

# Latina/o Youth’s Perspectives on Race, Language, and Learning Mathematics

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*In this article, the author employs critical race theory (CRT) and Latino Critical Theory (LatCrit) to examine Latina/o students’ narratives of learning mathematics in a multi-lingual, urban high school. Intersectionality as a tenet of LatCrit is introduced as an important way to understand how students talk about the roles of race, language, and other central identities in their mathematics identity development as well as how they believe race may or may not matter in other people’s mathematics achievement. The author’s analysis illustrates how mathematics identities are co-constructed in relation to racial, linguistic, and gendered narratives of Latina/o youth. In general, the study adds empirical evidence to previous research on the difficulties that high school students encounter when articulating how race matters to their own identities in academic subjects and highlights the nuanced ways Latina/o students make connections between race, mathematical achievement, and schooling experiences in and through narratives of school success and failure.*

**KEYWORDS:** critical race theory, Latina/o critical race theory, mathematics education, mathematics identity, urban education

The underachievement of Latina/o students in mathematics is repeatedly framed as “race-based” testing outcomes and seldom explored from the perspective of Latina/o students’ lived experiences in mathematics classrooms (Gutiérrez, 2008; Martin, 2009). Research that does account for the experiences of Latina/o youth in mathematics classrooms rarely analyzes their perspectives as learners of mathematics and rarely positions them as possessing agency in their own mathematics learning (Gutiérrez, 2008). Although research and contemporary theories of learner identities suggest that both language *and* race matter in the development of mathematics identities (e.g., Martin, 2007; Spencer, 2009; Turner, Dominguez, Maldonado, & Empson, 2013), recent research on Latina/o youth has focused primarily on linguistic identity (e.g., Moschkovich, 2002; Turner, Gutiérrez, Simic-Muller, & Díez-Palomar, 2009; Zahner & Moschkovich, 2011). This focus often leaves the nuances of the intersections of race and language under-researched. In many ways, the picture of how Latina/o youth might navigate their

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mathematics identities remains incomplete, especially when articulating the roles of their racial and linguistic identities in their own learning.

In this article, I draw on culturally responsive literature on Latinas/os in mathematics education and research on students' schooling experiences from critical race theory (CRT) and Latina/o critical race theory (LatCrit) perspectives to explore being a learner of mathematics with seven Latina/o students in two Algebra I classrooms. Using Martin's (2000) construct of mathematics identity to analyze interviews and focus group data, three research questions guided the analysis:

1. What perspectives do Latina/o students have about their own mathematics identities?
2. How do they describe the roles of language and race in learning mathematics?
3. How do these perspectives inform how students display agency in their mathematics education?

### Relevant Literature

The analysis presented here draws from two growing bodies of literature on Latina/o students and mathematics teaching and learning: intersections of race and mathematics identity and intersections of language and mathematics identity. As noted, the issues of race and language tend to be compartmentalized in the literature: an either-or (race or language) approach rather than a both-and (both race and language) approach. There are a few exceptions (see, e.g., Gutiérrez, 2002; Gutstein, 2003), but more studies are needed to illustrate the nuanced ways in which Latina/o students navigate the two identities simultaneously.

#### *Racial Identities in Learning Mathematics*

Within the field of mathematics education, researchers and scholars have documented students' perspectives on mathematics and larger discourses of who can be successful in mathematics (see, e.g., Barajas-Lopez, 2009; Boaler & Greeno, 2000; Jansen, 2008; Martin, 2000; McGee & Martin, 2011). Esmonde (2009), in a recent literature review, noted that although identity (broadly defined) has been increasingly noted in mathematics education research, researchers most often have not dealt adequately with the role of *socially constructed* identities such as gender, race, sexual orientation, or ability labels. In general, researchers tend to either ignore these identities or to position them as pre-determining factors in student learning.

Though scholars have researched the role of racial and ethnic identities of Latina/o youth in a broad school context (see, e.g., Barajas & Ronnkvist, 2007; Valenzuela, 1999), few studies in mathematics education have examined the intersections of racial identities and learning mathematics for Latina/o youth (notable exceptions include Gutiérrez, 2002; Gutstein, 2003). Fewer of these stud-

ies employ methodologies that privilege student voices (few exceptions include, Jilk, 2011; Gutiérrez, Willey, & Khisty, 2011).<sup>1</sup> Jilk's (2011) study provides an exception as she investigated the mathematics identities of Latinas at Railside High School, where mathematics was taught through Complex Instruction (Cohen, 1994; Cohen & Lotan, 1997). Focusing on the case of Amelia, a student who emigrated from Mexico, Jilk situates salient identity as negotiated across multiple communities of practice. Jilk used a narrative approach to discuss how Amelia's self-description as a "liberal"—someone who willingly expressed her opinions and authored her own destiny—allowed her to choose to participate in the way mathematics was taught at her school because the practices aligned with this salient piece of her identity. In her analysis, Jilk demonstrated how Amelia's constructed herself as a liberal in response to traditional cultural values associated with being a woman in Mexico. Jilk argued that Amelia displayed agency by participating in her mathematics class and acting on the perceived intersections of her identity as a liberal and the practices found in her classroom at Railside, which included, for example, actively engaging with others in collective problem solving.

Jilk's (2011) study is a reminder that what students find most salient about their identities may not be the neatly packaged macro-labels that are often of interest to researchers: race, class, gender, and so on. However, there is still a need to understand how students perceive these dimensions as they negotiate their mathematics educations (Martin, 2009), given that they have been documented to be real barriers to school success, motivational factors for academic achievement, and catalysts for social action such as school walk outs (McGee & Martin, 2011; Rivas & Chavous, 2007; Solórzano & Bernal, 2001; Steele, 1997). Scholars have documented the stereotypes that Latina/o students face in schools that serve to position them as violent, illegal, and alien (see, e.g., Solórzano, 1997). At the same time, stereotypes around Asian students' high achievement in mathematics simultaneously essentialize Asian students (Lee, 2009), as well as position Latina/o students as less capable (Martin, 2009).

Some of the research by scholars who focus on African American students has addressed important intersections between discourses of African American student achievement and the success of African American students in mathemat-

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<sup>1</sup> Scholars in the United States have assumed various positions concerning whether the label "Latino" constitutes a racial, cultural, ethnic, or other identity. Some scholars have also considered different ways to write about the intersectionality of multiple identities (i.e., gendered, political, historical, situated) that can describe the experiences of Latina/o people (Anzaldúa, 2007; Valle & Torres, 2000). Those scholars concerned with this plurality note that the field has yet to capture the "fluid and transformable" essence of Latina/o identities (Estela Zarate, Bhimji, & Reese, 2005, p. 97). In this study, I use race and ethnicity where adopted by scholars in discussing their literature, but adopt the language of race in my own analysis (see Lopez, 1997).

ics (see, e.g., Russell, 2013). Martin's (e.g., 2000, 2006, 2007) body of research on race and mathematics identities is influential in the field of mathematics education. Prior to his work, mathematics education, in general, lacked a nuanced discussion of racial identity and mathematics achievement. Martin's multilayered framework examined the multiple contexts that affect African American students' socialization into mathematics; it pushed scholarship in mathematics identity to examine the historical positioning of students as people with racial identities who navigate racial stereotypes and racialized hierarchies of success (including racialized mathematics experiences).

In extending this body of research, McGee and Martin (2011) examined how undergraduate Black mathematics and engineering majors navigated stereotypes of achievement. They noted that despite a preponderance of evidence that stereotype threat can negatively affect intellectual performance, "little is known about how Black students in particular manage racial stereotypes" (p. 1349), including using them as motivating factors. McGee and Martin argued that students constructed Blackness on their own terms; therefore, the process of navigating stereotypes was not predetermined. Rather, students used the negative stereotype as the impetus to display positive agency and defy it, perhaps needing to "prove something to these people" (Cory, interview in McGee & Martin, 2011, p. 1367). Their research provides a significant knowledge base for examining Black student success in mathematics. Nonetheless, there is a lack of similar research for Latina/o youth.

