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Academic and Peer Status in the Mathematical Life Stories of Students

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ABSTRACT

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Mathematics students often define themselves by their grades, test scores, how they compare to other people, how comfortable they feel in mathematics class, and so on. These experiences are all part of a student's mathematical life story. Students assume positions with particular rights and duties for themselves and for the actors in the stories they tell. Those positions reflect certain types and levels of status. Those types and levels of status have been shown to either inhibit or open a student's access to learning mathematics. Thus, a student's status in mathematics education is an issue of equity. Mathematics educators and mathematics education researchers alike have argued that equity is a critical issue to their field. This serious issue has motivated me to study status and associated positions from a student's perspective. Thus, I have analyzed students' mathematical life stories of two high school students for positions with concomitant rights and duties and associated these with types of status. Positions, which are situated in storylines (or larger narratives about interactions), have been identified which add to the field's definitions and understanding of status. Both student participants focused on different types of status in sharing their experiences, one focusing on academic status and the other focusing on peer status. Therefore, the positions for each student illuminate the relationship between positions and types of status. Contributions to the research which reflect this relationship are discussed as well as what teachers can learn from these stories to shape access to mathematics learning and to students' mathematical socialization.

Keywords: mathematics education, positioning theory, status, mathematical life stories, mathematical socialization

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Chapter 1: Introduction and Rationale

Everyone has a mathematical life story. As a graduate student in the mathematics education program, I have often heard these stories when I express my interest in the field of mathematics learning and teaching. I have noticed that people, including students, define themselves by the grades they received (e.g. Kohl, 1994) in a math class, use sarcasm when they speak about their own mathematical success, and describe mathematical competence as above them or "snooty," etc. They assume a position with particular rights and responsibilities in their story. I have also noticed that within mathematics classrooms, particularly in groups of students, that students take on different positions (almost like roles) and that there are students with varying levels of status within the group. Additionally, those with high status are given particular rights and duties while those with low status have limited rights and duties. When people talk about their experiences in learning math, whom (in terms of general positions) do they talk about? What *is* the status of the people in the stories they tell? Mathematics educators want all students to have equal access to learning mathematics but the way people speak about themselves and others creates an inequitable situation where this is not possible. This issue brings me to study the positions evident when people describe their mathematical life stories and the status associated with those positions.

Rationale

Here, I will articulate the need for mathematics educators to study status, describing first how status limits participation and learning for all students of mathematics as well as why this study is particularly needed in the field of learning and teaching mathematics. In order to give some background, I will first give a brief definition of position and status. Positions label students or people, in general, as certain kinds of people (Anderson, 2009). Different positions,

in turn, give students (or people) differing status with some having a higher status and others having a lower status. Status matters in a classroom because it influences access to learning mathematics.

A student's status could limit active participation and, therefore, engagement in learning opportunities. Cohen (1994) stated that students often feel a relative competence specific to mathematics classrooms. This feeling comes from typical mathematics classroom interactions in which students are expected to listen to or watch classmates perform mathematics and then hear the teacher's evaluation of those performances (e.g., exam scores, public praise). Cohen (1994) gave students a group task that relied on interaction and quality discussion. The students of low status did not feel that they could actively or validly participate. Anderson (2009) stated that "learning entails access to and authorship of ways of knowing and being with discourses and tools, which necessitates being recognized by others as having these skills and rights" (pp. 307-308). Therefore, students of low status are barred from full access to learning the mathematical concepts in the task because they are not seen as having the skills and ability to do so. According to Featherstone, Crespo, Jilk, Oslund, Parks, and Wood, (2011), students do not learn unless they have opportunity to actively contribute.

Featherstone and her colleagues (2011) further uncovered that students with high status are also limited in their access to mathematics. They gave an example of a fourth grade geometry lesson where students in a group were asked to give the name of three-dimensional objects. After pulling out a cylinder, Jakeel asked Nerissa, a student with high status, about the object. She replied, "It's a sphere" (p.36) and Jakeel wrote down sphere. When Jakeel's friend, Minerva pointed out his mistake, Jakeel responded "Well, you are my best friend, but she is smart" (p.

