Adolescent Girls' Construction of Moral Discourses and Appropriation of Primary Identity in a Mathematics Classroom

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Abstract   This qualitative study examines the way three American young adolescent girls who come from different class and racial backgrounds construct their social and academic identities in the context of their traditional mathematics classroom. The overall analysis shows an interesting dynamic among each participant's class and racial background, their social/academic identity and its collective foundation, the types of ideologies they repudiate and subscribe to, the implicit and explicit strategies they adopt in order to support the legitimacy of their own position, and the ways they manifest their position and identity in their use of language referring to their mathematics classroom. Detailed analysis of their use of particular terms, such as "I," "we," "they," and "should/shouldn't" elucidates that each participant has a unique view of her mathematics classroom, developing a different type of collective identity associated with a particular group of students. Most importantly, this study reveals that the girls actively construct a social and ideological web that helps them articulate their ethical and moral standpoint to support their positions. Throughout the complicated appropriation process of their own identity and ideological standpoint, the three girls made different choices of actions in mathematics learning, which in turn led them to a different math track the following year largely constraining their possibility of access to higher level mathematical knowledge in the subsequent schooling process.

1 Introduction

During the last few decades, gender issues in mathematics education have drawn a great amount of attention from educational researchers and school practitioners worldwide. Numerous reports confirm that gender inequity in mathematics education is a world-wide phenomenon found in many countries including Australia,

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Britain, Germany, and USA (e.g., Leder 1992; National Center for Education Statistics [NCES] 2005). Researchers found that female students reported lower self-confidence in mathematics (Hargreaves et al. 2008; Preckel et al. 2008) and, as a result, were more likely to avoid taking advanced math courses in high school (Jones et al. 1996; van Langen et al. 2006). Recently, gender differences in mathematics achievement, however, are gradually decreasing in USA (NCES 2004, 2005) and Great Britain [Department for Education and Skills (DfES) 2005], but gender inequity is still considered a problem in the fields of mathematics and many occupational spheres that are related to mathematics, science, and technology (Chipman 2005; NCES 2005; van Langen and Dekkers 2005). Since mathematical knowledge is an important prerequisite in many professions, unbalanced mathematics achievement in favor of males implies limited access for females resulting in inequity in acquiring high socio-economic status.

Recently, American researchers reported interesting dynamics across gender and other sociocultural factors, such as race/ethnicity and class. Several studies have shown that mathematics achievement of American female students is significantly influenced by age, ethnic group, and socio-economic status (SES) (Ansell and Doerr 2000; Mcgraw et al. 2006; Tate 1997). For example, Tate's study (1997) showed that the achievement disparity significantly differs across various racial/ethnic groups as well as across different class spectra within each ethnic/racial group. Secada (1992) identified that some minority girls—Black and Hispanic—and working class students are the most vulnerable group in mathematics learning and called for a more in-depth examination on the intersection of gender, race/ethnicity, and class.

Researchers have long suggested that various social and cultural factors (e.g., class affiliation, ethnic membership, and gender) may influence female students' experiences in learning mathematics and affect both their motivation to acquire advanced mathematical knowledge and their actual performance in the domain (Reyes and Stanic 1988). However, research examining this critical intersection of gender and other socio-cultural factors (e.g., race/ethnicity and class) has not flourished in mathematics education. The field of mathematics education has been dominated by individual psychological approaches (Atweh et al. 2001, p. ix) emphasizing the cognitive process rather than analyzing the socio-cultural aspect of social inequity (Tate 1997). Concepts of gender, class, and race, which are critical to understanding sociocultural issues in mathematics education, may still be overlooked by the majority of researchers (Lubienski 2002). As a result, few educational researchers have investigated the socio-cultural aspects of mathematics classrooms or examined how class, race, and gender, three powerful systems of social stratification in America, play a role in the learning environment shaping young girls' experience with and identity in school mathematics. Little is known about how female students who come from different class and racial backgrounds respond to the traditional learning environment—known to be so pervasive across the nation—developing positive or negative attitudes toward mathematics learning (Campbell 1989).

Research suggests that the development of an individual's positive or negative identity in the domain of mathematics is a subtle and complex process. Feminist scholars, such as Boaler (1997) and Jungwirth (1993), argue that traditional math instructional methods—prevalent in American classrooms—ignore women's unique

way of learning, depriving them of meaningful experience in their mathematical endeavors. Most recently, researchers pointed out that mathematical identity development among boys and girls heavily relies on a gendered binary opposition system (Mendick 2005), and such gendered relationship with mathematics is observed even among primary school children (Bhana 2005). Rodd and Bartholomew (2006) also presented a similar dilemma and struggle experienced by female undergraduate math major students as they constantly engaged in the process of re-defining the relationship between their everyday view of femininity and mathematical endeavors. This reflects, Mendick argues, the gendered discourse of rationality stemming from Western Enlightenment thought that still persists as a powerful source of stereotyped images regarding mathematics. As new literature adds further insight, it becomes clear that we have to admit that we live in a society where competing images of gender and mathematics intermingle making it difficult for many young girls to construct meaning out of such contradictions.

This study examines the way three American young adolescent girls with different class and racial/ethnic backgrounds construct their social and academic identities in their school contexts, particularly within their traditional mathematics classroom. Through the analysis of their use of particular terms, "I," "we," and "they," this study investigates the way how the three girls develop and construct their academic and social identities, and how they appropriate different ideological stances in order to support their emergent identities in the discipline.

1.1 Theoretical Framework: Bakhtin's Theory of Language and Identity

This study is indebt to the sociocultural approaches to mind that emphasizes the importance of the sociocultural, as well as the historical, environment in the formation of an individual's mind (Wertsch 1991, p. 6)—one's identity (Lacasa et al. 2005). One interesting aspect of Bakhtin's theory is the concept of "self:" He rejects the conventional notion of "self" as an entity constituted through a unified, monadic relation to the external world. Bakhtin's entire work, including the conception of self, is based on criticism of individualism and dualism that were prevalent in western society during his era (Morris 1994, pp. 25–26). He stresses that all social and cultural phenomena are "profoundly intersubjective or dialogic in nature (Voloshinov 1973, p. 34)" and that the formation of self is not an exception (Voloshinov). For Bakhtin, and the members of his circle, an individual consciousness, his or her subjectivity, is not a self-sufficient, pre-constituted entity, but is formed through the dialogic struggle between contending voices or discourses. The phenomenon of "self-ness" is constructed through the operation of a dense and conflicting network of discourses, cultural and social practices and institutional structures, which are bound up with the intricate and complex interplay of the self-other relation.

