Changing Your Attitude and Suiting Your Personality
How Can I Change My Attitude About Math?

Dr. Robert J. Rapalje, Retired
Central Florida

More FREE help available from my website at www.mathinlivingcolor.com

Introduction

The student success stories presented in this book represent a variety of students with different personalities and experiences. One common thread is that most of these students began with a fear of math and low self-confidence. Although the students began with negative attitudes towards math, in each case they became motivated to learn math and ultimately succeeded. Here's the main reason why: each successful student made an appropriate change in attitude and study habits, enabling them to succeed in their required math classes.

Success Story of a Student Named "D":

When "D" was in the 9th grade, she was having a great deal of difficulty with math (as many students in the 9th grade!) In a conference with her teacher, "D" was given the "death sentence" by her teacher. She and her mother were told, "You will never be able to succeed in math. The best you can ever hope for is to scrape by! There is nothing I can do to help you!" After that, "D" said that she never tried very much. During her junior year, she left high school because as she said, "I just didn't think I should even be there!" She was so discouraged. She knew she could never go to college.

After a year of working in a day care center, "D" decided to further her education, so she passed the GED (high school equivalency exam), and enrolled in Beginning Algebra. Unfortunately, she also had severe back pain and other physical problems. In spite of physical therapy and pain medication that made it necessary for her to miss class frequently, she persevered, and frequently had to learn the math on her own from the book without the benefit of classroom explanations. According to "D," "Things just clicked." She was awarded a scholarship for being the best student in the Beginning Algebra class, and during the next year, she also completed Intermediate Algebra—with straight A's. If only "D's" 9th grade teacher could see her now!!

"D's" success story and the rest of our profiles begin with a change in attitude. Stop now and think for a moment: what is your attitude towards math right now, and what can you do— better yet, what *must* you do— to change it? This topic will help you to answer this question.

Consider also the following story by "R" who had a dramatic change in his attitude that completely changed his lifestyle.

Success Story of a Student named "R"

Math has always been my weakest subject. In ninth grade I failed Algebra 1 and for the following two years barely squeezed by with C's in both Applied Math I and Applied Math II. Not only was I poor in math, but in most of my academic studies I failed to meet the standards of achievement. What was my problem? Attitude. I didn't feel that I could ever succeed in anything except the arts. Due to my poor self-confidence, I became more and more reluctant to put forth any effort in my homework and then eventually, even in class. I soon came to the point in my life where everything came to a crashing halt. My brain was fried on drugs, and it took a nearly fatal dose of an illegal drug to make me realize that if I wanted to succeed in anything involving the use of my brain again, I would need to reach outside my own physical limitations for some help. My choice? I turned to the Lord, who created both my brain and math, and started praying for help.

Now, four years later, I've almost completed my Associate of Arts degree with straight A's and B's in all my courses—straight A's in math! My GPA has slowly escalated to a 3.5, plus I am enrolled in honors courses. My mind is sharper than it's ever been, and my attitude has been completely reformed. It didn't happen over-night, but through persistence and prayer, I slowly gained the self-confidence and healing I needed to not only become successful in math, but also in all other areas of my life. Everything wasn't just dropped in my lap, however. I had to make the right choices. I began putting more effort into my homework and classes again, but this time I succeeded! Because I learned to live right, I've not only become successful in math, but I have experienced more joy.

Perhaps these stories about "D" and "R" will help put the next paragraph in perspective.

Negative Attitudes—Where Do We Get Them?

If you have a negative attitude towards math, it probably won't surprise you that you are not alone. If you interviewed people across this country and around the world, you would find that nearly everyone has vivid memories and strong feelings one way or another about math. Some say, "Yes! I really like math! I was always good at math in school!" Others say, "Math? I was never any good at math!" or "I hate math!" It seems that few people have neutral feelings about math. What causes such passion in so many people about math? The strong feelings, either good or bad, are a result of positive or negative experiences that nearly everyone has had.