Gaps in the research addressing how race affects Latina/o students' mathematics learning may be due, in part, to difficulties students face in describing race in relation to one's own learning when the dominant discourse suggests race is not a barrier to one's ability to learn. In her ethnography of a multi-lingual and multi-ethnic California high school, Pollock (2004) elaborated on what she calls "the reality of race's fluctuating relevance to [students'] own relationships and lives" (p. 47). Pollock's analysis showed that neither adults nor students consistently spoke to a singular way that race mattered in navigating school. The participants' comments indicated that race's relevance to their lives was complex. On the one hand, when asked how race impacted their lives, students might have offered statements such as "we are all the same" or "race is important" without elaboration. On the other hand, their everyday talk with peers, about peers, and with teachers revealed deviations from the racial scripts of how race was or was not supposed to matter. An important take away from Pollock's detailed ethnography is that race talk was complicated and situational for students and teachers, and conspicuously absent from teacher-to-student talk even though teacher-student conflict "felt" racialized to students (p. 61).

In my prior study in which Latina/o youths self-reported on learning mathematics (Zavala, 2009), participants portrayed factors influencing mathematics

achievement as colorblind (Bonilla-Silva, 2006), or not influenced by race. Students argued that race should not be seen as a barrier to one's ability to learn mathematics. Student participants shared the view that race does not determine how well you do in school. As freshman Yenni put it during the focus group session, "We are all just human beings (Zavala, 2009, p. 38). One student described his racial identity in a more complex way, and also provided an example of how U.S.-born status may intersect with racial identity as students navigate their mathematics identities. Andrew, an English-dominant, U.S.-born, Latino student with Mexican parents described how he negotiated feeling like a "White guy" when compared to the dominant forms of "being Mexican" he perceived in his school:

Well, I don't show a lot of Mexican stuff, at all. Being Mexican, I *am* Mexican, but I just don't wear the Los Angeles t-shirts and baggy jeans and stuff like that, like all the Mexicans do here. I'm just another type of Mexican, that looks like, I guess, a White guy. Yeah, like being a Mexican-American, but myself and mostly leaning towards the American part, I guess. (Zavala, 2009, p. 15)

Andrew addressed intersections of "being himself" with racial identities and his identity as an American. He noticed that he did not look like what he perceived to be the "typical" Mexican at his school. However, he refused to choose between his two identities, claiming both his Mexican and American identities, for which he evoked the dominant discourse that Americans are White. Andrew's case highlights the value of intersectionality as an approach to analyzing how Latina/o students make sense of their experiences as learners. Extant literature in mathematics education does not address cases like Andrew enough. Thus, more research is necessary to further understand intersections of racial identity and mathematics identity for Latina/o youth.

### *Linguistic Identities and Learning Mathematics*

According to research literature on Latina/o students who are emergent bilinguals (EB),<sup>2</sup> students can be more engaged in mathematics and have greater access to mathematics when they work in their first language (Gutiérrez, 2002; Gutstein, Lipman, Hernandez, & de los Reyes, 1997; Khisty, 1995; Moschkovich, 2002, 2007; Turner et al., 2013; Zahner & Moschkovich, 2011). However, few of

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<sup>2</sup> Emergent bilingual refers to students who are dominant in a language other than English and whom schools may classify as English learners. I use emergent bilingual instead of English learner to acknowledge the language resources the student does possess, rather than positioning students as lacking in language. As García (2009) wrote, "Categorizing children as LEPs (Limited English Proficient) or EPs (English Proficient) is a dubious construction that misleads educators and that robs emergent bilinguals of languaging and educational possibilities" (p. 323).

these studies focus on how EB Latina/o youth learn mathematics in a high school setting. In Gutiérrez's (2002) study of a high school mathematics department with a track record of success for Latina/o students, she found the department's success could be attributed, in part, to policies that promoted learning mathematics in Spanish for students who preferred it. She also found that strategies typically used in elementary school classrooms (e.g., having students work in groups) were equally successful in this high school.

According to Moschkovich (2002), Latina/o EB students do not use two languages simply as a tool to translate vocabulary from one language to another. Rather, she argued that the field should assume a sociocultural stance toward learners, viewing them as participants in multiple discourse communities. Such a focus counters deficit notions of Latina/o EB students as lacking English, and opens up space for analyzing their mathematics identities as people who bring resources to learning mathematics, such as ways of communicating in other discourse communities. A sociocultural perspective of EB students also allows for consideration of how their linguistic identities can function across settings, and the intersection of linguistic identities and mathematics identities.

Mathematics education researchers who focus on Latina/o youth have yet to examine the intersections of linguistic and mathematics identities for Latina/o youth who are English dominant. Too often they focus on barriers to learning rather than differential access to discourse. In related research, scholars have shown that bilingual students who are highly proficient or dominant in English may still use Spanish as they engage in mathematics (see, e.g., Zahner & Moschkovich, 2011). Zahner and Moschkovich also suggest that students may draw on hybrid linguistic identities, as a Spanish and English speaker, to negotiate their mathematics identities. However, questions remain regarding how Latina/o students who do not speak Spanish perceive the role of language in learning mathematics (i.e., if an English-only identity matters for them in multi-lingual classrooms).

Moreover, prior research on linguistic identity most often does not include student voice. With few exceptions, the literature does not include voices of Latina/o youth narrating their own experiences as mathematics learners. In addition, the research on racial identity does not sufficiently examine its intersections with language. Language is a consistent theme in research on Latina/o youth, suggesting a need to examine further the intersections of language and race in the mathematics identity development of Latinas/os. The study detailed here contributes to scholarship at the intersection of racial and linguistic identities of Latina/o youth by analyzing mathematics identity through the theoretical lenses of CRT and LatCrit. In the following section, I provide the definition for mathematics identity on which I base my analysis. I also describe how I draw upon CRT and LatCrit as theoretical perspectives to analyze the mathematics identities of Latina/o youth.

## A Critical Lens on Latina/o Mathematics Identity and Agency

### *Defining Mathematics Identity*

This study builds on theories that allow examination of the intersections of self, place, and discourses of race and language. Martin (2006) defined *mathematics identity* as:

Dispositions and deeply held beliefs that individuals develop, within their overall self-concept, about their ability to participate and perform effectively in mathematical contexts and to use mathematics to change the conditions of their lives. A mathematics identity encompasses a person's self-understanding of himself or herself in the context of doing mathematics (i.e., usually a choice between a competent performer who is able to do mathematics or an incompetent performer unable to do mathematics, but often flowing back and forth). (pp. 206–207)

Though Martin does not draw explicitly on CRT or LatCrit in his work, his definition is an important starting point for analyzing the mathematics identities of students from non-dominant backgrounds. He argues that mathematics identities are co-constructed with academic and social identities. Mathematics identities are negotiated over time, contributing to the socialization that allows students to see themselves as mathematical people.

Mathematics educators require theoretical tools to understand how students navigate racial, linguistic, gendered, and other social identities in relation to learning mathematics. CRT and LatCrit provide such theoretical tools. Scholars who privilege Latina/o voice use CRT and LatCrit to examine Latina/o students' experiences as part of a collective history of marginalization within the system of schooling in the United States that requires them to navigate broader discourses of oppression and resistance in their education (Cammarota, 2004; Fernandez, 2002; Perez Huber, 2010; Solórzano & Bernal, 2001; Solórzano & Yosso, 2001, 2002; Wassell, Fernandez Hawrylak, & LaVan, 2010). CRT is particularly useful to examine and challenge prevalent colorblind (Bonilla-Silva, 2006) and "culturally neutral" (Ladson-Billings & Tate, 1995) assumptions in mathematics. A fundamental tenet of CRT is to re-contextualize seemingly a-historical or abstract accounts of persons of color within historical and political contexts that illuminate whose interests are being served, and for what purpose (Solórzano & Yosso, 2001). The stories students tell about who they are as mathematical people have roots in multiple contexts, are situated in broader discourses of achievement and access, and contain notions of deeply seeded attitudes students have towards themselves and how learning mathematics works in general.

Although CRT and LatCrit focus on the same goal—understanding and dismantling multiple forms of oppression—they are distinct (Valdes, 1996). CRT mainly focuses on race, and while race is important, scholars of LatCrit argue that

researchers must consider multiple constructs specific to the experiences of Latinas/os in the United States, such as language, culture, ethnicity, immigration status, phenotype, and sexuality (Espinoza, 1990; Garcia, 1995) to understand the experiences of Latinas/os in the United States. As Bernal (2002) described, critical race-gendered perspectives avoid binary power relationships and, instead, look at the way that multiple identities intersect to inform the experiences and epistemologies of people of color. Building on this idea, she wrote, “LatCrit is a theory that elucidates Latinas/Latinos’ multidimensional identities and can address the intersectionality of racism, sexism, classism, and other forms of oppression” (p. 108). Critical race and LatCrit theorists argue that educational systems and discourses have both the power to oppress and empower. Therefore, educators are most deeply informed about Latina/o students when they analyze their experiences through a lens of intersectionality (Bernal, 2002; Solórzano & Yosso, 2001).