Based on this concept of "self-ness" many researchers have explored issues of identity development through an analysis of discourse—how people construct or

content their identities through the use of language, or how the (particular) use of (certain) language contributes to the construction of people's identities in various social contexts (e.g., Lacasa et al. 2005). Numerous studies have confirmed that the process of identity development at the individual level is a social process (Buxton et al. 2005; Jenson et al. 2003), which features language as a key element (Bucholtz and Hall 2005).

Another important contribution made by Bakhtin's circle is that their theory enables educational researchers to see the multiple sociopolitical layers embedded in a person's speech and identity: there is more than one voice and one identity in an individual's spoken word. Bakhtin (1981) states:

> As a living, socio-ideological concrete thing, language, for the individual consciousness, lies on the borderline between oneself and the other. The word in language is half someone else's. It becomes "one's own" only when the speaker populates it with his own intention, his own accent, when he appropriates the word, adapting it to his own semantic and expressive intention. Prior to this moment of appropriation, the word does not exist in a neutral and impersonal language, but rather it exists in other people's mouths, in other people's contexts, serving other people's intentions: it is from there that one must take the word, and make it one's own. And not all words for just everyone submit equally easily to this appropriation, to this seizure and transformation into private property: Many words stubbornly resist, others remain alien, sound foreign in the mouth of the one who appropriates them and who now speaks them; they cannot be assimilated into his context and fall out of it; it is as if they put themselves in quotation marks against the will of the speaker. Language is not a neutral medium that passes freely and easily into the private property of the speaker's intentions; it is populated—overpopulated—with the intentions of others. Expropriating it, forcing it to submit to one's own intentions and accents, is a difficult and complicated process. (p. 114)

Acknowledging the sociopolitical nature of language, the incessant tensions and dynamics among different intentions and powers deep-seated in it, Bakhtin believes that subordinate groups can generate a differentiated not yet complete set of knowledge, which is embedded in traditions and practices, and which is, at least, partially resistant to dominant discourses and ideologies (Morris 1994). Influenced by Bakhtin's idea of language as a discursive practice of social life, some feminist theorists and critical theorists have developed the concept of "language (voice) of possibility" (Giroux 1991, p. 53) and "language (voice) of resistance" (Bauer and McKinstry 1991, p. 4). They view discursive practices through language as the way of dismantling the oppressive social reality in which people are situated.

2 Methodology

This study is primarily based on in-depth interviews with three young adolescent girls who were part of a larger ethnographic study. The ethnographic research was conducted in a middle school located in the Southeast United States and included a sixth grade mathematics teacher and two groups of her students enrolled either in an advanced or regular mathematics class. The three girls—Jessica, Stella, and Amanda—reported in this paper were all enrolled in the advanced math class. The middle school, though located in a rural area, had an ethnically and economically

diverse student population consisting of 70% White and 26% Black pupils with a very limited number of Hispanic students. The proportion of students living below the poverty level was 16% and almost half of students (44%) were eligible to receive free or reduced lunches. As a whole, the middle school had a student body consisting of two groups of students, those from White middle class families and a significant number of "rural poor" students including, yet not limited to, many Black students.

I collected three types of data throughout one semester: participant observation data from the advanced and regular math classes taught by the participating teacher; repeated interviews with the teacher, the eight selected participants, and some school personnel including other sixth grade teachers; and I reviewed a collection of school records and other school-based documents. Additional observation data were acquired from other classes, such as reading and remedial mathematics, as well as from various sites at the school, such as the library and playground. Even though the analysis presented in this paper focuses on three girls in the advanced math class,[1] I explained some of the findings from my overall ethnographic research as the background information about the girls and their mathematics classroom contexts.[2] In particular, explaining the cultural characteristics of their mathematics classroom—an authoritative, individuated, and procedural learning environment—is critical to understanding the three girls' identity and ideological appropriation process in the domain of mathematics.

My data analysis is deeply influenced by Bakhtin's theory of identity and language, presenting language as the fundamental source for analysis examining the subtle, yet critical emergence of self-and-other relationship. I conceptualize that my young adolescent participants—with their growing sense of self-ness—were constantly exploring their possible position in the world in general, and in their math classroom in particular. Their use of language manifested their struggles to locate their right position in the given space, and to provide an ideological support for their emerging identity. They exploited and appropriated the existing language—overpopulated by others' voices—to make it serve their purpose so that the language, at least, partially expressed their own voice.

At a more practical level, my analysis is indebted to Gee's method of discourse analysis (1999). Gee explains that people construct six areas of "reality" as they engage in any type of communication (e.g., speaking or writing).[3] Among those six possible areas for discourse analysis, I specifically chose two areas of reality building—socially situated identity and relationship building and political building

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[1]I interviewed the total of eight girls, four from the advanced and regular class. This paper presents only three girls enrolled in the advanced class. April, my fourth participant in the class, showed results somewhat similar to Amanda's case. Yet, April did not develop as strong a voice as Amanda.

[2]I believe that reporting findings derived from my larger ethnographic research is beyond the scope of this paper. However, I presented a few major findings that are essential to understand the results from my discourse analysis presented in this paper. Those findings are explained in Sect. 3 (pp. 7–8).

[3]The six areas of "reality" are: (1) the meaning/value of aspects of the material world; (2) activities; (3) identities and relationships; (4) politics; (5) connections, and (6) semiotics (Gee 1999, p. 12).

since those two were most crucial to understand the girls' emerging identity and its collective ground as well as their ideological standpoint. Rymes' (2001) example of discourse analysis that presented the intricate, yet consistent pattern in drop-out students' narratives portraying their world divided by antagonistic "they" and victimized "I" (or "we") also inspired my analysis. There have been several studies analyzing (adult) author's use of "I" in various texts (e.g., Hyland 2002; Tang and John 1999) or speech (Fairclough 2003) as a way to examine the identity constructed in those texts or speech. However, the analysis of "we" as opposed to "they" which often "represents a deeper division" (Fairclough 2003, p. 150) between the two groups of people has been rarely found even in linguistic literature.