37). Because of Nerissa's high academic status, her reasoning was not questioned. Through the privilege of Nerissa's high status, her learning and that of her peers was limited.

To illustrate this point further, imagine a group of students discussing problem-solving strategies in a mathematics classroom. Those students with high status speak often and voice their own strategies while those with low status do not speak or are often ignored. Thus, the conversation of the group is limited to one or two strategies and the high status students are not open to the development of a deeper understanding of the mathematics that comes from hearing and understanding multiple strategies within a mathematics context. In contrast, imagine a group of students discussing problem-solving strategies in a more equitable way—that is, a discussion among students of similar status. If students are given pieces of a problem or expected to bring different expertise to approaching a problem, they become more interdependent and more likely to work equitably. In this way, they all learn from one another and the problem-solving is a product of each of their ideas.

Furthermore, mathematics education researchers have stated that equitable access to mathematics in a classroom is a critical issue (Moses, 1994). There have been many studies done and initiatives set in motion to make access to mathematics more equitable to all children (i.e. Ladson-Billings, 1995; Battey, 2013). However, as discussed, when students have different status in the classroom, there is inequitable access to mathematics learning. This point is reinforced by the following statement by Cohen and Lotan (1995): "If students in heterogeneous classrooms develop new status orders that have the effect of depressing the participation and effort of low status students, then the current wave of reform will simply substitute new forms of inequality for the old" (p. 100). Investigating and understanding status will provide mathematics

education researchers more opportunities to explore how to provide more equitable access to mathematics for all students.

Although it is evident that issues of status are important to study in the field of education in general, these issues are also specifically important to the field of mathematics education. Wagner and Herbel-Eisenmann (2009) stated that there is a feeling of "repression" associated with mathematics and that "changing the way mathematics is talked about and changing the stories (or myths) told about mathematics is necessary for changing the way it is taught" (p. 2). That is, mathematics itself has a different status than other disciplines which necessitate changes in how it is talked about and, ultimately, taught. These changes include thinking about the way positioning occurs in the mathematics classroom. For example, Anderson (2009) reinforced that teachers of mathematics often restrict positions available to students because of a limited view of competence. These restrictive perceptions on who is capable of learning mathematics have important consequences in what opportunities are available for students after school. For example, poor mathematical performance can be a gate-keeper that prevents people from having access to better careers.

In order to better understand the range of positions students see for themselves in mathematics classroom, it is important to talk to them and hear their stories. One way to get this information is to ask students to tell their mathematical life stories or stories of their life focused on their experiences both learning and teaching mathematics. The autobiographical nature of these tellings allows the researcher to focus on the positions from the participant's perspective and not just that of the teacher or researcher. Capturing the students' perspectives is essential to educational research as Nieto stated (1994), "students have important lessons to teach educators and we need to begin to listen to them more carefully" (p.420). With the understanding and

insight of students and their perspective in my research, teachers' ability to reach students and, therefore, their ability to teach mathematics will be expanded. Teachers can capitalize on, mediate, and otherwise shape positions that are available for all of the students in their classroom.

It is evident that issues of status are related to issues inherent in the field of mathematics education. Status limits the participation and access of students to a deep understanding of mathematics. It creates or reinforces inequitable situations. As this inequity is problematic, it is important to deepen understanding of the role that status plays in an individual's mathematical experiences. This thesis explores the mathematical life stories of two high school students in order to better understand the range of positions and status they see as important in their development as mathematical learners. The more that is understood about education from the students' perspective, the more teachers are able adjust their pedagogy to meet the students' needs and, when possible, their desires. In particular, unpacking the students' understandings of the possible positions and status they might have in mathematical learning environments can lead to the development of resources and tools that teachers can use to shape the status and positioning of students in their classrooms that would lead to more equitable access to mathematics.

