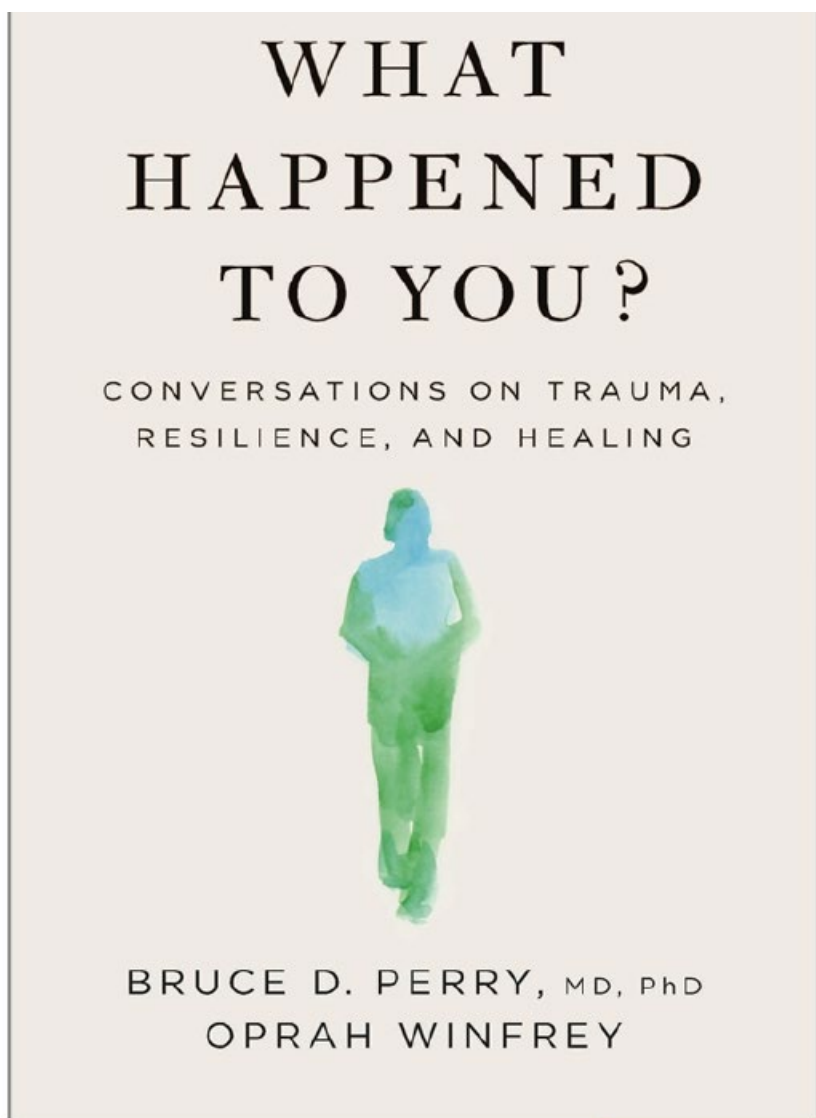


A Reading & Discussion Guide



Sponsored by the
North Carolina
Collaborative for
Mathematical Learning

This book discussion guide was developed by members of the North Carolina Collaborative for Mathematical Learning (nc2ml.org) and was modeled after the [PACEs Connections](#) Reading Guide which was developed after the [Neurosequential Network](#)'s study guide. Both organizations contain multiple resources to support building resilient communities and individuals that have experienced traumas and other adverse events. Our work connects with NC DPI's [Portrait of a Graduate](#) which suggests that students learn to develop empathy for one another. In order to support students to be empathic, this book club focuses on developing *mathematics leaders' and teachers'* empathy for students so that they can both engage empathically with their students as well as model empathy for them.

The nc²ml created this reading guide and complementary book discussion experience as Part One of a year-long Empathy Professional Development Series for mathematics education leaders at all levels of the education system. Our goal in this book discussion is to understand the neuroscientific explanation of trauma so that educational leaders can learn how to (and support teachers to) have empathic interactions with students. We know that when students feel a sense of belonging in mathematics classrooms and develop positive relationships with teachers, leaders and peers, their learning increases. Thus, understanding how the brain reacts to stressful and/or adverse events can help educational leaders empathize with students who may behave in ways that contradict their traditional expectations.

CONTENT WARNING:

While reading and discussing parts of this book, there may be times when you have strong emotional reactions to either personal stories shared in the book or by peers during a discussion. There are multiple resources listed throughout this guide if additional support is needed.

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Setting the Ground Rules before a Discussion

Since some of the topics we will discuss contain sensitive topics, it is important to set some ground rules about how we will talk.