After an initial analysis of my entire ethnographic data, I noticed that my student participants exhibited contrasting relationships with various groups of students in their mathematics class—and beyond. Expecting that a more detailed, thorough analysis of interview transcripts would reveal critical insights into their emerging identities and their collective ground, I initially decided to examine the participants' use of "I," "we," and "they" in the contexts of school, more specifically in their mathematics classroom. I read through all nine interview transcripts (each participant generated three interview transcripts conducted at different points of time) and identified the total of 55 excerpts (16 from Jessica, 21 from Stella, 18 from Amanda) that met the following three criteria: (a) Were those words used to describe their peers in their school or math classroom? (b) Is it clear whom they refer to? (c) Does the statement or story include (imply) at least two parties either contrasting or associated to each other?[4] Then, I used open codes (e.g., smart, high-achieving, intimidated, scared, nice/kind, pretty) to clarify the characteristics of each "I," "we," and "they" in those identified interview excerpts. This analysis created a data analysis table showing different set of characteristics observed in each participant's "I"s, "we"s, and "they"s. At the same time, I closely examined the relationship/dynamics among those three terms (e.g., if the student's "I" in the story easily transited to or connected to "we"—the groups of students with whom she identified). In my analysis of the three pronouns I noticed Jessica and Amanda articulating a strong ideological standpoint with a clear division between "we" and "they." As a result, I also analyzed the aspect of political building by identifying the type of ideology advocated or repudiated by each student in the given data set.

Gee recommends that discourse analysis should pay attention to "situated meanings" that are inherent in all discourse. He argues that situated meanings are not just individual phenomenon; instead they "are *negotiated* between people in and through communicative social interaction" (Gee 1999, p. 51). Therefore, all the discourses presented in this paper including the three girls' use of "we" and "they" should be

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[4]Based on the nature and common usage of these three words (I, we, and they) as generic first person or third person pronouns often used as a proxy for a larger group, I limited my analysis of these three terms to a smaller number of interview excerpts that meet the three criteria. Therefore, the participants' use of "we" or "they" that did not meet the criteria were not included in my analysis. For example, the participants, of course, used a lot of "they" as they describe their parents, school teachers, and others. Those "they"s were not the target of my analysis.

understood within the contexts of their interview *with me*—an international graduate student and the only Asian at the school. My student participants viewed me as someone similar to a student teacher who could be a teacher later, but not yet. My role at the school as an observer and instructional assistant when necessary located me somewhere between the teacher and students. Equally important, my racial/ethnic category—being Asian and foreigner—made me land somewhere between, or possibly outside, the two racial groups of students at the school—Whites and Blacks.

3 The Teacher and Classroom Contexts

The three participants reported in this article, Jessica, Stella, and Amanda, attended Mrs. Oliver's advanced mathematics class—one of two advanced sixth grade math classes at the school. Their mathematics teacher, Mrs. Oliver, a White teacher with 25 years teaching experience, was known as one of the most effective and respected mathematics teachers in the county. She was an extremely hard-working, enthusiastic teacher who believed in the value of school work and benefits of education in her students' lives: very few students or parents I interviewed, either White or Black, doubted that she was a devoted and serious teacher.

However, Mrs. Oliver's teaching mathematics also reflected some of the major challenges in mathematics education in USA. She started to teach sixth grade mathematics not based on her professional training or preference but because of a chronic shortage of math teachers in the county. Her professional development as a middle school mathematics teacher was rather isolated from the professional communities of mathematics teachers and researchers. As a result, she perceived mathematics as static knowledge and adhered to a somewhat traditional mode of instruction: authoritative, procedural, and individual work-based (Ball 1990; Boaler 2000; Brown et al. 1999). Mrs. Oliver often limited the number of possible answers for a given problem. She divided the entire process of problem solving into several steps and constantly emphasized those steps. She rarely used cooperative learning strategies in her classroom.

Mrs. Oliver identified a self-motivated, hard-working attitude as one of the most important qualities that students must develop in order to succeed in mathematics—a tough and difficult subject to learn. She, as one of the most "strict teachers" at the school, held a clear set of rules, and exhibited a very firm demeanor with the students in her math class. She consciously created and maintained an authoritative and restrictive classroom culture that intended to foster—even demand—hard-working attitudes among students. Mrs. Oliver strongly believed in the effectiveness of her strict disciplinarian approach to mathematics learning: Without having such firm structure of learning and clear expectation, most students—Mrs. Oliver conjectured—would not be able to master the level of mathematics content knowledge that the state curriculum requires. These specific cultural characteristics of Mrs. Oliver's mathematics classroom—an authoritative, individuated, and procedural learning environment—is critical to understanding the three girls' identity and ideological appropriation process in the classroom contexts.

Many of her students, mostly from white, middle-class backgrounds, interpreted her strict and firm attitude as an expression of high expectations for their academic success. In contrast, those from working-class backgrounds, including many Black students, who deeply doubted the fairness of school practices, experienced her strict disciplinarian approach differently. These students viewed the teacher's firm attitude and strict rules as something that could hurt them at any time—because school was *not* fair to them and teachers treated them differently. These two groups of students brought their prior knowledge and experience with school and teachers into the classroom. As a result, despite the teacher's good intention and hard work, Mrs. Oliver's students tended to experience the math class differently based on their class and racial membership.

4 Three Students

The overall analysis of three young adolescent girls—Jessica, Stella, and Amanda reported in this paper—shows an interesting dynamic among each participant's ethnicity and class background, their social/academic identity and its collective foundation, the types of ideologies they repudiate and subscribe to, the implicit and explicit strategies they adopt in order to support the legitimacy of their own position, and the ways they manifest their position and identity in their use of language referring to their mathematics classroom. Detailed analysis of their use of particular words, such as "we," "they," "should," and "shouldn't" elucidates that each participant has a unique view of her mathematics classroom, developing a different type of collective identity associated with a particular group of students. Most importantly, participants actively construct a social and ideological web that helps them articulate their ethical and moral standpoint to support their positions. Throughout the complicated appropriation process of their own identity and ideological standpoint, the three girls made different choices of actions in mathematics learning, which in turn may lead them to a different social context in which their possible identity and actions in the future are partly determined and largely constrained.

4.1 Jessica: They Call Us "Smarties"

Jessica, a high-achieving student in the advanced mathematics class, represented a typical portrait of an accomplished girl in the mathematics domain. Her motivation, as well as her academic identity, in the domain was firm and strong. Throughout her three interviews, Jessica exhibited a strong sense of "we"ness, frequently referring to a group of her close friends. Her "I" and "We" appeared interchangeably without any visible sign of hesitation or awareness of a subtle difference or possible conflict between the two. "They call us smarties. I take that as a compliment," declared Jessica. Jessica's use of "we" revealed that she had already constructed a firm collective identity with her friends coming from similar cultural and class backgrounds.

Jessica's use of "we" is characterized by four aspects; homogeneity, selectivity, academic accomplishment, and conforming school values and practices—accepting meritocracy ideology. Jessica's "we" is homogeneous in every aspect that she could think of except how they "look." Jessica's "we" share similar personalities, dispositions, hobbies, and learning goals. Jessica explained, "We look nothing alike, but we act just alike. We… we like to have good grades and make sure our work is done. And then after our work is done, that's when we can act silly and tell jokes and everything. But we have to make sure that our work is done so that we can make good grades and make sure that our average is staying the same or going up."

