Chapter 2

Identities, Agency, and Mathematical Proficiency: What Teachers Need to Know to Support Student Learning and Empowerment

Consider the comments of Terrell, a fourteen-year-old boy, about himself:

> Ever since I started playing hockey, my dad has been on my case to do my work. Keep my grades up in school. If I don't, that's the end of my hockey career. The most respect I get is from hockey.... I want to be the best in hockey, so I work hard in school to be able to play hockey.... People think of hockey as a white man's sport. But I think if a man wants to play hockey or a man wants to do something he wants to do, then he should be able to do it without anybody questioning how he does it or why he does it.

Terrell was one of thirty-five students interviewed as part of a larger research study that focused on academic and mathematics success and failure among African American middle school students (Martin 2000). Analysis of this excerpt, and the longer interview from which it came, showed that Terrell's strong identity as a hockey player served to strengthen his identity as a good mathematics student and helped to keep him among the highest achievers in his school.

A central goal of this chapter is to discuss the inextricable links between mathematics learning and identity. Specifically, we focus on some of the many forces that shape students' *mathematics identities*—how students see themselves and how they

are seen by others, including teachers, parents, caregivers, and peers, as doers of mathematics. We also give attention to other identities that students develop in and out of school and discuss how those identities shape and are shaped by students' life experiences. Then we discuss the concepts of *mathematical agency* and *mathematical proficiency* to highlight important behaviors, dispositions, and skills that teachers can help students strengthen to support positive mathematics identities. We conclude the chapter with a discussion of how teachers can reframe the identities that they ascribe to students—identities that might be based on stereotypes or limited knowledge of student backgrounds—to help strengthen mathematics teaching and learning in the classroom.

What Is Identity, and Why Should Teachers Be Concerned about It?

Identities can be defined as "the ways that people come to conceptualize themselves and others" and how they act because of those understandings (Cornell and Hartmann 1998, p. xvii). Identities can emerge in the form of *stories* that announce to the world who we think we are, who we want to become, or who we are not.

Student identities are diverse and complex. They can be faith-based (strong Muslim or Christian identities, perhaps) and family-based (identities as "good sons" or "good daughters," for instance). Identities of young people can also include early identifications with careers as doctors, lawyers, teachers, engineers, firefighters, train conductors, artists, or sports professionals, for example. These identities are important; they can serve as sources of strength and motivation to do well in school, in general, and in mathematics, in particular (Martin 2000).

We believe that children's developing identities should be important considerations in the daily work of all teachers. Teaching involves not only developing important skills and conceptual understanding in mathematics but also supporting students coming to see themselves as legitimate and powerful doers of mathematics. This understanding of children's identities, especially in relation to mathematics, can give teachers a better understanding of how and why some students make positive connections with mathematics and others do not. With this enhanced understanding, teachers can adjust their practice to support and strengthen a child's learning of mathematics and his or her persistence as a confident mathematical learner.

What Are Mathematics Identities?

We define *mathematics identity* as the dispositions and deeply held beliefs that students develop about their ability to participate and perform effectively in mathematical contexts and to use mathematics in powerful ways across the contexts of their lives. Depending on the context, a mathematics identity may reflect a sense of oneself as a competent performer who is able to do mathematics or as the kind of person who is unable to do mathematics.

Mathematics identities can be expressed in story form. These stories reflect not only what we say and believe about ourselves as mathematics learners but also how others see us in relation to mathematics. Teachers, peers, parents, and caregivers can all exert an influence on the mathematics identities that students develop. A key consideration about mathematics identities is that they are strongly connected with the other identities that

students construct and view as important in their lives, including their racial, gender, language, cultural, ethnic, family, faith, and academic identities.

For example, Berry (2008) interviewed and observed six African American middle school boys who were able to reflect on their mathematical experiences and how those experiences shaped their mathematics identities. Although Berry was interested in how these boys learned and saw themselves in relation to *mathematics*, he did not minimize attention to their *racial* identities as African Americans, because both identities were salient in the school experiences of these boys. One of those interviewed was Cordell, whose narrative provides a glimpse of his emerging mathematics, academic, "good son," and African American identities and shows how his experiences in and out of school wove those identities together.