- **Center the Voices of Minoritized People:** While multiple perspectives are necessary for growth, it is important to center voices of people of color and people that represent other oppressed populations (e.g., impoverished, LGBTQ2S+, multilingual learners/immigrants, students with disabilities, etc.)
- **Do Not Impose a Teaching Tax:** Do not expect people from minoritized populations to teach the group; they are not required to do so, and should participate in ways that are affirming to them.
- **Speak Your Truth:** Share from your own experiences and do not speak for others.
- **Seek to Understand:** Listen to learn, not to find the flaw in someone's perspective; think about your reason for responding before doing so.
- **Respect Others' Experience:** We may have different OR similar stories to share and contexts to draw from. All are legitimate.
- **Disagree Without Discord:** Disagreement is expected. HOWEVER,
 - Approach unexpected ideas with curiosity, not accusation.
 - If you disagree, ask questions to understand. Don't attack the speaker.
- **Share the Air:** Make room for all voices to be heard, and don't dominate the conversation.
- **Confidentiality:** Do not share the experiences you hear in this space outside this space without the participants' permission.
- **Be Comfortable with Discomfort:** We are all learning and will make mistakes. Take risks and do not freeze someone in time if they make a mistake. Assume that each participant is engaging to learn.
- **New Ground Rules:** Ask participants if there are any other ground rules they would like to add.

Chapter 1, Question 1

In Chapter 1, Making Sense of the World, Dr. Perry shares his simplified image of the brain (Figure 1, p. 27), referring to the bottom of the triangle as the lizard or reptilian section due its mostly primal processing ability. External stimuli enter into the lower part of our brain first, and the processing of that information makes its way slowly to the top, most sophisticated region. *This sequential processing means that the most primitive, reactive part of our brain is the first part to interpret an act on the information coming in from our senses. Bottom line: Our brain is organized to act and feel before we think. (p. 29).*

Have you encountered a math student who had a sudden, unexpected outburst or other reaction that did not make sense to you in the moment? How does Dr. Perry’s description of the brain’s information processing help us understand the responses and actions of that student?

Chapter 1, Question 2

In the introduction, Dr. Perry says, *The title “What Happened to You? signifies a shift in perspective that honors the power of the past to shape our current functioning. Oprah and I are convinced that asking the fundamental question “What happened to you?” can help each of us know a little more about how experiences – both good or bad – shape us. Or as Joe Foderaro put it, we should change the fundamental question from “What is wrong with you?” to “What happened to you?” in order to better understand our students.*

How does changing the question make you rethink your interactions with math students who are labeled as problematic or that you, yourself have labeled as problematic?

Additional Resources:

[Zero to Three](#)

[Centering on the Developing Child](#) (Harvard University)

Chapter 2, Question 1

Reread Oprah's reflection on her own heart rhythms on pages 45-47. Dr. Perry follows: *Rhythm is essential to a healthy body and a healthy mind. Every person in the world can probably think of something rhythmic that makes them feel better: walking, swimming, music, dance, the sound of waves breaking on a beach...*

What are some ways you notice your math students attempting to self-regulate through rhythm (e.g., tapping a pencil on the desktop rhythmically or shaking their foot)?

Chapter 2, Question 2

What is meant by Oprah's statement: Regulation, Relationship, Reward? This concept gets more attention in later chapters, but how does it make sense to you right now and what change does it inspire in you as a mathematics educator?

Chapter 2, Question 3

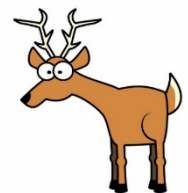
Dr. Perry and Oprah refer to regulating the stress-response-system (SRS). This idea returns throughout the rest of the book. What is your current understanding of the SRS, especially as it relates to the Tree of Regulation (Figure 2, p. 52), patterns of stress (Figure 3, p. 57) and Filling our Reward Buckets (Figures 4 & 5, pp. 62-63)?

Additional Resources:

[The Resiliency Collaborative](#)
[Stress Health](#)

Chapter 3, Question 1

You likely had heard of the fight or flight responses, but Dr. Perry adds two new responses, Flock and Freeze. When an external threat is posed, our brain signals the body to prepare for a response, potentially increasing our heart rate, adrenaline and stress hormones. The Flock, Freeze, Flight, Fight stress responses are described through the experience of a deer in the woods (pp. 85-86). Dr. Perry also reveals that some people respond to threats with **arousal** responses such as fight or flight and others dissociate to help **rest**, survey injury or tolerate pain.



What is your primary stress response(s)? How might your knowledge of stress arousal/dissociation responses inform your interpretation of student behavior in your math class? How might your knowledge inform your own response to stress?