Jessica frequently used "we" in order to indicate a group of selective students which she belongs to. For example, in the very beginning of her first interview, Jessica emphasized the fact that she is in an advanced math class, not a regular one, and used "we" as she explicated differences between her own class and other regular classes. This is one of rare uses of Jessica's "we" referring to other than her social clique, yet she accepted this "we"ness of the entire class as she emphasized the selective process through which the class had been formed. She highlighted that students in her math class were different from those in "regular" classes. Jessica's dominant "we" referring to her social clique—a much smaller subset of high achieving middle class White girls—also implies the high selectivity of the group to which she belongs.

Jessica's dominant "we" was characterized by the fact that they were successful accomplishers—"smarties" paying attention to their academic status at school. This "we" of Jessica's also showed a strong conformist attitude toward school values and practices. Jessica confidently testified, "All my friends love school" and "like mathematics." "All of us like to do well in school. And all of us, we don't interrupt class and we do pay attention," she added. Jessica's "we" stood firmly as strong supporters for current school practices, and school-related ideology and value system including meritocratic ideology.

The construction of Jessica's positive and collective identity in the mathematics domain was often based on an implicit marginalization or accusation of others whom she believed were different from herself and her friends. Separating herself from others seemed to be essential in the construction of her positive identity. Her use of "they," referring to students other than her friends and her, tends to have a negative connotation. From Jessica's point of view, "they" were passive learners and trouble makers. Responding to my question if she knew anybody who was struggling in math and did not like the subject, Jessica's first reaction was to distance herself from those students. She clearly drew a clear line between those students and her.

> Jessica: I don't really have friends that are like that. But I know that there are a few people like that… When they come to school, they're like, oh man, I hate school, I don't want to be here. And they don't really make good grades because they're usually sleeping or not paying attention or drawing. Something that does not have to do with the class. So, I really don't understand why people do that because I think school is very important.
> J.H.L.: And you said you don't have such a friend, right?
> Jessica: All my friends love school.

Believing the benefits of school work wholeheartedly, Jessica could not understand those students who came to school unprepared or did not show eagerness to learn. When some students kept asking the same question to the teacher, Jessica felt "kind of irritated because I think they should know that they need to be paying attention to understand it." Jessica attributed some students' lack of understanding or low grades to their bad choice—"sleeping or not paying attention" to the teacher. Her description of such students often reflected an ethical or moral judgment.

To Jessica, students who seemed not to understand the importance of schoolwork did not deserve a good grade, additional support, or special care. Jessica wanted to give a high B to her mathematics class because there were "six or seven people in the class" who "misbehaved a lot." In the same vein, she was rather selective about giving help to her classmates. She tended to separate or distance herself from those whom she believed did not deserve her care or help. She said, "I usually don't help them if they don't pay attention because I think that it's not right that they didn't pay attention." Jessica's decision not to help her peers who "didn't pay attention" reflected her math teacher's classroom policy—a firm and consistent use of reward and punishment system based on student behaviors in class. Jessica internalized much of the justice principle that Mrs. Oliver practiced in the classroom and used it as her own.

Jessica expressed a strong voice—including several "shoulds"—arguing for students' ethical obligations at the school including her math classroom. Jessica deeply appreciated Mrs. Oliver's dedicated teaching and declared that "they should be thanking Ms. Oliver because she could be doing any other job. But she chose to teach and to show them, to help them understand what they're going to need." Jessica easily identified herself with the teacher and volunteered to be her advocate. She developed a strong sense of justice differentiating what is right and wrong to do in the mathematics classroom: all students should pay due respect to the teacher—follow the classroom rules and pay attention to her lecture. Therefore, it was not right to give her help to those who did not pay their due respect. Distancing herself from those students was the right thing to do from Jessica's ethical point of view. Armed with this strong sense of justice, Jessica effectively separated herself and her close friends from other students who exhibited negative attitudes towards the school and mathematics and, therefore, did "not make good grades."

Mrs. Oliver supported Jessica' sense of "we"ness. She knew that Jessica's social clique consisted of high math achievers and conceived that Jessica was naturally "part of that group." Mrs. Oliver highly evaluated Jessica's eagerness to learn and succeed as signs of academic potential. The teacher felt that it was right for Jessica to "get into that pre-algebra class" along with her close friends.

There was a clear cultural consistency and social alliance between Jessica's family and teachers providing a collective ground for Jessica's development of "we." Both parties shared White middle class cultural values, such as strong self-discipline, hard work ethic, benefits of education, and meritocracy. They initially provided a cultural and social network that made Jessica's "we" develop; they welcomed the formation of the group and supported its stability and cohesiveness through various out-of-school activities. Jessica eagerly accepted a meritocratic ideology, internalized it, and used it to construct her own social world with her close

friends—the "smarties." Furthermore, she developed an ethical standpoint that reflected the justice principle adopted by Mrs. Oliver in her mathematics classroom. This emergent ethical standpoint conferred on Jessica a power and logic to distance and marginalize other students who seemed not to share the same attitudes as hers toward school and mathematics learning.

4.2 Stella: Between Two Worlds

Stella, an African–American girl, was one of the highest achieving students in the advanced math class, who would possibly enter the pre-algebra class the following year. Her family was not a middle class family, yet, provided her with a stable and relatively comfortable home environment with two parents. Her social clique consisted of other African–American girls with varying achievement levels: most of them had little positive experience in the school, particularly in Mrs. Oliver's math class.

As a whole, Stella's experience with Mrs. Oliver's mathematics class was much less positive than Jessica's. She suffered from a high level of anxiety and fear in her mathematics classroom. All three of her interviews revealed her uncomfortable feelings about her mathematics class and learning mathematics. The analysis of her use of "I," "we," and "they" poignantly revealed the dislocation of her two different social worlds—the world of her family and friends, and the world of school and mathematics—and her conflicting identities in each of those two worlds.

As a whole, Stella rarely used "we" as she explained any successful academic performance. It was always "I" who accomplished something at school while her close friends slipped into "they." Stella's academic "I" was very lonely without a collective ground of "we." The following excerpt explains the reason for her lonely "I" without a collective sense of "we." During her second interview, Stella gave her math class a B or C and explained why—which revealed her difficult position in the space:

> Well, I probably won't give (the math class) an A because sometimes it's boring. When I ask for help sometimes, she'll (Mrs. Oliver) be like 'why don't you understand it?' or something like that. I'll be like, "Well, we just learned it" or something. And if we do play (a game), if we do group stuff, all my group will say, 'you've got to say this though because you're the smartest' or something like that. I'll be like, 'Why can't ya'll say it?' They'll be like, 'Because you're the smartest.' So, I have to say all the answers. I don't really want to, though.