Chapter 2: Background

Literature Review

To situate this thesis in research of mathematics education, I will discuss two areas of study. To demonstrate the necessity of my study, I first focus on what the field of mathematics education already has gained by examining mathematical life stories in order to show what is missing from this literature. I then describe the research on status in mathematics education so that it is clear what is known and what is still left to examine.

Life stories. In order to gain better understanding of the development of a human over time, many researchers have pursued getting data that spans over the participants' lifetimes. One way to gain this kind of access to a person is to invite them to elaborate on their life experiences. Drake, Spillane, and Hufferd-Ackles (2001) applied the idea of life stories to uncover identities specific to subject matter such as mathematics. They asked open-ended questions about experiences in mathematics to elementary school teachers to learn about the teachers' mathematical identities but did not look for positions. Within this perspective, Drake et al. (2001) found that teachers described their mathematical life stories within the walls of their classrooms only and did not elaborate on experiences outside of school mathematics that might have contributed to their perspectives of themselves in relation to mathematics. Martin (2007) also used life stories to understand a person's mathematical socialization. This type of socialization "refers to the experiences that individuals and groups have within a variety of contexts…that legitimize or inhibit meaningful participation in mathematics" (Martin, 2007, p.150). In other words, mathematics socialization is what contributes to a person becoming a certain type of mathematics student. Martin (2007) studied the life experiences of two African Americans and found that their struggle for mathematics literacy could not be separated from

their experiences as African Americans. Few researchers have focused on the socialization of students within the context of mathematics learning like Martin (2007). Even Drake et al. (2001), as previously discussed, focused on the mathematics life story of teachers and not students. Similar to Martin (2007), my research focuses on students and their experiences with mathematics socialization (both their school mathematics experiences and their out of school experiences).

In addition to these described studies in the context of mathematics education, other studies using life stories as a focus have been conducted in other disciplines in education. These studies outside the domain of mathematics education offer additional information about how to conceptualize people's life stories and what kinds of insight those stories have in supporting claims about people's perspectives. Wortham (2003) called autobiographical data sets "participant-denoting discourse" (p. 189) because he was able to see the positions of his participant, Jane, not only through what she said but how she said it. Jane described her own positions and positions of others through answering general, open-ended questions about her life story. Jane also positioned herself in the communication acts involved with telling her story to the researcher. To Wortham (2003), this interview was a powerful way to understand Jane's experiences from her perspective because "sociocultural categories of identity exist only through the individuals whom they identify and the events in which they actually circulate" (p. 206). Thus, the telling of life stories gives researchers valuable information about positions. This conclusion is also seen in the research of Lensmire (2014) on how White men speak about themselves and others when describing their life experiences. Lensmire found that the identity of the White men he interviewed was, in part, dependent on the way they saw people of color. Although the topic was meant to be on the White mens' lives alone (and told from their

perspectives), Lensmire found that the stories these men told revealed details about how they viewed themselves and also others. So, not only does the telling of life stories expose the positions of the teller but also of those the teller views as "others" (p.22).

Life stories are a particularly rich site for analysis of a person's ways of doing, being and becoming. In the context of mathematics education, these life stories usually focus on people's experiences learning mathematics both in classrooms as well as outside the classroom. Research in the past has focused on the life stories of teachers or has been specific to mathematical learning within the classroom. However, these life stories can offer perspectives from students that are not otherwise possible. Understanding students' perspectives and characterizing the ways in which they develop (particularly with respect to mathematics) is important for creating more equitable access to mathematics in classrooms.

Status. Previous research studies have also not incorporated the mathematical life story with positions and status. As described earlier, differing rights and duties (associated with positions) influence people's opportunities to learn mathematics, which creates a hierarchy of access in the classroom. These differences are characterized by a student's "status." Therefore, when a student is positioned by others, they are given more or less status. Here, I review research on status and positioning in order to argue that researchers have often focused on characterizing positions and status from the perspective of themselves (i.e., the researchers). This kind of analysis does not consider the students' perspectives in their own mathematical socialization (Martin, 2007). I present the critiques of this research alongside its description.