Chapter 3, Question 2

Re-read Oprah's story about the *Cereal Moment* on pages 81-82. This story suggests that long periods of time and attention may be **less impactful** than short, purposeful periods of full connectedness with a student. Brief *Cereal Moments* are those where the adult is fully present, engaged, and listening to the student.

Have you had a *Cereal Moment* with someone? Who was it and how did it feel when the other person was fully present with you or how did they react when you were fully present with them? With hundreds of interactions per day, how do you stay fully present with your mathematics students?

Chapter 3, Question 3

Dr. Perry and Oprah Winfrey discuss the need for professionals who work with youth to learn trauma-informed strategies. For mathematics teachers, that means we must understand the mental state a student is in and what adaptations they have made to regulate themselves when experiencing stress in school. Understanding this is critical for educators because *the hypervigilance of the Alert state [Figure 5, p. 79] is mistaken for ADHD; the resistance and defiance of Alarm and Fear get labeled as oppositional defiant disorder; light behavior gets them suspended from school; fight behavior gets them charged with assault (p. 92).*

How can shifting our question from “What’s wrong with you?” to “What happened to you?” help to decrease rates of school suspensions, expulsions and the school-to-prison pipeline?

Chapter 4, Question 1

One of the difficulties facing the field, especially with the word “trauma” being used in multiple, inconsistent ways in public discourse, is that trauma has not been adequately defined. Re-read the school fire story on pages 101-102 and re-explain trauma from the three E's definition in the chapter: The Event, the Experience, the Effects. How does this

definition of trauma help you rethink events that take place in your mathematics classroom? Can you think of examples of events that might be experienced traumatically by students (e.g., taking timed tests)?

Chapter 4, Question 2

Does your school use the Adverse Childhood Experiences (ACE) questionnaire to put a number on a child? What are the main critiques of the ACE studies? In what ways can this be harmful or helpful in schools?

Chapter 5, Question 1

Figure 10 on page 142 shows a sequential model of engaging with a student who is in distress. You will read about this model throughout the remainder of the book: Regulate, Relate, Reason (the 3 Rs). Discuss the meaning of each of these terms, perhaps using an example from your math classroom.

Chapter 5, Question 2

Dr. Perry mentions “getting to the cortex” (p.143) which is when you can speak rationally with another person, connect with the abstract part of their brain. This can happen when both people are regulated but *“if they’re dysregulated, nothing you say will really get to their cortex. This is essential to understand if you’re a teacher because while the regulated child can learn, the dysregulated child will not.”*

What strategies have you learned so far for helping a student regulate? What strategies will you use to regulate yourself before interacting with a distressed student?

Chapter 6, Question 1

Dissociation has been given a negative label in our society, but Dr. Perry explains why it can be critical to surviving an adverse event. Daydreaming, in fact, is a form of

dissociation which can lead to increased creativity. As Dr. Perry states, *Our current public education system is good at producing workers, but it can be a miserable place for creators, artists and future leaders...but in a developmentally informed, trauma-aware school...downtime plays a crucial role for memory consolidation. Dissociative reflection is encouraged* (p. 171).

In what ways does your classroom/school discourage positive dissociations (e.g., daydreaming, doodling, rocking)? In what ways can you encourage the mind to wander in mathematics classrooms?

Chapter 6, Question 2

On page 172, Oprah refers to “shutting down” in classrooms is a dissociative response to stress (such as a math test). In a classroom setting, this manifests as avoiding eye contact with the teacher, being quiet in discussions, desiring to be invisible. When called on, they may comply, but it’s a hollow engagement.

Can you think of students who shut down during a math test or a math discussion? How do you react when that happens? How might you engage differently so that the student develops the capacity to control their dissociation and be in “flow” or “in the zone” (p. 177)?

Chapter 6, Question 3

Chapter 6 is all about moving from coping to healing. At the end of the chapter, Dr. Perry briefly describes how to help students, particularly those experiencing trauma in the classroom, regulate. What are some of the key elements he mentions? How might you adapt those to your classroom?

Chapter 7, Question 1

Chapter 7: Post-Traumatic Wisdom introduces us to these thematic words: “the painful path of wisdom.” *We can help each other heal, but often assumptions about resilience and grit blind us to the healing that leads us down the painful path to wisdom* (p. 189). What

mistakes are easy to make in traumatic situations when we don't respect the painful path of wisdom, when we assume resilience and grit?

Chapter 7, Question 2

Developing positive, strong relationships with adults in school is one of the most important responses to stress/trauma for students. Remember that every school year, students meet new classmates, teachers and new content that all produce a variety of stress. In terms of content, re-read the paragraph at the bottom of page 194 where Dr. Perry refers to the Goldilocks situation. How does this relate to mathematics instruction?