Second, when Stella connected her "I" and "we," the "we"—her social clique—tended to have many negative experiences at school. Stella's "we" did not feel comfortable being in a strict teacher's classroom, and automatically "got into trouble" if a teacher looked like a "mean" one. Other students, sometimes, appeared as the one treating Stella's "we" unfairly: behind the scene was a "mean teacher" approving the injustice practiced by the students. Stella described one incident when her "we" was unfairly accused of being "so loud" by another student.

> There was this one girl in our class that she (a teacher) really liked and she made her do everything. She would help her out all the time and she won't be so mean to her. And she'd

let her pass out papers, even though we raised our hands to pass out papers, she'd call on her even though she don't raise her hand. When she'd tell us we could have free time and we could do whatever we want, we'll like talk. And she'd be like 'don't talk so loud. And all these folks be over there talking real, real loud… So, I'd be like we ain't talking that loud.' I'd say 'what about them over there?' and she'd say, 'don't worry about them, they're my business.' And so I'd be like, OK.

Interestingly enough, Stella uses "they" as she explained high-achievers at school. Even though Stella is one of most high performing students, she tended to separate herself from other high-achievers in the class. "They make As in math all the time… Sometimes I am watching the teachers having the students to collect something and the… matching their answers, taking the other students answers. It's just the people that got all their answers right and she'll tell them to just go check other people's. Sometimes I'll just miss one or two problems, I didn't get that right. So I'll have to do them over." It was consistent in her interview data that Stella contrasted herself with other high-achieving girls. Her "I" statements often implied that she was not as good as other high-achieving Caucasian girls, yet, the teacher's record showed Stella herself was, in fact, one of top students in the class.

The second group of people that Stella called "they" was actually her own social clique. She tended to jump from "I" to "they" when she described some activities or behaviors of her close friends that seemed undesirable from the school's perspective. Sometimes, such use of Stella's "they" included herself implicitly. Other times, she completely distanced herself from such "they." The following excerpt shows an unnatural transition from "I" to "they," and absence of "we" when "we" seems a more appropriate term to be used in the contexts.

> J.H.L.: Do you act differently when you are at home and when you are in school?
> Stella: Yes.
> J.H.L.: Tell me a little bit about that. How do you act differently in two places?
> Stella: At school everybody thinks I'm quiet.
> J.H.L.: Hmhm (smiling), I thought like that.
> Stella: I'm real, real loud.
> J.H.L.: Hmhm.
> Stella: And they just be talking loud about stuff on the phone.
> J.H.L.: But is it OK to talk a little bit loud at home?
> Stella: Hmhm. To me, it is. Because we can't talk that loud here at school. And well, I ain't saying it about me but when I'm on the phone with them, they don't talk the way they talk here. In here they talk all like they shy and stuff and they don't cuss in there. But they do when they're on the phone.

In the above excerpt, Stella still admits that there was a connection between herself and, "they", her close friends. "We" appears intermittently in order to indicate Stella's "they" actually means "we,"—her social clique. However, Stella often cut off the connection between herself and her close friends as she described her school experience. When the field of her or her close friends' activity was moved from home to school contexts, Stella quickly removed herself by saying "I don't do anything like that" and referred to "they" rather than "I" or "we" in the rest of the story. The following excerpt shows Stella's strategy to position herself in Mrs. Oliver's classroom as she was asked to describe what was happening in the space. To my question asking her to describe the mathematics teacher in detail, Stella replied:

I don't really know her height, but, she's like not short, but like tall, in the middle kind of. That's all I can say about her looks. Well, she's a good teacher. Some folks say she's mean. Because when they ask for help she'll probably... (*pause*) probably don't want them... (*long pause*). Well, if they ask for help and she'll tell them, but they probably won't get it that good, so they'll probably say she's mean like that. But I think she's nice. I get, whenever she be talking about a subject, I get it, because she explains it good. To me, she do. But I don't know to other people, how other people think and (*whether*) she explains it... I don't know.

Stella's position between the teacher and her close friends posed a problem as she tried to understand the meanings of her academic endeavor in the classroom. Most of her close friends did not have a positive relationship with Mrs. Oliver. They were troubled with Mrs. Oliver's heavy-handed disciplinary rules in the mathematics class and did not accept the idea that those rules were the tool to help them learn the subject. As a result, it was very hard for Stella to draw a coherent picture of both the teacher and her friends in order to support her positive identity in mathematics learning. In her interview data, Stella revealed her confusion and inner conflict in understanding her mathematics teacher and friends because her own experience with the teacher seemed a bit different from her friends'; or at least she wanted to believe that the teacher treated her differently from her peers. Stella's desire to maintain a good relationship with both the teacher and her friends forced her to call her close friends "some folks–they," and to emphasize her subjective knowing, "to me, she do," followed by an intentional unlearning—ignorance "I don't know." She first tried to close her eyes to the experience of her friends and turned away from understanding them, yet her final resort was one of her 48 "I don't know"s con-stantly repeated throughout her three interviews. This response poignantly revealed her inner conflict between two different social worlds and her unconscious desire not to see the conflict residing deep in her heart. Stella's subsequent answers about the teacher and her friends were inconsistent, revealing her insecure feelings and contradictory knowledge about two hostile worlds existing simultaneously within the school.

However, Mrs. Oliver witnessed a negative impact of Stella's "we–they," her so-cial clique consisting of African–American girls. She saw it was gradually eroding Stella's potential for learning and academic success; yet the teacher did not see the psychological conflict deeply residing in Stella's mind. As a result, Mrs. Oliver predicted a rather negative future for Stella's academic endeavor despite her high evaluation of Stella's current intellectual capacity.

She is just an excellent student and I'm a little bit concerned right now. She's sort of falling down a little bit. She doesn't seem to be as interested in her academics as a whole... I don't know if it's from outside this class, but I don't think she wants the attention of being a goody–goody or doing too well. I think she's happy just doing what everybody else does. And she could, I think, do a lot better. Simply because she likes where she is. She's com-fortable. She likes that area of comfort. She's making good, she's doing well. And so she doesn't want to get out of the box.