My name is Cordell, and I am an eighth-grade student at Memorial Middle School. I am an only child, and I live with my mother. I know that my mother, being a single parent, has a tough job, so I have had to take on more responsibilities than other kids do, and I have learned to be independent. My grandmother and aunts help my mother by encouraging me to make good decisions and make sure that I stay on the right track. My grandmother and mother talk to me about doing well in school and make sure I do my work. My mother is always saying I better do well in school if I plan on going to college.

Math is my favorite subject because it is my easiest subject. Math is interesting and fun because in math you have to think and keep trying until you get it right. I was first drawn to math in the third grade when we started to learn how to multiply.

I knew I was good because I learned to multiply earlier than the other kids in my class. I am glad that I was good at math at a young age, because that put me ahead of the other kids in my class. My third-grade teacher divided the class into groups, and I was with the group that got the harder problems. This made me feel like I was smart.

When I was in fourth grade, I started getting into trouble because I was bored with school. My teacher was teaching me things I already knew, so I would start playing around in class. My mother thought I was not being challenged enough and that is why I got into trouble. After a few conferences with the teacher and the principal, my mother felt that I should be tested for the AG [academically gifted] program.

The teacher and principal did not want me tested because they felt I was not gifted. My mother thinks the reason they did not want to test me was because I am Black. She stayed on the teachers and principals until I was tested. I did well enough to be placed in the AG program midway through my fourth-grade year.

Cordell's narrative reveals a number of identities that are important to him and that are interwoven in his sense of self as a mathematics student. These identities include being a middle school student, an only child, an independent good son, a self-acknowledged smart student, and a Black boy who some school officials think is not gifted in mathematics. Cordell's narrative also helps to demonstrate our claim that students negotiate a number of complex identities that emerge as important to them. These identities can find support from parents, caregivers, and teachers, and other significant people in students' lives.

As Cordell's narrative helps to demonstrate, parents, caregivers, and teachers can have profound influences on their children's mathematics identities in response to the messages they send about their competencies and abilities. These messages can emerge in the stories that children tell about their mathematical experiences.

It is important to note that mathematics identities emerge not only through the stories that students tell and that are told about them but also through the *behaviors* that they demonstrate to help position themselves as certain kinds of people (for example, good math students) or as members of a particular group (high achievers, for instance). A student's correct and confident use of mathematical language and argumentation strategies, supported by positive feedback from teachers and peers, could help to reflect or shape a positive mathematical identity. These identity-affirming (or identity-challenging) behaviors can influence the kinds of learning experiences and social relations that students have with others (Cornell and Hartman 1998). Students who have been identified and behave as "gifted" mathematics students among their peers may dominate classroom interactions and activities in an attempt to maintain their status. Students who believe that they are not good at mathematics may remain silent in small-group interactions because they fear that other students will judge them. Language-intensive practices that demand increased levels of math discourse may come to favor or privilege some students (native English speakers, students who are outspoken) over others (English language learners, shy students), allowing the former to assume leadership roles, elevate their status as doers of mathematics, and improve their mathematics communication skills.

Similarly, classroom activities that reward speed as ideal mathematics behavior may lead students to believe that being "good at mathematics" means being able to recite multiplication facts or carry out calculations quickly. Students who are more deliberate in their work may see themselves as being not good at mathematics. Moreover, as criteria emerge to establish who gets labeled as "smart" or "gifted" or "slow" or "proficient" or "at-risk," students will come to see themselves in particular ways relative to other members of their mathematical communities. Instead of becoming more valued members of their classroom communities, they may come to see themselves as outsiders.

Thus, many influences shape a student's mathematical identity—some negative and some positive. It is important for teachers to understand the impact of the instructional decisions that they make, and the social and academic norms that they create, on a child's mathematics identity.