### *Student Agency and Testimonio*

In this study, I follow Powell’s (2004) concept of mathematical agency for students of color, which he defines as “the mathematical ideas and reasoning evidenced from learners’ individual initiative to define or redefine as well as build on or go beyond the specificities of mathematical situations on which they have been invited to work” (p. 43). Powell argued that it is important to understand the mathematical agency of students of color because both failure and success can be located within the same set of social, economic, and school conditions, although dominant discourses generally portray these conditions as mechanisms that produce failure. The research literature presents examples of how Latina/o students exhibit mathematical agency including how they see themselves as people who construct mathematical knowledge and use it in meaningful ways (Pitvorec, Willey, & Khisty, 2011; Gutstein, 2007), and how they use personal agency to resist unfair schooling practices (Fernandez, 2002). In spite of these examples, it is important for the mathematics education research community to continue to document the mathematical agency of Latina/o students as scholars seek to understand the connections between how these students make sense of their own experiences and how they feel empowered to act to learn mathematics.

LatCrit also offers some important tools for understanding Latina/o student agency. Solórzano and Yosso (2002) outline what they call a “critical race methodology” for education, which focuses on the stories and experiences of students of color. They propose that scholars can use the *counterstories* offered by students of color as they share their *testimonios* as a tool for exposing, analyzing, and challenging the majoritarian stories of racial privilege. Testimonio privileges the experiences of people marginalized by institutions such as schooling within a U.S. context, and highlights the way they show agency as they navigate these settings (Solórzano & Yosso, 2002).



A particular feature of many Latina/o students' testimonios is *productive resistance* (Fernandez, 2002). The notion of productive resistance helps scholars to challenge deficit views of Latina/o youth, and instead highlight Latina/o student resistance to schools as institutions that were never designed to support their identities and cultures. Thus Latina/o students show agency in both how they may succeed within the constraints of schooling, and how they may resist schooling practices and redefine success on their own terms (Fernandez, 2002; Perez Huber, 2010; Yosso, Villalpando, Bernal, & Solórzano, 2001).

## Methods

Scholars who use CRT and LatCrit argue that narratives function as a means to understand the lived experiences of students who have been traditionally marginalized, and whose experiences are largely absent from scholarship (Cammarota, 2004; Fernandez, 2002; Solórzano & Yosso, 2001). As Solórzano and Yosso (2001) wrote:

CRT in education recognizes that the experiential knowledge of Students of Color is legitimate, appropriate, and critical to understanding, analyzing, and teaching about racial subordination in the field of education. In fact, critical race educational studies view this knowledge as a strength and draw explicitly on the Student of Color's lived experience by including such methods as storytelling, family histories, biographies, scenarios, parables, cuentos, chronicles, and narratives. (p. 473)

Therefore, I employed a qualitative design based on LatCrit methodology of testimonio to respond to research questions anchored in Latina/o students' experiences. Though this analysis is part of a broader qualitative case study of two Algebra I classrooms, in this iteration, I privilege the student interview and focus group data in which students' interpret their own experiences. I use other data sources to triangulate or add depth to students' narratives, not to contradict their self-narrated accounts.

I conducted this study in the context of a multi-racial and multi-lingual school in an urban setting in the Pacific Northwestern United States (Office of Superintendent of Public Instruction, 2011). I found two classes whose demographic composition of the class roughly approximated the racial data of the school (approximately 20% Latina/o) and attempted to recruit all the Latina/o students in these classes. Ultimately, three Latina/o students in Ms. Williams' class and four Latina/o students in Mr. Anderson's class elected to participate (see Appendix A).<sup>3</sup> Only one or two additional Latina/o students in each classroom de-

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<sup>3</sup> All proper names throughout are pseudonyms.

clined to participate. Diversity in the cases appears somewhat limited given that all students are of Mexican heritage and are either first generation or immigrants to the United States. In other ways, the cases represent diversity among Latina/o youth in characteristics such as number of years in the United States, EL (English language) or SL (Spanish language) proficiency, age, and continuity of education. There were some potentially interesting data that I did not collect as they departed from the study's focus, such as previous schooling contexts, socioeconomic differences, family migration patterns, or students' roles in their home communities. However, the data provided capture multiple dimensions of these Latina/o students' lived experiences as people who participate in multiple communities and who bring their histories with them into the classroom. In a U.S. national context of increasingly diverse urban schools, this group of Latina/o students that participate in multi-lingual and multi-racial mathematics classroom settings have important insights to share about their mathematics learning experiences and how those experiences impact their mathematics identities and, ultimately, mathematics achievement.

### *Data Collection*

Individual interview and focus group data were the primary sources analyzed for this article, with observational data used in some cases to situate students' testimonios. In this study, I attempted to reposition myself as researcher, build a cultural bridge (Gay, 2010), and gain affinity with the group by sharing my background, my commitments to equity in mathematics education, and my language skills in Spanish. My goal was to align myself with the group in some ways to establish rapport (Glesne, 2006). In spite of these efforts, I did not eliminate the power differential between the students as participants and myself as researcher. Additionally, there was some discomfort among the young people related to discussing race, identity, and mathematics. They were not accustomed to addressing the types of questions I asked. As a participant-observer in their mathematics classrooms, I found other ways to build rapport through informal conversation and opportunities to engage in mathematics with the students. These interactions also gave me insight into students' mathematical competencies. In the case of the students who preferred to speak Spanish in their interviews, the fact that I could engage in Spanish with them allowed access into their self-expressions as Spanish speakers. This Spanish language engagement assisted both the students and me to be more comfortable in the interview setting.

The first interview focused on educational and personal history, attitudes toward mathematics, perceptions of the utility of mathematics, and descriptions of who can be good at mathematics. In the second interview, I used stimulated recall (Gass & Mackey, 2000), allowing students to watch a brief classroom video episode (selected by me) featuring the student participating in whole-class discus-

sion. The video prompted discussion of what it meant to participate in class and students' impressions of the teacher and other students. We also discussed peer relationships and experiences within that classroom. The second interview is where students who expressed a preference for Spanish explicitly discussed language preferences because discussing their classroom experiences brought language issues to the surface. English-preferring and English-dominant students explored attitudes about language in the focus group setting, as they did not raise language issues in the individual interviews.

I used my knowledge of language preference, length of time in the United States, and participants' age to organize three focus groups: Samuel, Anita, and Ignacio (students who grew up primarily in the United States); Rubén and Luis (younger recent immigrant students); and Marco and Julieta (older recent immigrant students). Julieta did not participate in the focus group due to leaving school. Consequently, Marco, her focus group partner, completed the focus group protocol as a third interview.

In the focus group, we looked at a bar graph from the school district that indicated a relationship between ethnicity and academic achievement (see Figure 1). I used the graph as a vehicle to discuss beliefs about race and racial stereotypes. We also watched a short selection of classroom video in which multiple distinct languages (English, Spanish, at least one distinct African language, and Tagalog in Mr. Anderson's class; English and Spanish in Ms. Williams' class) were being used at once. The video prompted a discussion of the role language plays in mathematics learning. Sample protocols from focus groups and interviews are available in Appendix B.

### *Analysis*

These data sources were used to write in-depth case reports of each focal student (Miles & Huberman, 1984), covering the following dimensions: educational history; experiences learning and attitudes towards mathematics; perceptions of the utility of mathematics; descriptions of who each student seemed to be in class, including their perception of particular roles each of them played; and perceptions of how race, language, and culture matter (or not) in learning mathematics. In this article, I focus on three themes that emerged from analysis of all seven focal students narratives: (a) the utility of mathematics knowledge in relation to self, (b) the role of race in learning mathematics, and (c) the role of language (English and other) in learning mathematics.

For analytic purposes, it is useful to explore these themes as unique focal points for consideration, but that does not mean that they do not subsume, overlap, or influence each other. Consistent with a LatCrit perspective, I looked for how these and other layers of identity intersected in Latina/o youth's mathematics learning experiences and how the students exhibited agency in learning mathe-

matics. In particular, I looked across these areas for how students exhibited mathematical agency (Powell, 2004) and analyzed what dimensions of their identities seemed to support their abilities to exhibit agency. In addition to findings across students, I present one student's case of exhibiting mathematics agency in detail, to demonstrate how mathematical agency was supported by a unique combination of academic and social identity resources.