Without significant supporting structure from either side, Stella confessed a deep self-alienation in learning mathematics. It is not surprising that Stella portrayed her-self in the mathematics class as "a rat in a maze... trying to get out of" Stella

wanted to be a good student and hoped to be different from her brother, who was a "trouble maker" both in school and at home. She tried hard to endorse and accept the legitimacy of school practices and to identify herself with her mathematics teacher. To accomplish these goals, she consciously changed her way of talking and acting at school, conformed school practices, and distanced herself from her close friends. However, her teacher did not see Stella's struggle. It was only the lonely "I" of Stella's vacillating between the two worlds without a strong ground of "we," collective identity.

4.3 Amanda: Political Dissent

Amanda, 1 of 13 Caucasian girls in the advanced mathematics class, used to be a high-performing student in elementary school. However, her grade had plunged this year dramatically. In Mrs. Oliver's classroom, Amanda always sat in the back of the classroom strictly limiting her communications to her close friends sitting nearby. Her social clique consisted of White girls with varying achievement levels; most of their grades had plunged this year. Amanda's view of school and her mathematics class was heavily influenced by her prior experience at home; she witnessed ongoing family violence that victimized her mother, the only person she could rely on in her family. As a result, she had a more critical view of the world of adults, including many school practices and supporting ideologies for those practices.

Amanda had a high level of anxiety in mathematics class. Like other participants in this study, she was worried about grades and test scores: yet, her anxiety was more deeply related to the social and emotional aspects of the class, such as whether she could enjoy learning the subject and working with the teacher. Amanda perceived the mathematics classroom as a lonely and impersonal environment in which she might be embarrassed in public. She refrained herself from asking questions in public. She hardly expected any support from Mrs. Oliver. Rather she viewed the teacher as a cold and distant authority who would "embarrass" students who were already struggling in the situation.

Amanda's "we" in the mathematics class shared some similar characteristics with Stella's "we." For example, as a whole, Amanda's "we" were vulnerable people in the class. Amanda's "we"s were unfairly treated and ignored by the teacher and other "smarter children." This Amanda's "we" frequently emerged in conjunction with "they"—"smarter children" who seemed to enjoy some privileges at school.

> J.H.L.: Then tell me a little bit more about how she is treating her students differently.
> Amanda: She likes, um... older children, I mean smarter children, alright, Stella, Whitney, and Janet. She don't let us go to the restroom at all. And if we ask to go to the restroom, she'll say no, you should have went [gone] earlier. But if they go ask her, she'll say yeah.
> J.H.L.: Can you remember the time when that kind of thing really happened?
> Amanda: Stella. She went to ask to go to the restroom and then Mrs. Oliver said, you should have went [gone] earlier, and then um, Janet went to ask her if she could get to the restroom and Mrs. Oliver let her. I don't think that's fair. Because Stella, she's really good in the class.

Getting "embarrassed" was another big issue to Amanda's "we." Amanda viewed the classroom as a risky space in which she and her "we" were getting embarrassed because they could not understand the concept taught by the teacher.

> Amanda: She embarrasses us sometimes, embarrasses us when we can't do a problem. She's like well, I've already taught you that, and… ugh. Like, it took ten minutes to answer a question and I got really embarrassed. And she told me that I needed to know that and I couldn't help it that I didn't understand it.

Associated with Amanda's "we", constantly being embarrassed in the classroom, was another intriguing concept of "we"—nice, pretty and attractive girls. She explained this "we" with pride, often in relation to her important "they"—boys in the class: "They don't treat us that bad. They kind of treat us good. But if they think we're ugly, they say, Oh God, that girl is so ugly. Like somebody (an ugly girl) asked him for a phone number because they (ugly girls) liked them (boys). Then he was like, I don't want to give you that. I don't want to give you my phone number because you're stump ugly." This "we" of Amanda's was depicted as an object of the constant gaze from boys—another important "they" in her data. Amanda perceived that this "they" constantly talked about her and her friends (her "we"): Her "we" defended their action against those boys' senseless judgment. "I can, sometimes I can hear them talking about me and they talk about my friends and stuff. Like if I'm walking with my friends, they'll say, oh, those two are gay. We're like, I don't think we're gay just because we're walking and talking to each other."

However, there are some aspects that were more unique in Amanda's "we." Unlike Stella's "I" and "we" disassociated from each other in school contexts, Amanda's "I" and "We" are firmly aligned to each other. Amanda frequently used both terms interchangeably as she described her own and her "we's" experience in school/classroom contexts. Amanda's "we" is active, even rebellious to what was then given to them, creating a different set of ideas of mathematics learning. Amanda's "we" consciously challenged the authority and rules of the game in the classroom. Naturally, there was a strong presence of "I," subjective voice, questioning the legitimacy of the existing practice, and challenging the given authority in the space.

> Amanda: Well, sometimes she (Mrs. Oliver) just says, "OK, this is how you're going to do this." And *we tell her a different way*, she's like… April, her aunt is a teacher and she told her that her aunt taught her differently. And Ms. Oliver said well, "That's just my way. This is the way I'm going to teach it."
> J.H.L.: So, um, tell me about that time when April and you explained another way to solve the problem. The teacher looked like she didn't like it?
> Amanda: Hmmm (yes). She was mean. She just said, "This is the way I'm doing it and this is the way I'm going to do it and this is the way you're going to learn it.".... (but) *I think it's better if you can learn in a different way that you can learn and understand better*.

Amanda's "we" seemed to grow in terms of scope. Amanda's "we," in her later interviews, tended to include not only herself and her close friends, but also others who were vulnerable and hurt in the space. Amanda's effort to make sense of her own experiences led her to a sense of community with others who had similar experiences. Based on this expanded "we"ness Amanda felt distressed even when

the teacher's disciplinary action was directed toward someone else. In the following excerpt, Amanda used "people," "I," and "we" interchangeably reflecting her resistance was not only individual, but based on the collective experience of "we-people."

> J.H.L.: Tell me about what you don't like about math.
> Amanda: I don't like when she yells at *people* and I really don't like that. And I don't like when she embarrasses *people*. Like say, *I* got a problem wrong and she'd get mad and say that she's already taught *us* that (and) *we* should know it. And I really don't like when she does that.
> J.H.L.: How do you feel when she says that kind of thing to students?
> Amanda: I feel mad. I'm like well, you shouldn't be treating *people* like that.

Amanda's understanding of the importance of mathematics and schoolwork was not much different from that of high-achieving middle class girls, such as Jessica. She emphasized that she would be different from others in her family who "want[ed] to go to college, but once they took a job, forgot about it." She did not "want to be like them." She firmly stated, "I want to be the one in my family that goes to college." However, Amanda's social world—"we"—was different from Jessica's: Amanda's "we" consisted of White or Black working class girls who found Mrs. Oliver's mathematics class uncomfortable or even frightening. Amanda's "we" was the one who suffered from high anxiety experiencing a dearth of caring relationship in the mathematics classroom. Her "We" had little support for her academic endeavor.