Researchers have studied the positioning of students (Harré, Moghaddam, Cairnie, Rothbart, & Sabat, 2009; Herbel-Eisenmann, Wagner, Johnson, Suh, & Figueras, 2015) in the learning and teaching of mathematics (i.e. Wagner & Herbel-Eisenmann, 2009). Anderson

(2009) studied groups in a fifth-grade classroom in the United States in order to answer questions about the discursive nature of positioning. As part of the study, students working in groups together evaluated the quality of the group as a whole in items such as engagement, argumentation and understanding. This evaluation allowed for the positions of each member to be evidenced and reinforced through discourse. She specifically focused on one student, Nate, who was positioned by other students as the kind of student who does not have valid reasoning or good communication skills. He was positioned as this kind of student even though the transcript showed his multiple attempts to display valid reasoning. Nate's position as a certain "kind" (Anderson, 2009, p.308) of student held more sway in how he was viewed by others than his actual ability or skills, even in subsequent instances. Thus, Nate's positions were interpreted to give him a low status that limited his active participation. Anderson (2009) and other researchers have acted as observers, interpreting status from the positions they see occurring in the classroom from their researchers' perspective. In learning about Nate, I wondered how the way that *he* thought about his mathematical abilities was connected to the positioning that came from his peers and the teacher. Anderson did not consider Nate's own perspective by asking him any questions directly about the phenomenon she observed. As noted in previous studies, the researcher's perspective does not always match the perspective of the participants (or students) (Martin, 2007).

Status has also been studied by looking at the statuses that arise within groups of students (without the influence of a teacher in the immediate context, as was the case in Anderson's (2009) study). In studies of cooperative learning, group work has exposed the effects of positioning or status ordering in a small setting (Esmonde, 2009). Cohen (1994) revealed that a main difficulty with group work experienced by students is the development of a status order.

This order can be based on perceived experience, expertise, popularity, or societal differences. Cohen stated that in group work the "rich get richer" (p.36), meaning that those of high status learn more than those of low status. This research showed that status is a problem for mathematics classrooms even, and maybe especially, for those that employ group work. As was mentioned in the rationale of this thesis, I argue that both high and low status students have reduced learning experiences.

In order to help understand and begin to solve those issues of limited access due to status situations, in this thesis, I consider the critical perspective of the student in unpacking and understanding the role status plays in mathematics classrooms. In particular, I examine the mathematical life stories of students in order to gain insight into how they position themselves and others in those stories. The focus of my research, then, is to deepen understanding of how students conceptualize their participation in their mathematics classrooms in terms of status.

Theoretical Framework

In the previous section I described where the research is lacking in both issues of status and in the use of mathematical life stories. These autobiographical stories define positions for all participants (both others and the tellers) (Lensmire, 2014). These positions lead to differing status. Therefore, it is necessary to define status in terms of positioning. I now give an overview of positioning theory as a background for my form of data analysis. I also define status through this lense.

Positioning. According to Harré, Moghaddam, Cairnie, Rothbart, and Sabat (2009), positioning theory "is a contribution to the cognitive psychology of social action" (p. 5). Its purpose is to better explain reasons and meanings behind the ways of human interaction, specifically in the giving of "rights and duties" (p.9, Harré et al. 2009). Positioning describes a