In the next section, I present findings from the collective voices of the Latina/o youth in this study and their beliefs about the proposed key aspects of mathematics identities. Appendix B contains a summary of identifying characteristics and notes on key findings discussed in the next section.

## Findings

The first set of findings focuses on general beliefs students held about themselves as mathematics learners. These findings add to extant literature on perspectives Latina/o students hold about their mathematics abilities, and connections between mathematics and self. Following these findings is a more detailed analysis of the focal students' perspectives on racial and linguistic identities and their intersections with mathematics identities. Findings on attitudes toward the role of race in their own mathematics learning show that students most-often adopted a colorblind (Bonilla-Silva, 2006) stance, though intersectionality of immigrant status, years in the United States, understanding of family history, and other personal factors may have helped some students to articulate how race matters in their own mathematics experiences. Finally, I use the case of one Latina, Julieta, to demonstrate how linguistic identities played a key role in the formation of strategic partnerships between EB and fully bilingual students. I also consider how Julieta used the strategic partnership to exhibit mathematical agency and how this agency was both supported by and functioned to support various facets of her mathematics identity.

### *The Utility of Mathematics: Connections to Self and Future Goals*

All of the students in these cases believed themselves to be capable of learning mathematics and that mathematics was important for their futures. These are important ideas to establish from the beginning, as Latina/o students' positive views of themselves as mathematicians and importance of mathematics remains under-documented in the literature (exceptions include Gutiérrez, Willey, & Khisty, 2011; Gutstein, 2003, 2006;). However, students' attitudes toward mathematics varied, indicating that having faith in one's own capabilities is not the same as liking mathematics. One student said that, although he liked mathematics, he did not like his current mathematics class (Ignacio, Interview 1). In addition,

students articulated two main uses of mathematics: to get ahead academically and vocationally or to use in daily life.

Three students elaborated on particularly deep ties between their overall descriptions of themselves and mathematics. Anita, who wanted to be an elementary school teacher, described mathematics as important for her to learn as a future teacher (Anita, Interview 1). Marco was an older student in this study who had already graduated from a *preparatoria*<sup>4</sup> in Mexico. When asked why he likes mathematics, he described how liking mathematics, persisting in it, and feeling good about himself for persisting in problem solving were interrelated: “Me gusta sentirme si tengo un problema difícil, hacerlo y sentir o, puedo, yo puedo, yo se que yo puedo, y me hace sentir bien [I like to feel that if I have a difficult problem after I do it I can feel like oh, I can, I can, and I know that I can which makes me feel good about myself]” (Marco, Interview 1). Julieta described how being good at mathematics was important for multiple activities in everyday life, and criticized her classmates for maybe thinking that “los números solo representan pandilla [numbers are just good for gang use],” such as tagging territory. Julieta went on to say that she thought this perspective was silly because numbers are good for everything. She shared that, in addition to liking mathematics, learning mathematics was very important for her overall sense of independence, including not having to rely on anyone else to control her finances (Julieta, Interview 1).

These findings illustrate that, to varying degrees, mathematics was important to long-term goals Latina/o students established for themselves and, in some cases, was deeply connected to students overall sense of self. These points of view provide a foundation for understanding students’ perspectives about the roles of racial and linguistic identities in learning mathematics.

#### *The Role of Race: Colorblindness, Complexities, and Cultural Attribution in Latina/o Youth Perspectives*

Race mattered in different ways for students in this study. Most of the group touted a colorblind (Bonilla-Silva, 2006) perspective, while two students who grew up in the United States expressed more complex ideas of how race does and does not matter in learning mathematics. These two participants linked racial identity to mathematics identity through motivation. Furthermore, students expressed awareness of but did not necessarily challenge stereotypes that position Asian students as smart in mathematics, describing Asian American success as a function of observable cultural practices. In particular, two recent immigrant students located and named racial stereotypes about Asian American school success,

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<sup>4</sup> Participants report that a *preparatoria* is essentially high school in Mexico, covering grades 10 through 12.

insisting that Asian Americans deserved all the A's they earned because they studied a lot, whereas, when it came to Mexicans, it was more about who has "ganas [motivation]."

*A colorblind perspective versus race "does and doesn't" matter.* Most students expressed a view that mathematics achievement is a matter of individual motivation and race is not and should not be a factor. This perspective cut across the lines of who was a recent immigrant and who was born in the United States, with all recent immigrants taking this stance and Samuel, born and raised in the Northwestern United States, also aligning with this thinking. Marco's explanation is representative of the students who held this belief. In his interview, he explained that what matters most is that an individual student focuses and wants to learn:

**Interviewer:** ¿Eso es decir que si todos se enfocan podrán sacar la calificación que deseen? [You are saying that if everyone focused they could get whatever they wanted (grade)?]

**Marco:** Pues, sí exactamente, todos somos iguales, todos tenemos la misma capacidad. Como dice el dicho 'querer es poder', y si uno no quiere, no puede; sería imposible poder. Aunque sea más difícil. [Well, yes exactly, well we're all equal, we all have the same capabilities, it's like the saying that 'caring is power', and if you don't care you can't do it, it's impossible to do it. Even the person with the most difficulties.] (Marco, Interview 3)

Marco's position that everyone is equal and possesses the same capacity privileged individual effort over contextual constraints such as navigating a racial hierarchy of success in mathematics (Martin, 2009). There are elements of meritocracy at work here in that his explanation does not take into account a critical perspective on schooling as an institution that has systematically marginalized Latinas/os. Marco's position as a nearly twenty-year-old student in an Algebra I classroom—even though he already has a high school diploma from Mexico—made his statement even more curious. He enrolled in school in the United States because he wanted to learn English. He enrolled in traditional high school classes such as algebra, in which he excelled and found enjoyment. Marco described his former high school in Mexico as very small, and of the more than 30 students who started the first year, "no mas alcanzamos a graduar ocho [only eight of us graduated]" (Marco, Interview 1). He attributed his ability to graduate from high school in Mexico to his individual motivation, charging those who did not finish with not wanting it enough.

Examining Marco's comments in the context of his prior school success, his affinity for mathematics, and his success in school in the United States reveals the multiple layers of his mathematics identity and helps to contextualize his color-

blind stance. Furthermore, he spent little time in the U.S. schools, but as successful and happily engaged in the process. Marco represents a success story: a student who cares a lot about and is engaged in mathematics. These characteristics may situate his ideas of why racial hierarchies did not apply to how he perceived learning mathematics.

Anita and Ignacio expressed a different perspective, indicating that their racial identities sometimes matter in relation to their mathematics identities. They were two of the ninth graders in the study and also two students who grew up in the U.S. school system, with Ignacio living in the United States all his life and Anita immigrating from Mexico at age six. In our second focus group meeting, I asked the group about how language could be connected to a larger sense of self. Anita shared that speaking Spanish is an important way she lets people know she is Mexican, and making others aware of her heritage is important to her:

**Interviewer:** So some people say that language is also how you express a part of your identity. Like choosing to speak in different languages at different times. What do you think about that?

**Anita:** Well sometimes when I meet new people, and most of the time they think I'm White, if I'm with a friend who speaks Spanish I try to speak Spanish so they recognize that I'm not White and they don't judge me by my cover. (Anita, in Focus Group with Samuel & Ignacio)

It is important to note that Anita feels she “passes” for White, so she uses language (Spanish) to communicate her racial identity.

Understanding how Anita positions herself as a Mexican and how it is important for her that other people do not mistake her for White also helps to situate the way she described how her racial identity and mathematics identity intersect in the following excerpt. Later in the same focus group meeting, we discussed racial identities in relation to school achievement. Anita said:

Well, for me I feel bad about myself sometimes for not trying the best I can, and not really doing as well as I could be doing on quizzes and stuff, and that brings me back to thinking that I could end up like my mom or my dad or like my cousin like washing dishes or whatnot. And then it makes me try harder, but then I forget about it. And I'll go back down again. (Anita, in Focus Group with Samuel & Ignacio)

Using a LatCrit lens, Anita's comments sit at the intersection of her Mexican Latina identity, her family, their immigration status, and how they are racialized in the United States. Anita perceived herself as having opportunity and advantage and considered herself fortunate for having familial support.