More important, Amanda possessed a strong subjective voice that she had developed from her own lived experience (Belenky et al. 1986). She did not blindly accept the manifested school ideology, but carefully examined its value and coherence as she experienced it. Having experienced family violence, Amanda held a firm belief in the necessity of caring relationship in the shared world of many people, including her classroom, and desire for such element in the learning environment. To Amanda, her mathematics classroom was not a mere learning space but a place where such ethical principles should be observed.

Apparently, Amanda and her teacher, Mrs. Oliver, had very different views on mathematics learning. Mrs. Oliver believed that Amanda was "not doing as much as she could do." The teacher deplored, "She (Amanda)'s capable, [but] she just doesn't do it. ...She is not concerned about it." To Mrs. Oliver, who strongly believed in hard work, Amanda's lack of motivation and attitude of resistance were frustrating. Mrs. Oliver, however, continued to provide Amanda with her best support—close monitoring and strict supervision, which she believed Amanda really needed. The teacher strictly applied her classroom rules to Amanda as she did to many other students who came from lower socioeconomic backgrounds. Mrs. Oliver never doubted the best policy for Amanda was forcing her to follow, and hopefully embody, the strict rules in her class so that she would discipline her for a very slight chance of academic success in the following grade.

However, Amanda saw the situation differently. To her, effective and comfortable learning could not take place unless she had a warm and mutually respectful relationship with the teacher. Being forced to participate in learning without such an

interpersonal base made Amanda hate mathematics and the teacher. Amanda who originally hoped her teacher "like me [her]" and "I [she] don't [doesn't] do bad in her class" changed her mind when the teacher "started yelling at kids" who "couldn't understand something." Her mathematics teacher, from Amanda's perspective, had disregarded the ethic of caring, which was central to her relational world especially when students were vulnerable, helpless, and most in need. In her last interview, Amanda declared that "Math is not important." She refused to learn mathematics and attached no value to mastering the subject. Instead, she expressed her fondness in Language Arts taught by a teacher who was often referred to as the most accessible, caring teacher in the sixth grade hall.

5 Discussion

The findings of this study reconfirm the thesis in the literature of mathematics education suggesting the complexity of gender issues in this discipline. As a whole, this study demonstrates that the three participating girls' experiences with school mathematics were grounded in the cultural characteristics of their mathematics classroom, which emphasized authoritative, procedural, individual, and competitive work. However, it also reveals that the class backgrounds and ethnicities, and the characteristics of the peer groups they belonged to, were other important factors that created a significant variation across the three students' profiles.

Jessica, a girl from a white middle class family, had less difficulty in constructing a positive identity in mathematics. Her social world, including friends and family, provided her with a cultural and social context that helped her readily adopt and internalize the various school-related ideologies, such as the legitimacy and goodness of school practices in general, and an ethic of hard work and justice principle as practiced by Mrs. Oliver's classroom in particular. Jessica's use of "we" showed that she clearly separated herself from "others who don't like mathematics and don't care about school," successfully constructing her positive and confident identity in the domain of mathematics. It is noticeable that Jessica' positive identity development in mathematics was accompanied with a path of moral development closely associated with the Justice principle (Strike 1997).

In contrast, Stella, an African–American girl from a working class background, was experiencing a much deeper confusion between her social world and the world of school mathematics. No matter how hard she tried, she could not seem to make these two worlds fit together. Even though she was one of the top-performing students in the advanced mathematics class, Stella had no "we" who could support her academic endeavor: Her social "we" slipped into a rather antagonistic "they" when she tried to develop a more positive academic identity in mathematics. Exposed to conflicting voices and identities within herself, Stella was confused feeling a deep alienation in the class environment. It was difficult for her to develop a firm and stable academic identity when she felt either of those two words was not exactly hers. Caught in a crisis of understanding the gap between her two worlds, she was left to deal with the fracture in her experiences with significant people, her teacher and her friends, and the implications of learning mathematics.

Several Black scholars (e.g., Stiff and Harvey 1988) have argued that the culture of traditional mathematics classrooms poses a challenge to Black students because it lacks cultural relevance. Stiff (1990) suggests that the African–American cultural frame of reference entails a particular set of dispositions, such as working in support groups and using a "conversational style" of discourse in an instructional situation. Yet, traditional mathematics classrooms remain largely based on individual and procedural work and employ an elaborate syntactical discourse as the acceptable form of communication for mathematics learning. The African–American cultural frame of reference or "Afrocultural ethos (Boykin et al. 2005, p. 521)" could be found across different spectra of social class within a black community (Timm 1999), yet such cultural differences/conflicts seem most visible and frequently documented in schools serving primarily working class Black students. For example, Boykin et al. (2005) confirmed that there is a consistent cultural mismatch between working class Black students and their teachers in poor urban schools. Experiencing a significant mismatch between their own cultural dispositions and what is expected of them in a traditional mathematics classroom, Black students—particularly working class Black students—may feel a high level of anxiety and even inadequacy in their endeavor to succeed in mathematics (Reyes and Stanic 1988; Ryan and Ryan 2005).

Amanda's case raises another interesting issue. Even though Amanda possessed the cultural knowledge of how school worked for or against each student, she found that the authoritative and procedural instructional approach that prevailed in her current classroom uncomfortable and even unacceptable. Drawing on her traumatic experiences at home, Amanda paid close attention to the relational aspects of her mathematics classroom. She viewed the mathematics classroom as a space where people should observe some basic ethical principles (e.g., caring) in order for authentic learning to take place. Based on this ethical framework, Amanda constructed her "we" and "they" with a strong present of "I" voices in each of her stories. By positioning herself in this way, Amanda actually lost a connection with the teacher, and other high-achieving peers in the classroom. It seemed rather natural that Amanda voluntarily chose to desert mathematics learning: She directed herself to other subject areas which seemed to readily meet her ethical claim. Working class students' resistance against the culture of school and its negative consequence have been well documented in literature (e.g., Willis 1981; Archer et al. 2007). On one hand, Amanda's decision not to pursue a higher level of mathematics learning was a strategy helping to preserve her own identity and cultural values: on the other hand, such decision limited her academic advancement for subsequent years, and therefore fulfilled the cycle of class reproduction. Researchers observed that effects of class/SES on girls' choice of math and science related fields were stronger than boys' choice of those disciplinary fields (Trusty et al. 2000). As a result, women in mathematics and related fields tend to come from middle/upper class families—often in significantly higher numbers than those of their male counterparts in the same disciplines (Oakes 1990). Furthermore, the two reasons for Amanda's disenchantment with mathematics are hardly new ones. Several studies in the past confirmed that girls and women experience the field of mathematics as an uncaring field (Herzig 2004) filled with authoritative male voices. Even those who have been successful and remained in

the field constantly negotiate their identities facing the conflict images of femininity and mathematics as male's domain (Rodd and Bartholomew 2006).