discursive process in which people are assigned positions as certain kinds of people. For example, Anderson (2009) states that positioning can help solidify how a person goes from failing to becoming a "failure," a certain "kind" of student (p. 291). This transition is seen in the three components of positioning theory. These components are speech acts, storylines, and positions. Speech acts or as Herbel-Eisenmann, Wagner, Johnson, Suh, and Figueras (2015) call them, communication acts, are the discursive exchanges between the participants in a given context and they serve to establish and reinforce positionings. Storylines are the descriptions that participants use to interpret contexts and in which positions are established. The storyline influences the position itself and how it is interpreted by the participants of the interaction and observers such as researchers. Storylines are culturally constructed and based on people's social experiences. Wagner and Herbel-Eisenmann (2009) add that the positioning process can be either interactive or reflexive. Interactive positioning involves the giving of rights and duties to others, while reflexive positioning is the giving of rights and duties to oneself. When a storyline and associated positions are introduced within interactive positioning, the actors involved have the choice to either agree with or resist the storyline and the position that they have been given by the other actor or actors. If the actor resists, she introduces a new storyline or a new position for herself (reflective positioning) within the same storyline. It is also true that by giving oneself a right, there are reciprocated duties given to others to fulfill one's right (Harré & Slocum, 2003). That is, positions are always concomitant with particular rights and duties within the existing storyline. Thus, when I describe positions of my participants, I outline the rights and duties associated with those positions, along with the storylines in which each position occurs.

Status. In this thesis, status is defined as an interpretation of the positions for a person within the context of mathematics teaching and learning (and its concomitant storyline(s)) and

the corresponding rights and duties associated with those positions, in which a person's access to mathematical learning is shaped by this interpretation. Like positions, status is interactive (people identify others' statuses) and reflexive (people identify their own statuses). A person's status is used to rank them in comparison with others. A person with a higher status has greater access to resources in the context and, therefore, according to Cohen (1994), it is advantageous for individuals to have a higher status in any context. Of course, the resources would vary by context but have the result of creating hierarchal structures within society and storylines.

Cohen (1994) described a few types of status that students are given or assumed in small groups in classrooms. Although her framework was developed on small group interactions, it characterized the variety of ways one might describe their mathematical learning experiences from their own perspectives. Thus, I argue that Cohen's categories of status can be used to understand students' mathematical life stories. Cohen defined the characteristics of students with academic, peer, and societal status. *Academic status* is the interpretation of the positions held by a person that is related to that person's academic ability, specifically when compared with the academic ability of others. For example, if a person is positioned as a mathematical expert, then that position would be associated with high academic status in mathematics. *Peer status* is essentially the interpretation of a person's "social standing" (Cohen, 1994 p. 32). If a person is positioned as "popular" or "friendly," then they will have a higher peer status than someone positioned as "unpopular" or "awkward." Positions are interpreted to reflect *societal status* based on the discrepancies placed on certain kinds of people by society. For example, it is generally and socially agreed upon that a person's position as a "white male" will give him higher societal status than a "non-white female" because of the rights and duties afforded by this position. Although it is clearly possible that these types of status may overlap depending on the position or

positions of the actor, in this thesis, I hypothesize that some positions (and their concomitant rights and duties) are associated with differing status.

Research Question

Based on the literature reviewed above and with the explained theories as my foundation, I was able to learn in depth about the positions and statuses within the tellings of mathematical life stories. Inequitable learning outcomes are related to inequitable access to learning opportunities in mathematics classrooms. This access is shaped or influenced by the status students have in the classroom. A person's status is related to the rights and duties as well as positions that they have in the classroom. Teachers would likely be able to use a greater understanding of the dynamics of their classroom in order to promote more equitable learning. Developing these tools would primarily be dependent on the students' perspectives. It is important to ask students about their mathematical life stories in order to be able to characterize the positions and status they see as influential to their mathematics socialization. The main question guiding this research study is, as follows:

- What positions (and concomitant rights and duties) are associated with particular kinds of status (e.g. academic, peer)?

Chapter 3: Methods and Analysis

Participants and Data Collection

Courtney and Eleanor are the participants in this thesis study. They were a convenience sample, taken from suggested participants by members of the mathematics education faculty. They were both in their last year of high school. I chose high school seniors because I was interested in students who could articulate their mathematical life stories from their public schooling experiences and had not experienced the shifts in perspective that college would bring. Courtney and Eleanor attended different high schools in adjacent suburban communities in the Mountain West. Courtney was taking advanced placement statistics, while Eleanor was taking pre-calculus. Each had taken mathematics courses throughout all of their years in high school. As the subject of this thesis is their mathematical life stories, much more is revealed in the results section about each of them.