When asked about experiences with racism in their mathematics classrooms, Ignacio and Anita did not describe any personal experiences. However, Anita

connected possible outcomes for herself to the discrimination her family members had experienced as adult immigrants, suggesting that she thought about what her racial identity meant in relation to her academic achievement. She recounted the story of an aunt whose degree from a Mexican university was devalued in the United States. She spoke with an awareness that, in the United States, the way she identified as Mexican meant she, too, could experience the devaluation and, ultimately, dehumanization that her relatives experienced as Spanish-speaking Mexican immigrants. This awareness affirmed her need to excel in mathematics. In this way, she addressed the pressure to be a good student so that she could be better positioned than her parents and her aunt had been.

*Stereotypes and racial hierarchies: Asian Americans and Latinas/os.* When questioned explicitly about racial stereotypes, none of the students who completed the focus group protocol could think of a stereotype that applied to Latina/o or Mexican students related to academics. Rather, when asked to name any stereotype about Latina/o youth, students named “we are illegal” and “we’re violent” as the two dominant stereotypes. In their second focus group session, Samuel and Anita described the illegal stereotype:

- Interviewer:** So, have we heard any stereotypes about Latinos in school, or math learning?
- Samuel:** *(smiling)* We’re illegal.
- Interviewer:** We’re illegal?
- Anita:** Yeah.  
*(Samuel laughs and looks at the ceiling)*
- Interviewer:** That’s a big one, right? Where have you heard that come up?
- Anita:** Well, we kind of like, well the people we hang around with, we kind of joke around about it.
- Samuel:** Yeah.
- Anita:** We’re like, oh we’re alien! Because you know how like when you fill out for passports and anything it says list your alien number here and something? I find it kind of like insulting for us to be called aliens, but...
- Interviewer:** Yeah, say more about that.
- Anita:** Well we kind of joke around about it so we don’t feel that bad.
- Interviewer:** So it’s more like a joke among people who share that experience?
- Anita:** Like when Black people call themselves the n-word and stuff.
- Interviewer:** What do you think about that kind of thing though?
- Anita:** Well, I don’t know. Because you know how people say only Black people can say the n-word because they’re Black.
- Interviewer:** Mhmm.
- Anita:** I guess it’s kind of the same thing, what I just said about aliens and stuff.
- Interviewer:** So as long as you are on the inside of it you mean?
- Anita:** I guess. Because you can’t just go up to somebody and say the n-word and like they’ll get like offended, because just like they can’t



come up to us and call us aliens, we'll get offended too. So I guess you have to be one to say it, I guess.

In making sense of the way Latinas/os joke about being illegal, Anita positioned “the n-word” as holding a similar power among African Americans that the word *illegal* holds among Latinas/os. Anita uses this parallel to illustrate the way that stereotypes have an insider–outsider quality. She and her friends use humor to negotiate the “illegal alien” stereotype, but they find the same stereotype offensive when employed by an outsider.

The illegal alien stereotype was not the only topic for which Latina/o students drew on their understanding of patterns in other racial groups to make sense of their own. When looking at the district grade data disaggregated by ethnicity (see Figure 1), all students sought to explain why Asian American students would have the highest grades by describing their perceptions of Asian students’ cultural practices. Rubén and Luis, who had a focus group together and who co-constructed their ideas about how Asian and Asian American students excelled, juxtaposed that group’s achievement with their perception of Mexican and Latina/o student underachievement. Marco speculated that Asian students got the most A’s because of “how they are brought up.” In their focus group, Ignacio, Anita, and Samuel speculated that Asian student achievement might be a function of how they study. Ignacio said, “they’re known for that,” suggesting that the stereotype for Asian and Asian American students was based on a history of observable patterns of achievement and an expectation for high performance.

During his focus group with Rubén, Luis noticed that the bar representing the percentage of Asian American students who received A’s was significantly higher than the other grades. When I asked for his explanation, Rubén proposed that all the Asians were smart, at which point I engaged them in an examination of this belief:

- Luis:** No, yeah, this is true.  
**Interviewer:** Is it true or a stereotype?  
**Luis:** Well, it’s true.  
**Interviewer:** But how did you learn that?  
**Luis:** Well you can tell.  
**Rubén:** Porque se van y andan con salen del bus leyendo. Andan comiendo y con sus papel escribiendo. [Because they go they walk with they get of the bus reading. They go along eating and writing papers (at the same time)]  
**Interviewer:** So all the Asians you know are very studious... Y nosotros? Cuál tenemos? [and us? What (stereotypes) do we have?]  
**Luis:** That we’re violent.

[Luis and Rubén laugh]

**Interviewer:** That we're violent?

**Luis:** You can see it. We're violent. You'll never see us like that, up like the Asians [*points to the bar graph for As*] (Rubén & Luis, Focus group)

As the discussion continued, Luis and Rubén laughed more about how the violent stereotype was not part of their experience despite being positioned as a universal characteristic ascribed to Latinas/os. Interestingly, in the end, Luis suggests that being violent is related to why you will not see Latina/o grade achievement as high as Asian and Asian American students, suggesting that the stereotype can simultaneously seem ridiculous to him, but also hold some explanatory power for Latino underachievement.

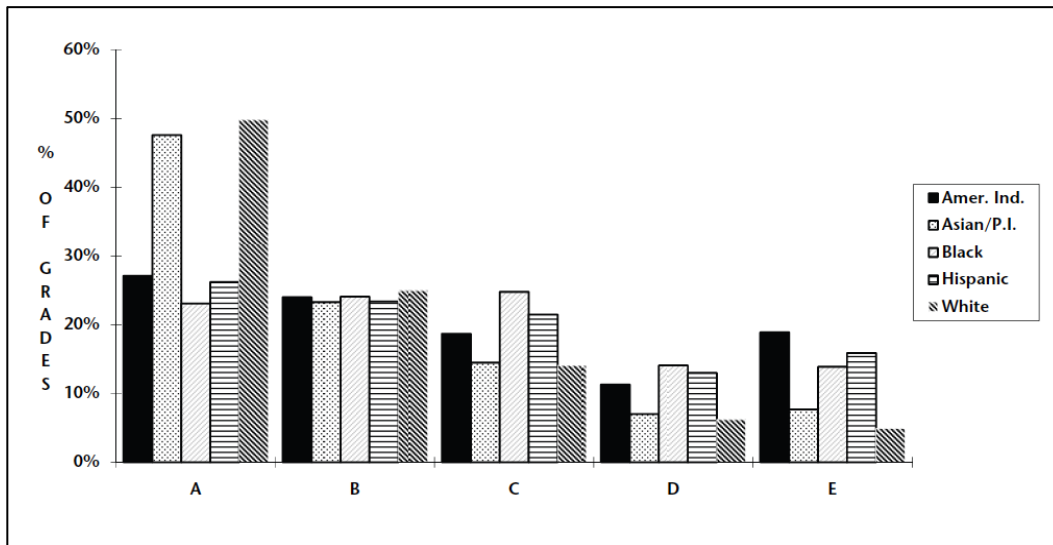


Figure 1: District high school grade data by ethnicity.<sup>5</sup>

In spite of Rubén and Luis' resistance to generalizations about Latinas/os, they seemed to make similar sweeping statements about Asian American students. The exchange in the focus group calls attention to how what may be perceived as a positive stereotype (Asian students are smart) is applied as capital-T truth to the monolithic category of Asian Americans, which feeds the model minority myth (Museus & Kiang, 2009). It could also be that because their own perspectives are situated in their experiences as young Mexican men who primarily socialize with other Mexicans, they may not be oriented towards thinking about collective op-

<sup>5</sup> Reproduced directly from a publicly available district report.

pression or struggle when their experiences suggest every Mexican is a different individual who makes their own choices. This position could support Luis's and Rubén's beliefs that race is not some kind of a determining factor in their experience. But on the other hand, Luis responded to my prompt to address "us" ("That we're violent?") by asserting a group identity and making a claim about Mexicans or Latinos in general, if you take my bid to address "us" into account. In asserting a group identity, he positioned a collective Mexican as less academically talented than Asian Americans: "You'll never see us like that, up like the Asians." This statement also captures how, in some way, Luis was acquainted with the stereotypical racial hierarchy of success in mathematics, and raises questions about the extent to which he had internalized the racial hierarchy.

