Math anxiety does not appear to have a single cause. It results from parents’ and teachers’ attitudes toward mathematics, poor self-concept, the inability to handle frustration, and emphasis on mathematics through drill without understanding (Norwood 1994). Tobias and Weissbrod (1980) defined math anxiety as “the panic, helplessness, paralysis, and mental disorganization that arises among some people when they are required to solve a mathematical problem.” Math anxiety has been called an illness that is an emotional as well as a cognitive dread of mathematics (Hodges 1983; Tobias 1978). Studies have shown that parents who have math anxiety can pass it on to their children and that teachers who have math anxiety can pass it on to their students (Lazarus 1974). The ranks of the mathematically anxious also include some mathematics teachers, especially at the elementary level (Williams 1988). A high percent of elementary school teachers say that they avoid mathematics and have been found to be math anxious.

Most math anxiety has its roots in the teachers and the teaching of mathematics (Williams 1988). A bad experience with a mathematics teacher can cause math anxiety (Tobias 1978). Evidence suggests that math anxiety results more from the way the subject matter is presented than from the subject matter itself (Greenwood 1984).

This article deals with students whose math anxiety resulted from past verbal or physical abuse, in particular, abuse by a teacher or parent while doing mathematics. Let us define math abuse as any negative experience related to an individual’s doing mathematics. It could be verbal, for example, such a statement as “You’re stupid if you can’t solve this problem”; or it can be physical, for example, striking a student who gives the wrong answer to a problem. In this article I discuss two examples of math abuse, the resulting math anxiety, and how I dealt with both.

**TWO STUDENTS**

Terry was forty years old. She was a student in my developmental-algebra class and was returning to college to become a teacher. In our first class session, I administered a short assessment test. During the test, Terry was tense and clearly disturbed.

After class I found Terry sitting in the hallway crying. She explained to me that she was afraid of mathematics and that she performed well in all her classes except mathematics. She asked me to be patient with her because she would work very hard. It was clearly important to Terry that I know this information about her.

Lenore, who was in the same class, was forty-three years old and was studying to be a nurse. She was quiet in class. To get her to participate, I called on her for the first time several weeks into the semester and I asked her a straightforward question. I often use this technique to boost a student’s confidence and increase her or his class participation. I was unprepared for her reaction. She panicked, said nothing, and sank into her seat as if she wished to disappear.

I spoke with her after class. She said that she had taken this course once before and failed it. She said that each time she was called on in class, she would “panic and freeze.” She requested that I neither call on her nor ask her any questions in class. Lenore seemed relieved that we had this conversation.

Lenore had a difficult time learning mathematics. I found myself crafting my lectures just for her. But after a few minutes, the results were the same. She stared blankly at me. She was not letting any information in. Lenore later described the situation in this way: what I said was scrambled in her ears, and by the time it reached her brain, it was gibberish. Why did Lenore have this reaction? The rest of the class responded well. I wanted an explanation.

**A WRITING ASSIGNMENT**

Both women were bright. They did well in all their classes except for mathematics. About a month into
None of her experiences as a police officer frightened her as much as entering her first college-mathematics class.

Terry's story
School was a terrible experience for Terry. Her very worst experience was in the third grade. Terry had trouble with long division. Her teacher asked her to write her “Math and Me” paper at home and hand it in during the next class period.

After I collected the papers, I read them that evening at home. Most students appreciated the fact that I cared enough to ask about them. Some, particularly young males, thought that the exercise was stupid. Women were more candid and gave more detailed responses, whereas men gave little detail. I made positive and empathetic comments on every paper. I learned many things about my students—how they learn and what affects their learning. However, once again, I was not prepared for what I was to learn about Terry and Lenore.

Terry and Lenore motivated my assigning the “Math and Me” paper because I was puzzled by their reaction to learning mathematics and wanted to know what was happening. I asked students to write their “Math and Me” paper at home and hand it in during the next class period.

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Terry said that her mathematics demons were created in the third grade. Although she was an excellent reader, mathematics was her nemesis. After she finished high school, it took her more than twenty years to build up the nerve to enter college. And when she did enroll at Dundalk Community College (DCC), she brought all her demons with her. I clearly recall Terry in my office talking about the chalkboard incident, spitting anger as she spoke of the teacher, as if it had happened yes-
terday. In her “Math and Me” paper, Terry revealed that she had been a police officer for ten years. She said that none of her experiences as a police officer frightened her as much as entering her first college-mathematics class.

Lenore’s story
Lenore’s paper was eleven pages long. Her worst experiences with mathematics involved her father. She too was in the third grade and needed help with her mathematics homework, so she asked her father for help. “He sat me down and showed me how to do the problem. But I didn’t get it. He slapped me. He showed me again. I still didn’t get it. He slapped me again. He screamed at me, telling me how stupid I was. I was terrified, crying, and shaking. He ripped the page out of my notebook, crumpled it up, and threw it at me.”