Mathematical agency

The definition of *mathematics identity* presented earlier in this chapter includes "the ability to participate and perform effectively in mathematical contexts." This behavioral aspect of mathematics identity can also be captured by the term *agency*. Several mathematics educators have taken up the idea of *mathematical agency* and documented it among students and teachers in classroom settings. Turner (2003), for example, has drawn on her work with Mexican American and Mexican children in the southwestern United States to conceptualize *critical mathematical agency* as students' capacity to "identify themselves as powerful mathematical thinkers who construct rigorous mathematical understandings, and who participate in mathematics in personally and socially meaningful ways" (p. iv). Gresalfi and colleagues (2009) characterized agency with respect

to opportunities to complete mathematical tasks, and they distinguished two forms of mathematical agency: *disciplinary agency* and *conceptual agency*:

> Recalling facts or definitions and executing procedures involve disciplinary agency; there are correct answers, and a student either gets it right or doesn't. Procedures with connections and, especially, doing mathematics generally involve conceptual agency, with students being positioned to take initiative in constructing meaning and understanding of the methods and concepts that are the subjects of their learning. (p. 56)

Both Turner's and Gresalfi and colleagues' conceptualizations of agency help to highlight that students are active participants in, rather than passive recipients of, their mathematics education experiences. They can exercise these forms of agency in productive ways—resisting negative identities that are imposed on them, developing mathematical strategies within the context of small-group work, or using mathematics as a tool to understand their life circumstances or events in the world. Creating opportunities for students—particularly those who traditionally have had less access to powerful mathematics and mathematical practices—to engage in productive forms of agency should be a goal for all teachers.

The idea of mathematical agency is not confined to individual students. Classrooms of students can exhibit *collective mathematical agency* when teachers and their students act together to solve problems, working from the shared belief that viable strategies can be developed, and solutions can be found. Different students can contribute different elements to this collective agency. Some students might contribute productive reasoning strategies. Other students might make computational contributions. Others might contribute through whole-class explanations of particular mathematical concepts or by asking questions that help to clarify problems and concepts for themselves and their classmates. Teachers can also encourage students to assume various roles that provide them with opportunities to make viable contributions to classroom activities and practices. Some students with bilingual competencies might be assigned roles as translators for their peers whose first language is not English so that these students will not be left behind. Teachers can further contribute to this collective agency by helping to establish classroom norms and rules for behavior that encourage cooperation and risk-taking during problem solving rather than strict competition (Featherstone et al. 2011; Horn 2012).

Reflective teacher practice that is committed to equity will include the development of tasks, activities, and classroom cultures that encourage students to exercise their positive mathematical agency, individually and collectively. These forms of agency can contribute to students' developing positive identity-related stories and behaviors that affirm and demonstrate these identities.

Mathematical proficiency

Creating these expanded opportunities for students to learn mathematics and develop productive mathematics identities with powerful agency will also require teachers to develop a broader concept of what counts as mathematics proficiency. As outlined in *Adding It Up: Helping Children Learn Mathematics* (National Research Council 2001a),

teaching for mathematical proficiency no longer should include a singular focus on having students develop computation skills and memorize algorithms, perhaps privileging those students who believe mathematics is about doing computations quickly. As the book suggests (see figure 2.1), mathematical proficiency should include developing *conceptual understanding* (comprehension of mathematical concepts, operations, and relations), *procedural fluency* (skill in carrying out procedures flexibly, accurately, efficiently, and appropriately), *strategic competence* (the ability to formulate, represent, and solve mathematical problems), *adaptive reasoning* (the capacity for logical thought, reflection, explanation, and justification), and *productive disposition* (a habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