If you have a negative attitude about math, think back to your experiences with math in the past. Perhaps the memories go back to elementary school. Perhaps the memories began in middle school, junior high, or high school. Were you ever embarrassed in a math class? Did a teacher in school humiliate you in front of the class? Do you have a memory of everyone in the class laughing at you for some reason? Did you ever feel stupid because you didn't know the answer to a math question or because you failed a math test? Did anyone ever tell you, as they told "D" and her mother, "You will *never* be able to learn math!"?

Being embarrassed or humiliated in front of people, especially a classroom full of people, can be a terrible experience. Unfortunately, it happens frequently. If you have such memories from a math class, no wonder you have problems with your attitude towards math. The wounds are deep, and they must be allowed to heal.

Your experiences at home may not have been much better. Did you have a brother or sister who was really good at math, and you never seemed to measure up? If your parents were not good at math, perhaps they tried to comfort you with words like "That's okay! You are just like your mother/father! You are just no good at math." On the other hand, if either or both of your parents *were* good at math, perhaps you were an embarrassment to them. They may have told you, "Math is so easy! It's so obvious! How could anyone not understand that! You must be stupid or something." Those who are successful at math often have a way of humiliating those who are not!

If your attitudes towards math were formed early in life, you may have undiscovered talent in math. It is very possible that your situation in math is not nearly as bad as you may have thought. With a few changes in attitude and behavior you can succeed. You'll have to put forth the effort in order to see what you can do.

[Personal note: Time and again, I have been astonished at the end of a semester to learn that many of the top students in my classes have not always been top students in math. In fact, to the contrary, I am frequently told by students that (as indicated in so many of our

Student Success Stories) they came from backgrounds from which they never believed they could succeed in math. While these students were in my classes, their performance had been so good that I naturally assumed they had always been successful in math. As it turns out, the students had made appropriate changes in their study habits and attitudes, and with the right combination of inspiration and perspiration, they became extremely successful. These are not isolated cases. The fact that they occur so frequently among students who never thought they could succeed is reason to believe that you too can drastically improve your math skills if you are willing to work at it. Dr. R. Rapalje]

How Can I Build a Positive Attitude?

Whatever your previous experience with math, you can begin by changing your attitude. The first step is to recognize that you have a problem. Perhaps you didn't try as hard as you should have in the past. You may have missed opportunities to learn math because of your own bad judgment or past immaturity. Take heart! It is not too late to commit yourself to learning math.

On the other hand, perhaps it was not your fault at all. Perhaps you were a victim of "math abuse" in that you were hurt, embarrassed, or humiliated by someone else. Whether the person was malicious or simply careless or insensitive, it will help your recovery to forgive the person who hurt you. Even more importantly, you must forgive yourself for not taking advantage of earlier opportunities and for not believing in yourself. Guilt and grudges are unnecessary burdens that must left behind.

Next, begin to replace your negative attitudes about math with positive ones. It may be difficult to generate positive feelings about math if you have only had negative experiences with it. Use this book to begin building positive experiences with math. Begin by reading (and perhaps even re-reading) the student success stories that appear throughout this book. Remind yourself that these students also began with negative experiences and attitudes towards math, some even worse than yours! Nevertheless, these students changed their attitudes and their behaviors, and they succeeded in math—many beyond their wildest dreams. Remember, *you too can succeed!* This is not just wishful thinking. After years of experience with students from poor backgrounds and with negative

attitudes just like you may have, we believe success in math is a very reasonable goal. However, it does require time and hard work.

Does My Personality Have Anything To Do With Being Successful at Math?

Personality is a word that characterizes our pattern of thoughts, feelings, and behavior that is consistent over time (relatively predictable). It is the essence of what makes us unique. Of all the qualities that distinguishes each of us as individuals, personality is the most intricate and the most complex. Personality and our interpersonal skills affect the way we get along with and work with others, especially classmates and instructors. The diversity of our own personalities is further complicated by the diversity of the people with whom we associate and the interactions between us. Understanding more about your own personality as it fits into the world around you will help you as you pursue your own academic and career goals— including your relentless pursuit of success in math! This section of the chapter is intended to provide a brief introduction to the theories of personality and the primary tool that psychologists and counselors most often use to assess specific personality traits. If this introduction is helpful to you, we encourage you to seek out your school's counselor (usually found in student, career, or counseling services). Some schools have counselors in the career placement office or even the registrar's office. If you cannot find the counseling or advisement office at your school, contact the registrar's office and ask to speak with an academic or career guidance counselor.