The lesion that was created lasted well into adulthood. Lenore said that when she is in mathematics class, she sometimes feels like that little girl again, shaky and stupid. She feels free to ask questions in other classes, where she does not mind being called on or making a mistake. But not in mathematics class. Lenore said that writing the “Math and Me” paper was a catharsis for her.

WHAT DO I DO WITH ALL THIS?
When I finished reading Lenore’s paper, I knew that I had entered unfamiliar territory. However, as a result of their candid “Math and Me” papers, I could neither ignore Terry’s and Lenore’s math anxiety nor shuttle them off to another area of the college for help. I had to “deal with it.” How could I use what I had just learned to provide a comfortable learning environment for Terry and Lenore?

To begin, it is important to note that both math-abused students wanted their mathematics instructor to know their histories. They wanted to return to school and be successful, but they needed someone else to help them deal with “old luggage” that hindered their learning. The “Math and Me” writing assignment served as an opportunity for help. It allowed students to tell their instructor about themselves, to put on paper in the privacy and comfort of their homes what they might not be able to verbalize in school. A knowledge of their mathematical pasts helped me deal more effectively with them in class. Among other accommodations, I did not call on Lenore in class and gave Terry the opportunity to test outside the classroom. As a result, their learning environments were more comfortable.

Instructors sometimes say that students either have or lack the ability to learn mathematics. A student who has had a painfully negative experience in mathematics often actually has the ability; it is simply masked in anxiety. We can effectively teach these students by tapping their belief in...
themselves and in their ability to learn mathematics through encouragement, positive talk, and accommodation. The belief that an individual can learn mathematics, linked to the feeling that the instructor cares about the student’s learning, will push a student harder to learn. Had I not discovered their histories, I might have viewed Terry and Lenore as slow mathematics students who just had to work harder to pass the course.

Several other students, both male and female, said in their “Math and Me” papers that a parent or teacher had called them “stupid.” Some received no support at home. Several said that a teacher’s encouragement had kept them going. We must not underestimate the power of encouragement and positive talk in the mathematics classroom. We must not underestimate the damage that negative talk from a teacher or parent can have on self-esteem and performance, regardless of how long ago it occurred.

Dealing with math-abused students and their math anxiety requires that an instructor assume an additional role. Teachers are in large part responsible for student learning. However, we cannot teach just to a student’s intellectual side. If a student’s emotional side—the source of math anxiety as well as motivation, self-esteem, and belief in one’s ability—interferes with learning mathematics, it is our responsibility to address the emotional side, as well. The average student at DCC is thirty-three years old. At this age the emotional side may have more influence on learning mathematics than intellectual ability, which in many cases is average or above average. The AMATYC Crossroads Standards, when speaking of pedagogy, say, “Faculty will have to be compassionate enough to help students work through their frustrations but show enough ‘tough love’ to encourage them to become independent thinkers and help them realize that sustained effort will be required to truly master the material” (Cohen 1995, 28).

Preventing and overcoming math anxiety begins with teachers and teaching strategies that develop positive and realistic self-concepts. One effective technique that helps reduce math anxiety focuses on teaching the content of mathematics (Reyes 1980). Teach so that students understand, because the more the student understands, the less math anxiety the student will have. Working collaboratively in small groups and using manipulatives to demonstrate concepts helps increase understanding and reduce math anxiety (Sherard 1985). Encourage students to ask questions and participate in class by creating a comfortable classroom setting that emphasizes the positive and discourages the negative (Tobias and Weissbrod 1980). Encourage each student to understand his or her own personal learning style. Ask your counseling center to administer a learning-styles inventory to interested students and to review the results with them. And finally, discuss the issues of math anxiety and comfortable and productive learning environments with your students. This advice is particularly timely and useful in developmental classes. It will help some students who believe that “it’s just me” realize that they are not unique, and it will open a door to conversation.

Somewhere in each of our pasts, we may have internalized educational demons of our own. How did they influence who we became? I challenge each teacher to write his or her own “(Subject) and Me.”

Not until I started giving the “Math and Me” assignment did I begin to think about my own past. I wrote a “Reading and Me” essay, in which I recalled my first-grade teacher. Children took turns going to the front of the classroom with a cardboard square, on which a letter was printed. All we had to do was say the letter. My turn came. My letter was R. I said P. The teacher took the stack of letters and tapped me on the head with them. The class laughed. The image is vivid. I did poorly in reading and English classes until I entered high school, but I excelled in mathematics. Did I make a connection among the cards, mathematics, reading, and English? Could that first-grade incident have steered me toward mathematics and away from the other areas?

Teachers wield tremendous power over a student’s academic success, especially in the lower grades. This power affects self-esteem and one’s belief in what one can do. A teacher must do more than just give great lectures. Success for many students is related to how we make them feel in class.

I would like to thank Terry and Lenore—not their real names—for allowing me to tell their stories. Terry pushed herself, passed all her mathematics classes, and today has a degree in education. Lenore passed her mathematics class and now works as a registered nurse.

BIBLIOGRAPHY