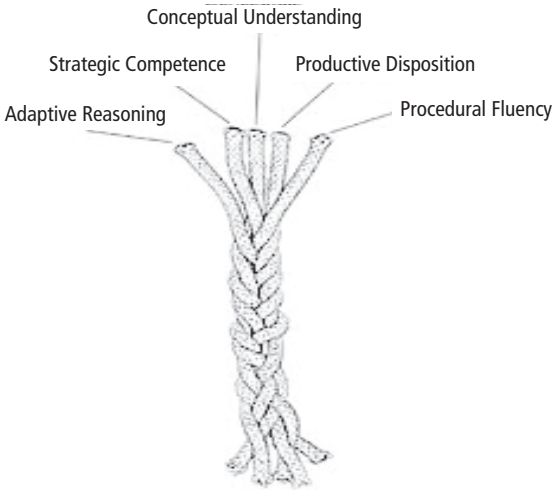

Fig. 2.1. Five strands of mathematical proficiency (National Research Council 2001a, p. 5; reprinted by permission)

Although the five strands of mathematical proficiency outlined in *Adding It Up* are intertwined, as the figure suggests, one or more may emerge earlier in some students than in others. Some students might demonstrate deep conceptual understanding but might not yet demonstrate strong strategic competence. Other students might demonstrate strong procedural fluency but might not yet display a productive disposition toward certain kinds of tasks and practices. Teachers will need to reflect on which classroom and curricular practices provide the best opportunities for these components of mathematical proficiency to emerge.

Connections to these strands of mathematics proficiency can also be found in the mathematical practices identified and emphasized in the Common Core State Standards for Mathematics (National Governors Association Center for Best Practices and Council of Chief State School Officers 2010) as well as process standards in state frameworks such as the Texas Essential Knowledge and Skills for Mathematics K–12 (Texas Education Agency 2012). The Standards for Mathematical Practice "describe ways in which developing student practitioners of the discipline of mathematics

increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise" (p. 8):

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

We believe that these shifts in characterizing mathematical proficiency can help to foster reflective and equitable mathematics practice among teachers *and* the development of positive identifications with mathematics among students. Instructionally, these shifts offer teachers an increased number of pathways and points of entry to assess students' mathematical development. For students, these broader conceptions of mathematical proficiency provide multiple ways to demonstrate their competence. That is, these expanded possibilities for developing and demonstrating mathematics competence can represent substantial opportunities to learn and engage in mathematics. We believe that *how* students experience mathematics in their classrooms shapes their views of mathematics and themselves as mathematics learners and doers. Thus, how mathematical proficiency is defined and communicated to students has a powerful impact on their mathematics identities and their exercise of various forms of agency.

Seeing the Multiple Identities of Students

Although we give primacy to mathematics, we emphasize the importance of recognizing the range of identities beyond mathematics that students spend their time and energy developing or that others may assign to them. Acknowledging these identities can lead to richer, more meaningful understanding of children and their lives. Terrell's identities as a hockey player and a good student, for example, serve to challenge popular societal and school-based perceptions and negative stereotypes about what it means to be a young African American male. It is important to note that although Terrell was able to defy negative stereotypes by maintaining high grades in mathematics, expressing positive attitudes toward mathematics, and demonstrating classroom behaviors typically associated with being a good mathematics student, he did not identify mathematics as his favorite subject or use mathematics as the *primary* source for constructing his overall academic identity. In fact, English was Terrell's favorite school subject:

> I like English because I like to write. I'm not much of a poem writer but I want to write poems. That's what I want to do. Nobody knows. I never told anybody that I want to write poems, but that's what I want to do. So I like English. My mentor is Langston Hughes. I look up to him. (Martin 2000, pp. 146–147)

These remarks by Terrell serve to remind us that, unless asked, students may be unwilling to reveal important aspects of their many developing identities. Similarly, students can be very adept at invoking particular identities to serve particular needs in both school and nonschool contexts.

It is equally important to stress the significance of identity-based considerations for students whose identities are often taken for granted. In many school-based discussions and policies, the categories "Asian" and "Latinx," for example, are often associated with beliefs about students who do well in school, in the case of the former category, and with children who struggle and fail, in the case of the latter category. Often these associations exist with no consideration of the varied experiences of different subgroups and the varied home and cultural experiences and roles of children within those subgroups.