How Can I Measure My Personality Type?
Determining Personality Types: The Myers-Briggs Personality Type Indicator (MBTI)

Of all the assessment tools that psychologists use to evaluate people today, one of the most widely used and accepted tools for determining one's personality traits is the Myers-Briggs Personality Type Indicator (MBTI®). Several personality factors that are researched and explained in the MBTI can have impact on your success in math. It may

be helpful to obtain additional information beyond what is mentioned here concerning these personality factors. Perhaps your counselor can arrange for you to take this test to determine your own personality type.

The Myers-Briggs Personality Type Indicator presents four separate dimensions of personality. The first three were the basis for Karl Jung's theory of personality type. The last one was developed by Isabel Briggs Myers:

Extroverted(E) vs. Introverted(I). Our natural flow of energy defines how we receive the majority of our stimulation. We receive this stimulation either from external sources (Extroverted-E) or from within ourselves (Introverted-I).

Sensing(S) vs. Intutitive(N). Generally, we prefer to take in or absorb information either from the five senses (Sensing-S) or we rely on our instincts (INtuitive-N). "Sensing" personality types take in information in a concrete, literal fashion using the five senses (see, hear, touch, taste, or smell). "INtuitive" people create abstract possibilities from the information they gather.

Thinking(T) vs. Feeling(F). The third personality preference concerns decision-making. Some people (Thinking-T) prefer to make decisions objectively using logic. For example, in the old Star Trek™ show, Spock has the ultimate "Thinking" personality type. He uses only his head to make decisions. Other people (Feeling-F) tend to follow their heart. They make decisions based upon personal, subjective value systems.

Judging(J) vs. Perceiving(P). The last preference has to do with the way we deal with the external world on a daily basis. Some prefer organized, structured environments (Judging-J), while others are more comfortable with diverse, flexible surroundings (Perceiving-P). This trait characterizes the way people organize (J) or prefer not to organize (P) information and handle the routines of life.

The average breakdown of the population within the United States by Myers-Briggs personality factors is as follows:

Extroverted (75%)	Introverted (25%)
Sensing (75%)	Intuitive (25%)
Thinking (50%)	Feeling (50%)
Judging (50%)	Perceiving (50%)

These personality factors are like natural strengths or gifts that we have. They are value neutral which means they are neither good nor bad. One tendency is not considered better than another. Each of these personality factors indicates a personal preference or natural tendency, like our own tendency to be right-handed or left-handed. For the most part we are born with these preferences. However, over the years, we do tend to work on and develop the other side of our personality, in order to become well-balanced individuals, able to function well in society. Remember how Spock was supposed to have the ultimate "Introverted, Intuitive, Thinking, Judging" personality type? His battles with the "Extroverted, Sensing, Feeling, Perceiving" sides of his personality made for many great Star Trek™ episodes! Do you think Spock was good or bad at math? [Answer: He was like a computer when it came to math!]

The following explanation is not meant to be a comprehensive treatment of the Myers-Briggs personality factors. Rather, it is designed to briefly introduce the personality factors, especially as they may relate to success in mathematics classes.

Extroversion Vs. Introversion: Don't Get Lost in the Shuffle.

Extroverted students tend to pick up ideas from the outside, frequently speaking before thinking. They tend to think out loud, asking a lot of questions. Extroverts tend to dominate classroom activities. On the other hand, introverted students tend to get ideas internally, requiring quiet time to solve problems. They may find it difficult to ask questions in class.

While neither personality type is better or worse than the other, the extroverted student must be careful not to be perceived (especially by an introverted instructor) as a troublemaker or as one who asks too many questions in class. The introverted student must make an extra effort to get his or her questions answered, either in class or outside of class. There is a tendency for the introverted student to be overlooked by well-meaning instructors who just do not notice that the student really has questions.