The findings around racial identities in learning mathematics suggest that students navigated racialized hierarchies of success. They attributed success among other racial groups to collective cultural practices, while perceiving their own failure or success as a function of caring about education or having enough motivation. For Anita and Ignacio, racial identities had a more complex role in this motivation process because of their families' histories of struggle in the United States. Students also grappled with stereotypes or observed cultural patterns among other racial groups as they made sense of their own experiences and within-group stereotypes. Anita also addressed intersections of her racial and linguistic identities in how she lets people know she is not White, but Mexican. In the next section, I explore further the role of language and linguistic identities.

### *The Role of Language: Linguistic Identities, Agency, and Academic Partnerships*

The English dominant students recognized the importance of specific mathematics vocabulary for learning mathematics. Although they did not find language of instruction to be as important to their mathematics learning, they did express that language was a likely issue for EB students. Additionally, they justified the use of multiple languages in their mathematics classes by considering that it was probably easier for students to learn mathematics in their first language.

The significance of learning mathematics in Spanish becomes more salient when situated in the linguistic worlds of the recent immigrant EB students, who reported speaking English only when in school. For these participants, language of instruction was a critical element of their mathematics learning. Marco, Julieta, and Rubén indicated a preference for learning mathematics in Spanish. Luis, the fourth recent immigrant student, preferred to learn mathematics in English, although he could be observed in class using both English and Spanish. These students' accounts of their experiences revealed two important themes. First, in order to understand what is happening in the mathematics classroom and the textbook, the student must have access to the appropriate mathematics vocabulary. Second, students who do not speak English "properly" may find the mathematics class-

room to be a threatening place. Julieta saw teaching mathematics in Spanish as a tool to help students for whom English is not their first language:

**Julieta:** Obviamente estamos en un país inglés, y hay que hablar inglés y practicarlo más que nada. Pero para tener un poquito más de ayuda con los estudiantes creo que deberían tener gente que pueda, um, *translate* - explicar mejor en su primera lengua y así entender mejor y tener mejores calificaciones. [Obviously we are in an English-speaking country, and so we have to speak English and practice it as much as possible. But I think that to provide the students a little more help I think there needs to be people who can, um, translate, and explain better in our first language, and in that way understand better and get better grades.] (Julieta, Interview 1)

In their focus group, Luis and Rubén expressed difficulty with understanding mathematics vocabulary:

**Luis:** Well (what's hard) for me it's the words. I misunderstand at first...I mean the *actual* words—las palabras [the words].

**Rubén:** Sí, las matematicas tiene palabras mas dificiles, que a nosotros no entienden...El vocabulario de las matemáticas en mas complejo que inglés. [Yes, mathematics has harder words that we don't understand...the vocabulary of mathematics is more complex than English.] (Luis and Rubén, Focus Group)

Luis and Rubén's comments support the notion that there are three languages at work in their classrooms: Spanish, English, and the language of mathematics.

Similar to other students in this study who had been in the United States three years or less, Marco did not speak English if he did not have to. In his third interview, he summarized the way Spanish dominates the worlds of the recently immigrated students:

"I never speak in English. En la casa, puro español, en el trabajo, puro español, en la clase puro español. Hasta mi jefe, que habla español porque ha estado en España dos anos. Solamente cuando hablo con los maestros. [I never speak in English. In the house, pure Spanish, at work pure Spanish, in class pure Spanish. Even with my boss, who spent two years in Spain. It's only when I talk with my teachers.]"

In spite of his choice to use Spanish in his daily life, Marco recognized the importance of learning English. In fact, Marco's purpose for enrolling in high school in the United States after graduating from high school in Mexico was to learn English. Marco described the breakdown of when he spoke Spanish and when he spoke English in his mathematics class:

**Marco:** Hablo español cuando pido ayuda a los estudiantes hispanos, o a un maestro que habla español, porque lo explican mejor en mi idioma, así entiendo mejor y entiendo perfectamente lo que están diciendo. Y los momentos en que tengo que hablar en inglés son cuando pido ayuda a la maestra. Necesito hablar en inglés para entender lo que está diciendo. O, a veces, a un estudiante que tampoco es de aquí y no habla español. Me explico en inglés, tengo que hablar inglés. [I speak Spanish when I ask for help from the other Hispanic students, or help from a teacher who speaks Spanish, because they explain it better in my language because I understand better and perfectly what they are saying. And the moments I speak English are when I have to ask the teacher for help. I have to speak English to understand what she is saying. Or sometimes a student who is from here and doesn't speak Spanish. If they explain to me in English, I have to speak in English.] (Marco, Interview 3)

The teacher who speaks Spanish that he is referring to is the Spanish-language instructional aid who was present two or three times per week. Marco's description aligns with the experiences of other EB students in this study who preferred learning mathematics content in Spanish while also knowing that it was important to engage in English sometimes, especially when talking with the mathematics teacher.

#### *The Case of Julieta: Navigating Linguistic Identities and Exhibiting Agency*

Some students used language in the classroom to display agency in forming strategic partnerships for their own benefit. Julieta was passionate about her own learning and critical of the students in her mathematics class that she perceived as not taking advantage of their opportunities to learn mathematics. As we watched a video clip of her classroom in her second interview, she indicated who she thought was an intelligent person in the class, and then went on to criticize other classmates and to classify her own feelings as jealousy:

**Julieta:** Ah sí, [*pointing to screen*] Kayla ayuda. Es muy inteligente y ayuda, pero la mayoría no lo es, no sé. Casi nunca preguntan porque tienen pena, o simplemente no quieren trabajar. Algunos de los estudiantes son [*pause*] tontos, sí tontos. Porque si yo supiera hablar inglés como ellos, siempre les haría preguntas, y no sé – [*Oh yes, (pointing to screen) Kayla is helpful. She is very intelligent and helpful, but most of the class is not, I don't know. They almost never ask questions because they're embarrassed or they simply don't want to work. Some of the students are (pause) stupid, yes stupid. Because if I knew English like they do, I would always be asking questions, and I don't know-*]

**Interviewer:** ¿Y por qué - ? [And why? -]

**Julieta:** - Me siento, creo, creo que más bien siento *jealous*? [- I feel, I believe, I believe that more than anything I feel *jealous*?]

**Interviewer:** *Jealous*, ¿te sientes celosa? [*Jealous* you feel jealous?]

**Julieta:** Sí, porque ellos saben perfectamente bien el inglés y no preguntan, y ellos pueden entender todos los problemas, todas la palabras del libro de matemáticas, y yo no. Si yo fuera ellos yo me la pasaría leyendo matemáticas, pero no sé bien que significan algunas palabras, así es que no puedo. [Yes, because they know English perfectly well and don't ask questions, and they can understand all the problems all the words in the math book, and I can't. If I was them, I would spend my time reading about mathematics, but I don't know what all the words mean very well, so I can't.] (Julieta, Interview 1)

Julieta passionately identified accessing the mathematics content (*pasando leyendo matemáticas*) and asking questions as an advantage English speakers have over her, and criticized them for not embracing that privilege. Her perspective was that these young English-speaking students in the Algebra I class did not understand how well positioned they were to do something she wished she could, just because they grew up speaking English. She perceived these students to be wasting their advantage. Because instruction and all materials were in English, Julieta's jealousy was partly a critique of how she could not access mathematics in ways that they could.