With each student, I conducted two interviews, which were video-recorded. In the first set of interviews, I asked the students to describe their mathematics life stories (adapted from Drake et al., 2001; see Appendix A). As noted before, Drake and her colleagues (2001) conducted "life-story" (p.3) interviews to bring to light the stories relating to mathematics and literacy of teachers. In these interviews Drake et al. (2001) asked about critical events, large challenges, positive and negative influences within the mathematical history of the interviewee. Similarly, in my study, students answered questions about four specific experiences in their mathematical learning. These experiences are a high point, low point, turning point, and then any other memory from their youth related to learning mathematics they felt was important to tell me. The students also designated people who were either positive or negative influences in their mathematical experiences. Then, the students described possible positive and negative personal

futures in mathematics. Finally, I asked the students to define what it means to be "good" or "bad" at mathematics so that I may understand their conceptions of mathematics.

After the initial set of interviews, I performed an initial analysis which will be described in the analysis section below. This analysis informed the follow up questions that I asked each of the students in the second set of interviews (see Appendix B). These follow up questions and answers aided in the finding, analyzing, and understanding of each student's mathematical life stories.

After asking these follow up questions, each student participated in an activity using a list of actors from her mathematical life stories and a few continua. The continua are adapted from Leatham and Hill (2010) (see Figure 1). In the first continuum, each student wrote "Anxiety" above the negative sign and "Peace" above the positive sign. Then each student placed her name along the continuum with a tick mark that reflected how she feels when doing mathematics. Each student repeated this activity for the following dichotomies: Pain/Enjoyment, Confident/Not Confident, Smart/Not Smart, Good at Math/Bad at Math, Good at Teaching/Bad at Teaching.

Figure 1. Continuum for second interview dichotomies.

After placing themselves, I asked each student to place a list of peers on a separate continuum for the following categories: Confident/Not Confident, Smart/Not Smart, Good at Math/Bad at Math. After ranking her peers, each student was then given a list of teachers or other adults to rank in these areas: Good at Teaching/Bad at Teaching and Good at Math/Bad at Math. After all of the continua were finished, I asked each student to compare her original placement to that of her peers and the adults on the first continua and asked if she would change her placement when compared with where she had placed her peers or the adults.

Data Analysis

After transcribing the interviews, I investigated the data using a discourse analysis drawing from multiple perspectives (e.g., Gee, 1999/2005; Wortham, 2003). First, I looked for any actors in the transcriptions. These actors are the speaker and anyone the speaker described or mentioned, such as teachers, parents or peers (i.e. any particular human). These actors could also include non-specified human actors (e.g., all mathematics teachers, friends). I then separated the transcription into blocks of communication that are related to each of the actors.

Within those instances, I identified the communication acts and actions the student used to describe the actors or as performed by the actors themselves. These communication acts or actions can take place within denotational text or interactional text as described by Wortham (2003) as components of a "participant-denoting discourse" (p.194). Denotational text is the content of the message in the utterances of the speaker. The interactional text is how the speaker conveys their message to the receiver during the storytelling act. Wortham (2003) noted that the denotational text and interactional text tend to parallel one another such that the positions in the denotational text and interactional text are similar. These distinctions were then represented in maps that included distinctions in the layers of text (Wortham, 2003).