Sensing Vs. Intuitive: The Great Math Student Vs. Instructor Divide

Sensing students learn by seeing, hearing, touching, and handling. They are comfortable with concrete topics, and they prefer a classroom with few choices and decisions to make. Sensing students prefer *not* to see different methods of solving a given problem. They like to follow step-by-step instructions. Intuitive students prefer to learn through imagination and inspiration, rather than their senses. They prefer a classroom with a wide range of options and learning by insight. Intuitive students do well with abstract topics and essay tests. Considering how many topics in mathematics, especially in higher math, are abstract, like applications (word problems), working with formulas, and proving theorems, it is clear that the intuitive students have an advantage in math classes.

Again, one side of the sensing/intuitive scale is not considered better than the other. In fact, both dimensions are needed to be successful in mathematics. Students must learn to follow step-by-step procedures to solve a problem. They must also learn to understand abstract topics, especially in higher mathematics. Sensing type students may have difficulty with the symbols in math. They may also have trouble with word problems. Extra help and extra homework may be needed to help these students grasp abstract concepts in math. Intuitive students, who have little problem with abstract concepts, may have a problem learning to organize math problems in a step-by-step fashion. These students may need help organizing their work. They will likely be bored by the repetition and drill usually required in order to master and retain math concepts.

It is interesting to note that research indicates an estimated 85% of students in developmental mathematics courses are **sensing** types, while 95% of mathematics instructors are **intuitive**. What would cause such a mismatch of students and teachers, and what are the implications for teaching and learning?

The mismatch described above should be no surprise. It's normal to assume that those who are naturally good at math often become mathematics instructors. The abstract nature of mathematics, the extensive use of symbols, and the necessity of imagination in solving math problems (especially word problems!) would tend to eliminate many of the sensing type from a degree and career in mathematics. In addition to this, most mathematics departments are managed by intuitive personalities who often value and prefer to hire instructors with similar personality types.

On the other hand, students who have had the most difficulty with mathematics, especially word problems and abstract ideas, and who find themselves in developmental mathematics classes are those who do not have the intuitive skills. In most cases, this is why they need extra help with mathematics. Intuitive students for the most part are already successful in math, so they are probably already in higher math classes.

In order to solve this mismatch of sensing students and intuitive instructors, both students and instructors need to be aware of the needs of students. As a student, you must strive not to be intimidated when, at first glance, math concepts seem difficult. Although there may be little you can do about a non-sympathetic instructor, you can use the techniques described in this book to help you overcome these circumstances. Also, make use of resources available at your school outside of class such as a math lab or learning resource center. to abstract ideas. Do you learn best through concrete ideas with examples that you can "see?" If so, then you are a concrete learner, Or in your thinking, can you easily move beyond the concrete into abstract ideas and concepts that cannot be "seen?" Are you

[Personal Note: I myself am an "ISFJ" ! Can you see why students who had trouble with math seemed to like my classes? BTW, how in the world did an "ISFJ" ever become a MATH teacher?? The Lord works in mysterious ways!! Dr. R. Rapalje]

Thinking Vs. Feeling: On Your Own Vs. In a Group

"Thinking" students like to use reason and logic to make sense out of their world. They like to win an argument, and they appreciate an intellectual challenge. Thinking students tend to prefer to work alone. "Feeling" students make decisions based upon their personal value system. These students value harmony and agreement. They like to work in groups, and they function best when they feel appreciated.

Usually the "thinking" student has the advantage in math, although they may be at a disadvantage when it comes to interpersonal skills and working with others. The "feeling" student should be encouraged to build friendships and to work in groups.

Judging/Perceptive: Structure Vs. Flexibility

"Judging" students prefer to work in a structured environment. They work well with charts and records, and they tend to be well organized. These students are good at finishing what they begin, although they may think they are finished before they really are. "Perceptive" students like variety and are motivated by curiosity. They prefer flexibility to structure and organization.

"Perceptive" students may be at a disadvantage in math, since they may be easily distracted, lack neatness and organizational skills, and may have difficulty finishing tasks. If you sense that you lean towards having a more "perceptive" personality type, be careful and pay close attention to step-by-step procedures for solving problems. Often these will come in numbered lists either explained in class by your instructor or appearing in your textbook in boxes or in the chapter summaries.