Julieta addressed her disadvantage by doing mathematics in Spanish. This strategy took some creativity on her part because, over time, the teacher asked the language instructional aid to work with Julieta exclusively in English. Julieta sought Samuel, a partner who could do mathematics with her in Spanish. Ms. Williams arranged her class in groups of four; Julieta and Samuel were seated together in a group.<sup>6</sup> In her interviews, Julieta named Samuel as important to her mathematics learning. Their partnership supported Julieta's linguistic and mathematics identities. In the quote below, Julieta explained the importance of her relationship with Samuel, and her preference to work with Samuel rather than the adult assigned to work with her (the language instructional aid):

Cada vez le pregunto (a la IA) y me contesta en inglés, y a mí me gustaría más que me contestara en español para entender mejor [*pause—continues in English*] That's why, maybe I – le estoy preguntando más a Samuel que a ella, porque Samuel me está respondiendo en español. Y por eso, veo que no estoy practicando tanto, y sé que ella es maestra, pero ya no me responde en español, pero Samuel sí. [Every time I ask the instructional aid she responds to me in English and I would prefer if she

<sup>6</sup> Ms. Williams had not seated them together intentionally and did not know that Samuel spoke Spanish.

would respond in Spanish to understand better (pause—continues in English) That's why, maybe I—I'm asking Samuel more than her, because Samuel is responding to me in Spanish. And for that I notice that I'm not practicing as much and I know she's a teacher, but she's stopped responding to me in Spanish, but Samuel does.] (Julieta, Interview 2)

Later in the interview, when asked about whether she thought she played a particular role in the class, Julieta elaborated on how her partnership with Samuel was important not only for accessing mathematics content but also for allowing her to feel like part of the classroom community. She described how she felt “*no fuera del circulo, sino dentro*” [not outside the circle, but instead inside]:

Por ejemplo, preguntándole a las personas de mi grupo en español, y creo que así siento que estoy participando, trato de poner la mayor atención posible para entender el problema, y no sentirme fuera del círculo, sino dentro. [For example, asking people (in my group) in Spanish, and I believe that is how I feel I'm participating in the group, and trying to put all the attention that I can into understanding the problem, and feeling that I'm not out of the circle, but instead inside.] (Julieta, Interview 2)

She described “*preguntándole a las personas en español,*” indicating that she spoke in Spanish and Samuel passed her ideas on to the group. This process allowed her to contribute to the group's ideas. Julieta participated in the class on her own terms, using her linguistic identity as a resource. Julieta used her agency to initiate a strategic partnership with Samuel. Through this partnership, she simultaneously maintained her linguistic and mathematics identities, which enabled her to feel like a participant in her small group. As a part of the community, she saw herself as a mathematics learner in positive ways.

Julieta initiated a friendship that would benefit her mathematics education. It was the intersectionality of multiple layers of Julieta's identity in this case, how she liked mathematics, how she connected mathematics to a broader sense of self, her linguistic identity, as well as her initiative, that together capture how she demonstrated mathematical agency in her classroom.

## Discussion

The findings presented here assist mathematics education researchers and scholars to understand the layers of experience (identities, agency, and participation) that impact the mathematics education of Latina/o youth. Overall, this study adds evidence to how CRT and LatCrit are useful to understand the multiple identities that intersect in the lives of Latina/o youth and inform the agency they exhibit in learning mathematics and negotiating their identities within mathematics contexts. Focusing on students' perspectives was also crucial to understand their lived experiences in the tradition of CRT and LatCrit scholars (Fernandez, 2002;

Perez Huber, 2010; Sólorzano & Yosso, 2001). In particular, Julieta's case adds documentation to how students resist schooling practices and exhibit mathematical agency in productive ways within their classrooms. What we learn across the cases is that race and language are complex factors that influence how these Latina/o youth become mathematical people. Likewise, the variety of experience among Latina/o youth shows how the particular mathematics identities these youth negotiate are impacted by racial stereotypes and their linguistic identities in relation to the official language of instruction.

Findings around student perspectives on how racial identities matter in learning mathematics show Latina/o students perceive racial identity to be more salient for other racial groups than for their own. Rather than tell a counterstory about race and achievement, the students who subscribed to the colorblind stance of mathematics achievement were drawing on a dominant narrative of achievement-motivation in which race does not matter. Only two students (Anita and Ignacio) who grew up in the United States described the role of race in their own educations as more complex, and tied to motivation. Anita's description of using her heritage as a resource is a counterstory to the dominant colorblind perspective, although even her own testimonio shows an intricate link between her racial identity and her personal motivation. However, as she grapples with how her racial identity is a resource for her learning, she resists negative stereotypes in ways that increase options for what it means to be Mexican and to learn mathematics, making new Discourses (Gee, 2001) for Latinas/os to navigate in mathematics (Zavala, 2009). Similarly, other scholars have addressed the complex effects of race for high school students (Esmonde, Brodie, Dookie, & Takeuchi, 2009; Fernandez, 2002; Pollock, 2004). As Pollock (2004) noted, "Taking cues from youth, we can keep creating moments to talk about racial categorization as a human and contestable process, even while keeping race labels strategically available for analyzing social inequality" (p. 43). Race is implicated, but in ways that may be contestable and difficult to articulate at this point in their learning trajectories.

There is also a need to dig deeper into the implications for academic success that are suggested by navigating stereotypes of Latina/o youth as illegal or violent. These stereotypes may not speak directly to Latina/o achievement in mathematics, but they perpetuate an image of Latinas/os as violent and alien, rather than belonging and intellectually or mathematically resourceful (Solórzano, 1997). Luis' accounts of how Latinas/os are violent and not as high achieving as Asian and Asian Americans also suggests that he may be grappling with internalized racism (Padilla, 2001). Though Luis does not speak directly to Anglo-superiority, which Padilla (2001) argues is part of internalized racism, he does participate in self-defeating behavior and, thus, is an active participant in his own oppression.



The consequences then for his academic achievement in mathematics are dire—Luis has his own internal work to do before he can realize his full potential.

Another issue that emerges from the students' accounts is how to reconcile students' expressed beliefs about race with what we observe as scholars in the field who conceptualize mathematics classrooms as racialized spaces (Martin, 2009) and what we have come to understand from research that suggests attitudes toward race matter in learning mathematics (Spencer, 2009). Are we wrong? Should we take the perspectives of youth as a sign that race really does not matter, if that is the way they narrate their experiences? In this study, it is important to note that, from the student perspective, ideas of who can be mathematically successful *are* related to racial stereotypes of success in mathematics. The students support these racialized dimensions of learning mathematics when they positioned themselves as less capable than Asian and Asian Americans. As problematic as their perceptions of Asian and Asian American students may be, they also insist that their own success is not predetermined by race. Again, the complexities in talking about race that Pollock (2004) uncovered are important to making sense of the ways students can simultaneously notice racialized patterns in others while maintaining a colorblind stance for themselves. The students who hold views that race does not matter may use this approach as a coping mechanism because they do not have a means to engage deeper power issues that they have experienced elsewhere, but have not come to recognize in their mathematics classrooms.

The findings around linguistic identities and mathematics identities suggest that Latina/o students may use strategic peer relationships to resist schooling practices in ways that seem productive for learning mathematics. For Julieta, engaging in mathematics in Spanish with Samuel was a way that she also exhibited mathematical agency (Powell, 2004) by taking initiative to position herself as a contributor to the group's mathematical reasoning. At the same time, the way she exhibited agency to learn mathematics in Spanish can be seen as resisting the dominant story of bilingual Latina/o youth in U.S. schools that privileges an end goal of learning English over learning academic subjects in their language of choice. While scholars have written about competing hypotheses for why bilingual students would use Spanish and English to learn mathematics, very little has been documented about students actively resisting learning mathematics in English by circumventing the teacher in favor of a competent peer. This form of resistance was productive because it facilitated Julieta's learning. Though she expressed jealousy towards her classmates who spoke English but did not use it to participate in class, she may have been speaking from her positions as a marginalized participant in a classroom where the language of instruction was English. She wanted to exhibit more mathematical agency, and she found a way to do it. Even though Julieta had an instructional aid assigned to work with her, when that adult stopped working with her in Spanish or was not present, Julieta was creative. In

this way, Julieta's story interweaves her linguistic and mathematics identities as she engaged in productive resistance. Her experiences represent a counter-narrative to the dominant notion of Latinos/as as hardworking but passive.

As the research on bilingual Latina/o students in secondary mathematics settings suggests, students use multiple resources to learn mathematics (Gutiérrez, 2002; Zahner & Moschkovich, 2011). One mode of access that mathematics education researchers should consider is how their racial and linguistic identities intersect to inform how they display agency in learning mathematics. Julieta and Samuel's relationship had clear linguistic affinity, but they also had shared heritage. That is to say, those relationships were not formed with White or other Spanish-speaking students. Questions remain regarding how racial and linguistic identities are co-implicated in mathematics identity negotiation, and close attention to peer groups may be a way to understand how they both manifest in mathematics identity negotiation. Further questions also remain that are specific to how gendered identities are also implicated in mathematics identity negotiation.