Orellana (2009) highlights the family roles of immigrant children and the complex identities they take on in relation to both their family and school lives. She offers a brief profile of a fourteen-year-old girl, Cindy, and describes her role as family translator. Orellana explains that Cindy liked this role because "she learned more about other people in her family and about herself…; it made her feel smart; she learned more words in her two languages, English and Chinese" (p. 9). In describing how she believed these experiences distinguished her from her peers, Cindy was simultaneously able to reveal the out-of-school mathematical needs (for example, budgeting and making banking transactions) that she was meeting to ensure her family's well-being:

> Sometimes I think I invaded people's privacy, like they have to tell me over the phone, like deposit statements and stuff like that. I know exactly the house's wages and stuff like that, and I tell my parents, and they don't really care. I just know, and I translate it. While the other kids, they ask for things, I'm not trodding down people of my own age, but some people they just ask for things, like "Can I have a bike, can I go swimming, can I go to summer camp, can I have a new pair of Nikes?"… Their parents keep saying, "Do you know how hard I work for the money to pay bills?" They don't know exactly how much is in their bank deposits, the bills and stuff. But *I* know personally because I write the bills. I write the checks. (Orellana 2009, p. 9)

In Cindy's case, her family roles and out-of-school experiences helped to shape her identity as a daughter, a translator, and a budget manager. Her identities intersect with one another in ways that reveal complexities that nonimmigrant children may not experience.

Our point in presenting the preceding examples is to stress that *all* students develop, resist, and try on many different identities as they make sense of their experiences in school and nonschool contexts. These identities, in our view, are important in shaping how students come to see themselves as mathematics learners.

Reframing Identities to Strengthen Mathematics Learning

We encourage teachers to take an active role in shaping positive mathematics identities among their students by also attending to the other identities that students are developing. But to succeed, teachers must do so in ways that move away from negative

stereotypes (such as identifying Black males as thugs or identifying Latinx and Asian children as "illegal aliens" or "anchor babies") and avoid reducing children to nameless, objectified data points such as "bubble kids" or "bottom quartile kids" in larger conversations about assessment. Increased awareness and understanding of students' multiple and complex identities may require that teachers move beyond the simple categories that seem to work for sorting and ranking purposes. Demographic and socioeconomic labels such as "Black," "white," "Latinx," "Asian," "Native American," "immigrant," "urban," "rural," "middle class," "gifted," "limited English proficient," "multilingual," "at-risk," "disabled," and "poor" are common in school discourse but are often used in ways that mask their complexity and intersection.

We ask teachers to reflect on how their students might make sense of these labels and categories. Understanding how and why students come to resist or accept particular labels can be helpful in understanding their engagement or lack of engagement in mathematics. For example, do students internalize positive or negative stereotypes about mathematical intelligence and ability that are associated with their own or others' racial and ethnic identities? In the context of discussions of racial achievement gaps, do students who identify themselves as "Native American," "African American," or "Latinx" see themselves as intellectually inferior to students who are identified as "white" or "Asian"? What effects do discussions about "illegal" immigration have on the academic engagement of undocumented students or students with undocumented family members? How do students from various Asian subgroups respond to stereotypes about mathematical superiority or the expectations that come with being labeled as a "model minority"?

As teachers reflect on how they might simultaneously support and affirm students' racial, gender, cultural, ethnic, academic, and mathematics identities, we encourage them to seek ways to reframe negative views of the identities that reflect limited knowledge of students' background experiences and social realities. We offer some examples and suggestions in the discussion that follows.

From acceptance of, to resistance to, "model minority" myths

Societal and educational discourse often holds up students who are identified as "Asian," "Southeast Asian," and "East Indian" as "model minorities" in comparison with students who are identified as "African American," "Latinx," or "Native American." Such discourse communicates the idea that Asian students are academically superior, come from cultures and families that value education, and have successfully assimilated into American society. Because Asian American students have minority status and are perceived as having overcome language and cultural barriers to achieve their success, the belief is widespread that students from other minority groups should be able to overcome their circumstances and achieve at much higher levels. Instead of assuming that African American, Latinx, and Native American students come from racial and cultural backgrounds where education is valued, the dominant narratives suggest that "cultural deficits" are the cause of underachievement by these children.