After identifying the communication acts and actions surrounding each actor and the type of text in which they occur, I considered the connotation of the words used to describe those acts by the speaker. Did the speaker use language that communicated needs, wants, expectations, responsibilities, or desires? The answer to this question provided me with a list of rights and duties for each actor in both the denotational and interactional texts. From this list of rights and duties, I found a parable, metaphor, or noun that describes each set of communication acts or actions along with associated rights and duties. This parable, metaphor, or noun became either

the position or the storyline (depending on the grain size). For example, if I noticed that the list of rights for one actor included "be taught basic principles" and that the list of the rights for another actor included "teach those basic principles," I would identify the storyline of *teaching and learning basic principles*. Within that storyline, I denoted the different actors with different positions. In this example, someone who was being taught basic principles could be seen as an *abecedarian*, while the actor who was teaching could be seen as a *trainer*. Therefore, for each student, I developed a list of positions and concomitant rights and duties. It should be noted that I made every attempt to develop metaphors that were consistent with how the student herself spoke about her interactions with others; however, my own culture and social interactions obviously shaped the metaphors that I chose. In a few excerpts, this fidelity was more challenging as the student herself resisted an offered position or changed the storyline in the middle of the excerpt. These discrepancies are noted in the results section alongside the passages or contexts that posed these challenges. Additionally, while making lists of rights and duties, in one instance, I found that a non-human actor, the discipline of mathematics, had particular rights and duties. I, therefore, assigned it a position within the identified storyline even though it was not a human actor.

I then examined the lists of positions and associated rights and duties to identify themes in the mathematical life stories of each of the students. In some excerpt analyses, there were identical positions labeled, while in others, the metaphors used for the position had overlapping rights and duties. As themes emerged from the data, I began to notice that the themes aligned with the definitions of peer and academic status that Cohen (1994) characterized (using a constant comparative approach (Strauss & Corbin, 1990)). For example, segments associated with mathematical ability, mental capacity, mental talents, learning, or knowledge reflected a

focus on academic status, while segments associated with relationships, interpersonal skills, or popularity were reflective of peer status. Therefore, I used additional themes gathered by the definitions of these respective status categories to consider the data. All themes were recorded and data was organized around each theme. As the data analysis was limited to excerpts of the interviews that indicated *both* actors and their relationship with the speaker, some aspects of the data were not explicitly included in this analysis. To ensure that the analysis here represented the themes across the entire interview, they were examined in their entirety for disconfirming evidence (including, in particular, the data from the continua questions). For example, if a student specifically emphasized her relationship with her peers (instead of her academic abilities), the way she talked about the people during the continua portion of the interview needed to also match this language. Any disconfirming evidence is discussed in the results. The first analyzed excerpt detailed in the results section serves as an example of this analytic process. These processes are summarized in Figure 2.

Phase of Analysis	**Questions used to interrogate transcript**
Phase 1	Who are the specified actors? Who are the non-specified human actors (i.e. "teachers")?
Phase 2	What actions and communication acts are described in the denotational text or implied through the interactional text for each actor?
Phase 3	What connotations are associated with those communication acts or actions? What rights and duties are implied?
Phase 4	What parable, metaphor, or noun can capture the essence of the set of actions and communication acts and agrees with the rights and duties for each actor or set of actors?
Phase 5	What themes emerge from the storylines and positions? What type of status (societal, peer, or academic) is reflected in the themes?

Figure 2. Phases of Data Analysis

Chapter 4: Results

From the data analysis, I found that Courtney and Eleanor represented very different types of status. That is, the themes of the positions and concomitant rights and duties aligned closely with academic status and peer status for Courtney and Eleanor, respectively. I answer my research question by expressing the positions (and concomitant rights and duties) that are associated with the particular kinds of status suggested and supported within their life stories. Additionally, I discuss the ways in which they deviated (or not) from the type of status that was their primary focus.

Courtney

As clarified in my theoretical framework, academic status is the interpretation of the positions held by a person that is related to that person's academic ability, specifically when compared with the academic ability of others. The foci of Courtney's experiences and the way she described them (in both the denotational and interactional text) were her own academic ability and comparing the academic abilities of people.