Given the small sample size and the conflation of gender, race/ethnicity, and class in the three young adolescent girls reported here, findings from this study are limited in explaining the concrete relationship between the three socio-cultural factors and the mathematics learning experience of girls. However, this study suggests that there could be a subtle, yet powerful (dis)connection and dynamic existing between the cultural structure of their math classroom and each student' class/race-based disposition, which determines their "right" or "desirable" place in the school's math streaming system.

Despite many limitations of the findings described above this study still poses at least two important discussions concerning the gender and class inequity problem in mathematics education in American schools and beyond. First of all, this comparison suggests a critical outlook toward the prevalent culture of mathematics classroom that can be generalized to middle and high schools across USA. Despite 20 years of criticism on such practice (Ball 1990) and continuous reform efforts (NCTM 1991, 2000), many American middle and high school math classes still repeat the same authoritative, procedural, and individuated mode of instruction. More important, this study illuminates such mathematics classrooms are not merely a neutral, peaceful learning space, but a political arena (Noddings 1993) in which different ideological and moral discourses compete against one another, and individual (Zevenbergen 2001) and collective identities (Atweh et al. 1998; Zevenbergen 2005) are constantly being negotiated and reconstructed. Even though the three students were in the same classroom, each student's interpretation of and experience in the space was dramatically different from each other's. To Jessica, the space was a supportive environment for her mathematics learning; yet, the same environment posed a serious problem to Stella and Amanda. They felt self-alienation or anger being in the space.

It should be noted that the traditional and procedural mode of mathematics instruction has been widely criticized for its lack of relevance to the life-experience of minority and/or working class students who present a different cognitive/learning style—field-dependent (Bond 1981), and collective and mutual (Foley 2005). Therefore, it is not surprising that several mathematics education researchers confirmed that providing a cooperative learning environment in which teachers engage students in group projects and connect their academic work to everyday life experiences/examples is crucial to successful mathematic learning experiences of minority and/or working class students (Boaler 2006; Balfanz et al. 2004). Mrs. Oliver's traditional math classroom failed to foster such connection among different groups of students as well as between her and those coming from other than white middle class families. This may be one of the possible reasons contributing to the dearth of minority and/or working class girls in higher tracks of math class as well as the field of mathematics in later years.

From a gender perspective, this phenomenon of dis/connected identity may pose a critical challenge to minority or working class girls considering women's different ways of knowing: girls, as connected knower, tend to rely on the commonality of experience, rather than authority, as they try to access another person's idea

or knowledge (Belenky et al. 1986). Therefore, Jessica who was able to develop a strong psychological, emotional connection with both her high-achieving white peers and teacher appeared to be more comfortable with the authoritative and procedural learning environment than others. In contrast, when the possibility of such connectedness is slim, almost invisible, the task of understanding an abstract mathematical concept or procedure through a distant teacher may become a challenging task to Stella, and even unthinkable from Amanda's perspective. From this perspective, it seems rather inevitable that in the case of Stella, the path to a higher level of mathematics learning did not appear as a pleasant, desirable, and promising one; it looked more like a creepy and unsafe route to her. Amanda's loss of connection from high-achieving peers and the teacher, as well as her emerging connection with "pretty, nice girls" and other students distressed in the class cost her initial desire to build a relationship with the teacher and disregard the importance of mathematics to her ultimate goal-going to college. It should be noted that class and racial membership creates a whole new set of social and psychological dynamic in the three girls' experiences with school mathematics due to such (dis)connected experience and identity with different groups of peers and ultimately with their math teacher.

Findings from this study suggest that the most common rhetoric for learning mathematics based on the instrumental value of school mathematics (either to be a good student or to get into college) or advocating and inculcating the legitimacy of school practices in Stella's or Amanda's heart is not an appropriate or effective method to support their higher level of mathematics learning. Stella's life, her consciousness, cannot be separated from the rich, collective cultural identity of the African–American community and its collective experiences of the fundamental injustice of many school practices. In the same vein, Amanda will not easily give up her critical voice, which sprang from her subjective knowledge on the illegitimacy of an authority and strong commitment to the ethic of care over any other principles.

What appears to be a more relevant—and urgent—approach is to raise mathematics educators' sensitivity and responsiveness toward their students who come from other than White middle class backgrounds. In this study, Mrs. Oliver, although she was one of the most dedicated, hardworking, and competent mathematics teachers at the school, failed to understand the identity dilemmas Stella and Amanda faced. Her strong conviction about the value of schooling, the ethic of hard work/self-discipline, and the effectiveness of traditional math instruction method kept her from reaching a deeper, more reflective understanding of the cultural and social challenges some of her students experienced in her classroom. Teachers with more cultural awareness and sensitivity will develop a sense of advocacy for marginalized students (Parsons 2005) and critically examine their own instructional practices. This process of self-reflection and taking their position as an advocate—rather than a neutral instructor—are critical to shaping their everyday "teaching as social activism." (Gutstein et al. 1997, p. 732).

When the community of educators as a whole, inspired by their reflective and critical examinations of their own practices, many more Stellas and Amandas in the near future will see the possibility of building a meaningful bridge between their seemingly irreconcilable worlds and competing voices—their identities as reflected

in their construction of "I," "we," and "they". These students need to find teachers who will eagerly provide culturally sensitive, caring support as they attempt to develop a sense of "we" supporting their academic endeavors.

Equally important, however, is that it involves more than an individual student's or teacher's agency to create the possible strategies that would lead to a more equitable intellectual pursuit and joyful learning in school mathematics across diverse groups of students: it demands that multiple agencies work together critically examining the current structure and practice of school mathematics in light of gender, racial, and class implications, and constantly soliciting strategies that effectively disturb or counteract the reproduction process of the existing status quo across the various pipelines in the discipline. I, therefore, argue that there should be systematic examination and intervention built into the entire US public school system directed toward various groups of underserved students. Without such realization and commitment at a structural level—claiming schools as a space for social justice (Giroux 1997) and "prepare[ing] people for critical citizenship" (Skovsmose 2007, p. 215)—it would be hard to make a significant difference, a positive long-term lasting effect, in the most marginalized groups of students—White and Black working class girls who face multiple challenges in their pursuit of higher level mathematics learning.

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