects."²

To investigate these questions we conducted a survey of elementary school teachers and a series of follow-up interviews. A "Math Attitude Inventory" was prepared and administered to 230 elementary teachers. Results of this survey indicated that some popular beliefs may need closer scrutinizing. In this particular population, only 17 percent of the females and 8 percent of the males were categorized as "math anxious." While even this percentage is distressing, it does not support the belief that "most" elementary teachers hate or fear math. Although proportionally more women than men had negative attitudes, the difference in our study was not statistically significant.³

We asked teachers responding to the Math Attitude Inventory if they would be willing to participate in a follow-up interview. Twenty of the 41 volunteers were selected. The interviews focused

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Quite a few elementary teachers of both sexes enjoy teaching mathematics.



on four general areas:

1. Feelings about mathematics both as a student and as a teacher, and factors contributing to these feelings
2. Relationship between attitude toward mathematics and career choices
3. Sex-role stereotyping in relation to math
4. Suggestions for preventing and alleviating math anxiety in students.

While we cannot generalize from these teachers' statements to the entire population of elementary school teachers, some interesting trends emerged.

Feelings about Math

The teachers seemed delighted to have

the opportunity to talk in a nonthreatening situation about their feelings regarding math. Most felt they did well enough at math in the elementary school. Typical statements were: "I was a good student, but less good in math." "I could do math, but it was dull." Several others loved math and remembered it as fun in grade school. But at the secondary and college levels, about half the teachers ran into problems. Sources of trouble included math content; inadequate, impatient, or sarcastic teachers; low grades ("the only D in my life!"); and parents' impatience with lack of success in math.

The most encouraging result of the interviews, however, was our finding that, in spite of their negative experiences, the teachers were generally positive about teaching math. They felt secure with the content they were teaching and worked hard to see that their students understood and enjoyed math. As teachers, they seemed determined to spare these children their own unpleasant experiences with numbers.

This does not mean that all the teachers love math. Very few expressed interest in taking more advanced math courses. But through their own struggles, most now feel comfortable with the math they are dealing with and find it interesting and enjoyable to teach.

Two of the teachers were currently enrolled in a math course designed for math majors at a local university and were experiencing acute math anxiety. They somewhat facetiously suggested that all teachers should be required to take a course that is "over their heads" so they can empathize with children who have problems learning math.

Career Choice

There was little evidence from the interviews that math had been an important consideration in the choice of elemen-

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tary school teaching as a profession. Three teachers mentioned that they chose teaching *in spite of* the two-semester math requirement. Careers briefly considered but abandoned at least partly because of the threat of math were accounting, psychology, medicine, and business. Even these teachers seemed happy that they "fell into" teaching, and certainly did not seem bitter or frustrated at not having achieved a cherished dream.

Sex-role Stereotyping

Most of the teachers remembered their own schooling as including the "math is for boys" stereotype. This message was apparently indirect at the elementary level. ("I remember thinking math was more important for boys." "Teachers seemed to think boys should do better at math.") At the secondary level, several recalled the small number of girls in advanced math classes. ("Only three girls were in senior math." "Of 27 students in trig, only two were girls.")

However, these teachers perceived little or no sex stereotyping in elementary schools today. Nearly all said they expect girls to achieve as well in mathematics as boys and consider the subject important for girls as well as for boys.

In fact, some evidence of a reverse bias was present. Several teachers stated that girls tend to perform better in all subjects, including mathematics.

Yet, a few comments indicate that some stereotyping is still with us. "I expected boys to do better at math, but found that girls did." "The children think boys are better at math." "Parents are more concerned about boys' achievement in math."

Preventing Math Anxiety

The teachers were genuinely eager to create a positive learning climate for their mathematics classes. Several mentioned the importance of modeling a "math is important, interesting, and fun" attitude. It was suggested that teachers challenge students to do difficult work but support them all the way. Students should be encouraged to ask questions. ("There is no such thing as a 'dumb' question in this class.") Students can be helped to accept the fact that making mistakes can frequently be an important step in learning.

Suggestions for teaching strategies included permitting children to use manipulatives and "crutches" and encouraging use of a variety of games and activities. The teachers stressed the need to provide much practice and drill before any tests or grades are given. They also emphasized the importance of individual help and encouragement, ensuring success at each level before moving on, and flexibility with time limits when possible. Some of them noted opportunities for integrating math with other subjects. ("Is 20,000 leagues a long distance?" "How long ago was this book written?")

It was obvious to us that some of the strategies for preventing anxiety in their students resulted from the teachers' own unpleasant experiences with math. Rather than perpetuate the cycle of negative attitude causing negative attitude, most teachers seemed determined to break that cycle. This was true even of those we interviewed who were categorized as "math anxious" as a result of the inventory analysis. Although we cannot conclude that all math-anxious teachers are equally determined to break this cycle, it is encouraging to know that some of them are.

Implications for Administrators

How can supervisors and principals be of greater assistance to teachers as they try to improve attitudes toward mathematics? Although the interviews were

generally positive, inventory results supported the suspicion that some elementary school teachers continue to have very negative attitudes toward mathematics. One of the most important contributions administrators can make is to create a climate where teachers can admit their negative feelings about math. The teachers appeared happy and relieved to share such feelings with two harmless strangers. But one wonders about their willingness to share this information with principals (most of whom are men) or with math supervisors (most of whom are probably mathematics majors). They may reasonably fear to admit feeling inadequate about one of the "basics"; yet this admission seems to be a necessary first step to overcoming the problem.

Administrators will need to let these teachers know they are not alone. Many bright women (and some men) are "coming out of the closet" and admitting to math anxiety. A nonjudgmental and nonthreatening support group could be formed to discuss negative attitudes and perceived needs and to suggest what types of therapeutic/remedial help would be appropriate.⁴

Having made their dilemma known, teachers would then be free to talk with and observe other teachers who enjoy teaching mathematics. They could thus learn not only content and techniques but also positive motivational strategies. Provisions for small-group review and remedial sessions with interested and sympathetic math teachers could be made. Since long-term attitudes cannot be changed in a few days or weeks, follow-up support and encouragement is a must. ■

¹A good introduction to the topic and summary of research can be found in S. Tobias, *Overcoming Math Anxiety* (New York: W. W. Norton and Co., 1978).

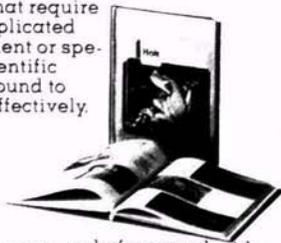
²B. Donady and S. Tobias, "Math Anxiety," *Teacher* 95 (November 1977): 71-74.

³A complete account of the study can be found in C. Widmer and A. Chavez, "Math Anxiety and Elementary School Teachers." Mimeographed study, Northern Kentucky University, 1979.

⁴Sample resource materials include: S. Tobias, *Overcoming Math Anxiety* (New York: W. W. Norton and Co., 1978); S. Kogelman and J. Warren, *Mind Over Math* (New York: McGraw-Hill, 1979); H. R. Jacobs, *Mathematics, A Human Endeavor: A Textbook for Those Who Think They Don't Like the Subject* (San Francisco: W. H. Freeman, 1970).

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