Several Asian American scholars, including Lee (2005, 2009), Louie (2004), and Shah (2019), for example, have challenged the idea of the Asian model minority and have pointed out that this characterization of schooling experiences often overlooks the educational struggles of various Asian American subgroups, including Laotian, Hmong, Mien, and Cambodian students. This myth also overlooks the experiences of

poor and working-class Chinese and Vietnamese students, for example, who may not be high achievers but may drop out of school or be on the verge of doing so. As a result of the myth, these students are not likely to receive the support services that they need to improve their academic standing or help them remain in school.

We suggest that teachers reflect critically on this myth and understand that Asian American students are varied and diverse in their identities and backgrounds. Furthermore, their mathematics experiences, like their experiences in broader societal contexts, reflect the impact of issues of race, class, gender, and culture.

From limited English to multilingual language brokers

Many states and cities are experiencing changes in demographics that often bring dozens of languages into their schools and classrooms. When children from culturally and linguistically diverse backgrounds enter school, their home language and language status often become primary markers for their identities. How teachers respond to these language identities is important. We know, for example, that these students are typically referred to as "limited English proficient," with *limited* as the operative word. Although this assignment of identity to these children is accurate to a certain degree, it is itself limited. These students are in the process of becoming bilingual or multilingual, with English becoming for them a second, or even a third, language.

The label "limited English" masks the multilingual backgrounds and experiences of many students. The reality is that many of these children are positioned within their families as *language brokers* who must navigate nonschool contexts on behalf of their parents, despite their age and evolving development as English speakers. As we noted earlier in the case of Cindy's story, researchers have documented these brokering practices among students and families who have immigrated from Mexico, Central America, China, Hong Kong, and Korea. Orellana (2009) offers useful descriptions of these children's roles as language brokers:

> Children serve as language brokers because their families need their skills in order to accomplish the tasks of everyday life in their new linguistic and cultural context. Many teachers also need these children's skills. (p. 2)

> Language brokering involves activities in which children, often taking the lead with adults, facilitate their parents' abilities to accomplish what these adults would not be able to accomplish on their own. In the process, children also support their parents' acquisition of English language and literacy skills. (p. 104)

Multilingual children also serve as language brokers in the classroom by performing bilingual translations and mediations of oral and written texts from their first language to English and vice versa. They act in this role for their peers as well as their teachers (Manyak 2004). In addition, recent research has demonstrated the connection of language-brokering practices with increased levels of academic performance (Dorner, Orellana, and Li Grining 2007).

In the case of mathematics classrooms, we would argue that bilingual students at various levels of English proficiency can spontaneously find themselves serving as,

or being positioned by others to serve as, language brokers during classroom interactions. More importantly, these students can bring to mathematics learning considerable strengths that may go unrecognized if the instructional focus is only on the use of English vocabulary and pronunciation rather than on additional ways in which these students communicate their ideas through gestures, representations, and their first languages.

For example, Moschkovich (2002) highlighted the ways in which Latinx bilingual students used an array of resources that supported their own and their peers' learning. During a middle school math class, students constructed rectangles of the same area (36 square units) and different perimeters while looking for patterns that related the perimeter to the dimensions of the rectangles. During a small-group discussion, one group of Latinas spoke primarily in Spanish while attempting to solve the problem. They struggled to come up with the Spanish word for *rectangle*, using other words, such as *ángulo* ("angle"), *triángulo* ("triangle"), and *rángulo* ("rangle") in their problem-solving efforts. Later, the teacher asked the small groups to present their ideas about mathematical relationships between the perimeter and the dimensions of the rectangle, and one of the students in the small group, Alicia, responded:

> The longer the, ah … the longer [traces the shape of a long rectangle with her hands several times] the, ah … the longer the rángulo [rangle], you know, the more the perimeter, the higher the perimeter is. (p. 201)