What About My Learning Style Preference?

When it comes to learning style preferences, you should be aware that different people have different learning styles. Like personality, there are many different models that measure many different dimensions of learning style. One model that assesses learning styles, the Gregorc Style Delineator®, contrasts your preference for **concrete** as opposed

to abstract ideas. Do you learn best through concrete ideas with examples that you can "see?" If so, then you are a concrete learner. Or in your thinking, can you easily move beyond the concrete into abstract ideas and concepts that cannot be "seen?" Are you bored with the obvious, and you prefer deeper thinking? In the latter case, you are an abstract learner.

Another dimension of the Gregorc model is a preference for **sequential** learning as opposed to **random** learning. Does your learning seem best when ideas are presented in a step-by-step and orderly fashion? Of course this indicates a preference for sequential learning style. However, perhaps the very words "step-by-step" and "orderly" cause your mind to bog down with unnecessary details. If you are bored with details and if you prefer random ideas instead of step-by-step thinking, then you are a random learner.

Another model compares and contrasts **verbal learners, visual learners, auditory learners**, and **kinesthetic learners**. Being one kind of learner, as opposed to another, simply indicates that you have a preference for learning through that medium. For example, a verbal learner refers to one who prefers to learn by words, either written or spoken. Such a verbal learner could learn well by either hearing words in a lecture or by reading words in a book. More specifically, in a lecture, a visual learner likes to see something written on the board. An instructor may be explaining something in class, thinking it is so simple that there is no need to write it on the board. Suddenly, the visual learners are completely lost! Sure, they can see the instructor and hear what he/she is saying, but **visual** learners want to have **everything** written on the board. If they were **verbal or auditory** learners, they could understand the words as the lecturer is speaking. Visual learners must see it with their eyes, or they will be lost. Auditory learners prefer to learn by hearing. Kinesthetic learners prefer to learn by demonstration (or movement). Kinesthetic learners learn best by seeing the problem acted out.

In summary, being a verbal learner, a visual learner, etc. simply means we have a preference for learning by a particular method, the method that works well for us. When it comes to learning, most of us really need to combine all of the learning styles described
23
above.

Conclusion

When it comes to attitude and personality, your attitude towards math may have been set a long time ago. You may have had some unfortunate experiences associated with math in your past, and perhaps you have some unhappy memories. You may have even come to think of **math** as a **four-letter** word! Perhaps you were told by a math teacher or parent that you will never succeed in math. Indeed, you probably have just cause for your frustration and lack of self-confidence. Nevertheless, it is important that you begin the healing process by putting the past behind you. Understandably, it is difficult to believe in yourself when you have had nothing but negative experiences. Take heart from the student success stories in this and other chapters.

The secret to succeeding in math is to change your attitude (believe in yourself) and your behaviors (see "Study Skills"). Apply the recommendations in this book to become more efficient in your study habits and get the very most out of your study time. If others with negative attitudes and experiences could overcome fear and anxiety to succeed in math, then you too can do it!

Do You Remember?

1. In general, what causes negative attitudes towards math?

2. If you have legitimate reasons for negative attitudes towards math, does this mean you should keep them?

3. What evidence do you have that you can succeed in math?

4. Assuming that it will take more than "positive thinking" to enable you to succeed in math, what will enable you to succeed?

5. How many math courses do you need to take?

6. What good is math?

7. When it comes to personality type, is one personality type considered better than another?

8. What advantages and disadvantages does the extroverted student have when it comes to learning math?

9. Which personality type, sensing or intuitive, seems to have an advantage in learning math? Explain your answer.

10. A) Which personality type, thinking or feeling, is best suited for logical reasoning?

    B) Which personality type, judgmental or perceptive, tends to be less structured and free spirited?

11. A) What learning style would be considered the opposite of "random"?

    B) What learning style would be considered the opposite of "abstract"?

12. Name the learning style preferences described below:

a) Prefers to see the concept acted out.
b) Prefers to see an explanation on the board.
c) Prefers to hear the explanation described.
d) Prefers to read the explanation in a book.