Chapter 7, Question 3

Read each of the statements from this chapter, choose one to discuss deeply, bringing examples from your classroom or school.

A child in an environment where they feel loved and safe will choose to leave their comfort zone.

It's very difficult to meaningfully connect with or get through to someone who is not regulated. And it's nearly impossible to reason with them. This is why telling someone who is dysregulated to "calm down" never works.

If you [the teacher] stay regulated, ultimately they will "catch" your calm.

Chapter 8, Question 1

This chapter explains how our brains came to have implicit biases, where those lie in the brain and why they are so hard to recognize (refer to pages 234 to 236). Because we have developed "clan sensitivity", we tend to judge and compete with others not in our "clan" sometimes without recognizing it. When we encounter someone that is different from our "clan", the brain's default is to activate its stress response system, often sending us into dysregulation and may even cause us to feel threatened. How does this

physiological reaction relate to the disproportionate number of students of color being referred to special education and/or school resource officers? How does “clanship” norms impact our interpretation of students’ behavior if they are not from our “clan?”

Chapter 8, Question 2

Trauma is not only an individual experience but can be passed on historically as well as epigenetically. Trauma is present and passed along across generations, families, communities, cultures, societies, and yes, school systems. What practices are present in your math classroom that perpetuate these historical traumas (e.g., discouraging girls and students of color to excel in math)?

What practices/policies are present in our school system?

How do we avoid repeating these stressors that exacerbate the effects of trauma?

How do we make sure we don’t “retraumatize” someone by unintentionally continuing the marginalizing, dehumanizing experiences in mathematics classrooms?

Chapter 8, Question 3

On page 220, Dr. Perry says that truly trauma-informed systems are anti-racist systems. What does he mean by this?

Chapter 8, Question 4

Now imagine thirty children, sitting in rows in a classroom, passively listening to the teacher lecture... Does this sound familiar? According to neuroscience, why is lecture style teaching the least impactful way for the brain to learn?

Chapter 8, Question 5

Why is diversity training for teachers and students not enough?

Chapter 9, Question 1

Relational hunger/connectedness and empathy are the focus of Chapter 9. How does Dr. Perry define empathy and why is it so important for classroom interactions with students?

Chapter 9, Question 2

There has been a significant decrease in empathy due to the increase in technology platforms that allow individuals to interact with little personal risk. Online relationships are often shallow, but higher in frequency than ever before. This is true of adults too (put your phone down!). According to Dr. Perry, *poverty of real relationships can disrupt normal development, influence how the brain works, put you at risk for physical and mental health problems*. The typical college age student is much less empathic than 20 years ago.

How do you practice empathy with students in your math classroom? How can we promote social connection and prevent isolation in and out of the classroom?

Chapter 9, Question 3

Re-read the examples from Dr. Perry and Oprah on page 267 related to the power of appropriate touch in classrooms and the impact of making policies with good intentions but are developmentally un-informed. What other policies does your school have that have unintended, developmentally un-informed consequences? What about your classroom?

Chapter 10, Question 1

On page 282, Dr. Perry gives some good advice to teachers about how to engage empathically and with developmentally informed, trauma based responses. Re-read that section and reflect on the advice. What can you do starting tomorrow?

Examine your classroom practices...how might you change them to engage with students more empathically:

- Physical arrangement and appeal of the room
- Nature of mathematics talk
- Teaching style (teacher centered, student centered)
- Instructional materials/activities
- Discipline procedures
- Who you encourage to continue studying mathematics

Examine your school practices and policies...how might you change them to facilitate empathic interactions:

- Physical space

- Discipline practices
- Professional development
- How (who) students are recommended for honors mathematics courses

For further consideration

If this book interested you and you'd like to explore this topic more, here are four more opportunities to grow your empathy and trauma-response in the classroom.

- Duggan, K. (2022). [Empathy in the math classroom](#). *Journal of Mathematics Education at Teachers College*, 13(2), 35-36.
- 15 hour (1.5 continuing education) training through the continuing education department at UNC Charlotte. It is all asynchronous and paced by teachers. The training is called Trauma-invest teaching practices and policy. Link to training is <https://continuinged.charlotte.edu/traumateaching>
- Souers, K. V. M., & Hall, P. (2018). *Relationship, responsibility, and regulation: Trauma-invested practices for fostering resilient learners*. ASCD.
- Venet, A. S. (2021). *Equity-centered trauma-informed education (Equity and Social Justice in Education)*. WW Norton & Company.
- Reiss, H. (2018). *The empathy effect: Seven neuroscience-based keys for transforming the way we live, love, work, and connect across differences*. 2018 Brilliance Publishing, Inc.