What is important to note is that as the group's spokesperson, Alicia was serving in a role as a language broker for her group, for her peers, and for her teacher. She communicated a mathematical idea in English that was developed in her small-group discussions that occurred primarily in Spanish. Although she did not use the correct term, *rectangle*, in the explanation, the way in which she used gestures and mathematical objects, such as drawings of rectangles, conveyed the group's collective understanding of a relationship between the shape of the rectangle (with longer lengths) and the perimeter. Moschkovich (2002) notes the completeness of the explanation: "Although Alicia was missing crucial vocabulary, she did appropriately (in the right place, at the right time, and in the right way) use a construction commonly used in mathematical communities to describe patterns, make comparisons, and describe direct variation: 'The longer the _____, the more (higher) the _____'" (p. 203).

Focusing only on the limited use of correct English vocabulary and pronunciation rather than on the mathematical ideas and language that Alicia did communicate could negatively affect Alicia's and her group's views of their mathematical competence. Shifting to a language-broker perspective enhances teachers' opportunities to recognize the multiple resources and responsibilities that bilingual learners bring to mathematics learning and participation.

From "at-risk" to "resilient"

Quite often, the discourse about students who come from backgrounds that are not middle class or wealthy is characterized by negative assumptions about their skills, abilities, competencies, and motivation. For example, if students are identified as "poor," assumptions attached to this label might include the belief that little teaching or learning occurs in their homes and communities. In our experiences in school contexts and discussions

with colleagues, we have frequently encountered opinions like the following: "These children come from bad neighborhoods. Their parents don't care. They don't value education. They have too many hurdles in their lives to focus on learning. These children can't learn algebra." These attitudes represent very limited conceptions of children, their families, and their competencies.

Even if students come from backgrounds characterized by poverty and limited resources, they often exhibit high levels of resilience and mathematical excellence in the face of these circumstances (Martin 2000). For example, Turner and Celedón-Pattichis (2011) analyzed the problem-solving competencies of Latinx bilingual kindergartners. These students exhibited mathematical excellence in solving increasingly complex word problems and showcased various strategies for correctly solving problems involving multiplication and division. These children from working-class immigrant families in the southwest United States demonstrated mathematical success equal to that of wealthier students, according to assessments from an earlier study.

Studies like these continue to challenge commonly held deficit views of children from poor and working-class backgrounds, students of color, and multilingual learners as automatically "at-risk" by virtue of their racial, ethnic, and socioeconomic backgrounds and levels of English proficiency. We argue that a focus on learning rather than on labeling is critical. Furthermore, finding ways to build on this resilience, instead of focusing solely on the conditions that make such resilience necessary, should be primary goals for teachers.

Conclusion

In this chapter, we have encouraged teachers to engage in deeper reflection not only on the mathematics that they will teach but also on the multiple identities that emerge as important to their students and how those identities can shape and be shaped by mathematics learning and classroom engagement. We assert that if teachers plan to support the development of positive mathematics identities and multiple forms of mathematical proficiency and mathematical agency, they must develop a deeper understanding of these multiple identities and the social realities of their students. We encourage teachers to understand the productive identities that students are developing and reframe the negative identities in ways that move beyond stereotypes and simplicity.

DISCUSSION QUESTIONS

1. What range of mathematics identities is expressed and performed by your students? What actions do you take to positively affirm your students' mathematics identities? What are some ways that you might get students to share their emerging mathematics identities?
2. What are some of the various identities that your students express and perform through the stories that they narrate in your mathematics classroom? In what ways do these identities support or hinder the development of positive mathematics identities?
3. What are some of the ways that students demonstrate their mathematical agency in your classroom? How do you model positive mathematical agency and provide opportunities for students to demonstrate this?
4. What are some of the stereotypes and assumptions that emerge in your classroom about who can or cannot do mathematics? How do you and your students deal with these stereotypes and assumptions?
5. What additional family roles do your students take on that might contribute to their positive development in mathematics?