Mathematics teachers in the United States are under such pressure to cover a large volume of content in the midst of high-stakes accountability measures that attending to how big ideas like racial and linguistic identities manifest in the classroom can seem overwhelming. Some may find such ideas irrelevant to the mathematics classroom. However, an important implication from this research and others is that racial and linguistic identities do matter to learners in the classroom and impact their engagement. A key implication from this research for mathematics teachers is to learn how the aspects of identity analyzed here, specifically those related to race and language, may be important in the lives of their own students. Observing how students are navigating these aspects of their identities can help teachers to make informed pedagogical decisions including, but not limited to, supporting multiple forms of talk, making students' first language more central for participation, or challenging racial stereotypes of who has the authority to be a mathematical resource in the classroom. Teachers will need support to engage their students in frank discussions of stereotypes and achievement in their classrooms. At the same time, teachers need time to reflect on their own identities as mathematics learners and teachers, and the privilege and power they bring to the classroom (Aguirre, Mayfield-Ingram, & Martin, 2013). We should not expect mathematics teachers to do this crucial work alone. Mathematics coaches and school administrators need to help re-think how instructional time in mathematics should be spent and commit to supporting teachers to grapple with these issues.

## Conclusion

The perspectives of these Latina/o youth suggest there is more to explore about how students use racial stereotypes to make sense of other racial groups' academic achievement and how these stereotypes manifest as reality. The findings presented add depth and complexity to the experiences of students who we might see as all being affiliated by the label *Latina/o*. Their variety of experiences and differences in how agency is enacted, give us insight into what matters to them about learning mathematics. Their perspectives are key to understanding what they believe are important aspects of becoming different kinds of mathematical people—people with goals and people with promise. Given the unique history of racism in schooling experiences of Latinas/os in the United States (Solórzano & Yosso, 2002), and the historical tension between bilingual education and English-only education (Ovando, 2003), there is an academic imperative to continue examining the multiple influences on how Latina/o youth come to see themselves as successful mathematical people, and to address racial and linguistic discourses in our research. Within the monolithic category of Latina/o we find a range of experiences with languages other than English, and a range of ways people identify racially, ethnically, and culturally. CRT and LatCrit can provide an important perspective on the experiences of young people learning mathematics to add depth and texture to how we as scholars and teachers understand their mathematics identities.

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## APPENDIX A

## Characteristics, Attitudes, and Beliefs of Focal Students

Name	Mathematics is useful for?	How would you describe yourself as a mathematics learner?	Does race matter? How?	Does language matter? How?
<b>Marco</b>	It is important in everyday life and for mental development; mathematics is hard, but useful	Capable, hard worker, and likes to solve problems	No – individual attitude matters most	Yes – English language proficiency is the advantage other students have in class over non-English speakers
<b>Interview Language:</b> Español <b>Teacher:</b> Ms. W <b>Grade:</b> 12 <b>Age:</b> 19 <b>Years in US:</b> 2 <b>Previous Schooling:</b> México (graduated from Preparatoria)				
<b>Julieta</b>	It is useful for multiple things in life (provided many examples); linked it to independence	Enjoys doing mathematics; recalls crucial positive experiences learning mathematics	<i>Julieta left school before completing her final interview about the role of race in learning mathematics</i>	Yes – English is the only thing between her and the mathematics; jealous of English speaking students who don't understand what privilege they have
<b>Interview Language:</b> Español <b>Teacher:</b> Ms. W <b>Grade:</b> 11 <b>Age:</b> 19 <b>Years in US:</b> 2 <b>Previous Schooling:</b> México (primaria/secundaria on and off)				
<b>Samuel</b>	Knows it is important for some things (non-specific)	Capable, “normal” student, not excited about mathematics; it is easy	No – individual attitude matters most; everyone is equal	Yes – If you are proficient in both English and Spanish, then your job might be to help others who are not able to access the mathematics in English
<b>Interview Language:</b> English <b>Teacher:</b> Ms. W <b>Grade:</b> 9 <b>Age:</b> 15 <b>Years in US:</b> 15 <b>Previous Schooling:</b> US Pacific Northwest				
<b>Ignacio</b>	It is necessary for college, not a lot else	Has changed from feeling good at mathematics in elementary school, to not good anymore after sixth grade	No – individual attitude is what matters Yes – can knock you down because people may not expect much from you	Yes – for people who don't speak English
<b>Interview Language:</b> English <b>Teacher:</b> Mr. A <b>Grade:</b> 11 <b>Age:</b> 19 <b>Years in US:</b> 2 <b>Previous Schooling:</b> US Los Angeles				
<b>Rubén</b>	It is useful for everything you do and especially for securing your future career	Capable, “normal” student, but is not excited about mathematics	No – individual attitude is what matters most Yes – could matter for why Asian students are successful	Yes – explaining the vocabulary of mathematics clearly is what matters most; if it can be explained in Spanish is better; non-English speakers are at a disadvantage
<b>Interview Language:</b> Español <b>Teacher:</b> Mr. A <b>Grade:</b> 9 <b>Age:</b> 15 <b>Years in US:</b> 3 <b>Previous Schooling:</b> México (primaria)				
<b>Anita</b>	It is a part of everyday life. It is important for her plans to be a teacher that she learn math well	Capable and interested in learning; puts pressure on herself to work hard when not happy with her mathematics grades	No – individual attitude is what matters most Yes – can remind you that you need to do better to take advantage of your opportunities	Yes – both to help people learn mathematics who do not speak English, and because it is how she expresses her Mexican identity
<b>Interview Language:</b> English <b>Teacher:</b> Mr. A <b>Grade:</b> 9 <b>Age:</b> 15 <b>Years in US:</b> 9 <b>Previous Schooling:</b> US Pacific Northwest				
<b>Luis</b>	It is necessary for everything (non-specific)	Does not think he is very good at it, and points out he likes to work with people “smarter” than him so he can learn	No – individual attitude is what matters most. Yes – could matter for why Asian students are successful	Yes – learning vocabulary matters most; people may tease you if you do not speak English well enough
<b>Interview Language:</b> English/Español <b>Teacher:</b> Mr. A <b>Grade:</b> 11 <b>Age:</b> 17 <b>Years in US:</b> 3 <b>Previous Schooling:</b> México (on and off)				



## APPENDIX B

**Sample Interview Questions and Focus Group Protocols***Sample Student Interview Questions*

The questions below are taken from interview protocols 1 and 2 and are meant to share kinds of questions asked of the participants. These are neither entire data collection protocols nor represent the order questions were asked necessarily.

1. Self-Descriptions and meanings
  - a. If someone didn't know you, what are some words you would use to describe yourself?
  - b. How would you describe yourself as a student? What do you do well as a student? What do you feel you need to improve?
    - i. Tell me about your study habits, and how you are doing in school.
    - ii. Probe around cultural, familial connections
  - c. What do you think of (this school)?
    - i. What is important to you at this school, so far?
    - ii. Do you think you can be yourself at school?
    - iii. What are your first impressions of your teachers?
    - iv. What do you think this year is going to be like for you as a student?
2. Mathematics Class/ID
  - a. How would you describe yourself as a math student?
    - i. Are you "good" at math? What does it mean to be good at mathematics?
  - b. Take a moment and think about how you learn different things (how you learned to cook, or play soccer, or whatever). How do you learn math?
  - c. What will it take to be good at mathematics this year? (I know you haven't been in school very long, but what you think right now?)
  - d. Is learning mathematics the same as being good at math? So, if you are good at math does that mean you are going to learn a lot of math? Is there a difference?
3. Impressions of Language, Race, Gender, class:
  - a. What languages do you hear students speaking in your class? What about yourself?
  - b. Do you think learning math is related to race, class, language, gender, or any other bit of information about a person? How?
  - c. How do you think being Latina/o plays a role in how you learn math?
  - d. For Spanish speakers: How do you think speaking Spanish plays a role in how you learn math?

*Sample Focus Group Questions*

1. Let's look at some data from your school district. This is demographically unpacked data about who gets what kind of grades.
  - a. What do you see here? Where are you in this data?
  - b. What do you notice about the achievement of Hispanic students? Why do you think this is so?
  - c. What does this data have to do with learning mathematics?
2. Let's watch a video from your class and get our brains going—think about the languages people speak and might be speaking in this class.
  - a. What languages do you hear students speaking in your class? What about yourself? How do students seem to be using multiple languages to learn mathematics? How else is language used? (Some people would say that language is also how you express your identity, what do you think about that?)
  - b. Last time we talked about how there are stereotypes around different races of people. It makes me wonder, in your class, have you ever heard or experienced racism? Do people joke about race (racist language, racist actions, anything like that)? What about at school in general?
    - i. Do you think race plays a role in learning math? How?
    - ii. Do you think race plays a role in how people participate or not in math class? How?