As I will show through the following subsections, Courtney's focus on academic status was evident in the interactional text but more so in the denotational text of her interviews. When describing interactions within the realm of learning mathematics, whether her own or that of someone else, she focused on the academic status of the actors involved. She spoke of her academic competitiveness and learning the academic habit of asking questions. She also focused on how the academic status of her teachers and mother helped her to succeed in learning mathematics. Even Courtney's negative experiences were centered on academic status. These experiences were negative because people were ostracized through academic comparisons or because Courtney disagreed with the way academic achievement was defined in the situation.

Even though throughout most of her interviews Courtney's perspective was focused on academic status, there were two instances she shared where her perspective shifted to peer status (her relationship with her peers or other people). In the next few sections, I discuss all the ways that Courtney's focus on academic status is apparent and the two instances where a shift from academic status to peer status occurs.

Success in mathematics. Courtney's definition of success in learning mathematics was based on comparisons of academic ability and the habit of asking questions in mathematics courses. The academic comparisons included scores on standardized, scores on classroom tests, overall classroom grades, and participation in advanced placement mathematics courses. She also had a firm belief that asking questions and getting help when necessary were essential habits of a successful mathematics student. The following examples are two instances that explain her definition of success and show its academic focus. As indicated in the data analysis section, this first example is elaborated in the order in which the analyses were conducted. The analyses of subsequent excerpts are reported in a condensed format for readability.

Stephanie. Courtney mentioned a girl named Stephanie[1] as one of her positive mathematical influences. Stephanie had always been on the advanced track with Courtney. To Courtney, Stephanie was an academic competitor, although they did not directly speak about this competition. Stephanie was always just one or two "points" ahead of Courtney on tests. Courtney also described Stephanie as "hard to handle," "cocky," "easily offended and offends easily" (I1, p. 9)[2]. She also often sought attention through rudeness or through recognition of her academic

[1]Along with the names of the participants, Courtney and Eleanor, the names of all other actors mentioned by the participants are pseudonyms.
[2] These citations refer to the transcripts of each interview for each participant. For example, the abbreviation "I1" means "Interview 1" and followed by the page number in the transcript.

achievement. Despite these negative social characteristics, Stephanie was a positive influence to Courtney because of the academic competition between them. Courtney said that Stephanie motivated her to be better at mathematics. Courtney allowed Stephanie to be a positive academic influence on her mathematics learning. This choice, and the fact that she mentioned Stephanie as a positive influence in her interview, showed that academic status took precedence over peer status. As further evidence, here is an excerpt from the transcript where Courtney described Stephanie. I will give my analysis following the excerpt[3] and explain the positions inherent in this part of the transcript.

> COURTNEY: So, I have a friend, her name is Stephanie Lindon... She is, she's crazy smart. It's kinda always been one of those, like, not competitions but a little bit. And it's like unspoken, like when I would get like a better quiz grade than her, she would be, you could just tell she was a little irked. And we've been in the same, I've told you, this is actually one of the girls we've been in the same math class like multiple times just because we're both on the advanced math track. Like, we actually got really similar [laughs] ACT scores. She got 35, I got 34, and I was like "Dang it, [playfully angry face] Stephanie! You're just right there!" but, um, yeah, she like, I dunno, sometimes people who are just that much [holds up an inch between finger and thumb] better than you kinda just push you to wanna be better, ya know? … We've actually been in math three consecutive years and she's kind of a hard to handle person, sometimes 'cause she's really good at everything, so she's cool but a little bit cocky but, I dunno, just seeing like how far she's gone, she got a 5 on the AP test, by the way, I got a 4. I was like, "Dang it!" [laughs]… And so, I dunno like when I got a good quiz score like that was better than hers, I was just like, [Shrugs coyly] "Ya know" [laughs]. So, yeah, and we're, we're friends but, ya know, I dunno, sometimes like your friends, just, their example of doing their homework and being good at something, motivates you to do that, too….
>
> Um, yeah, we would all the time do homework together, but her brain works a little bit faster than mine. She'd always get to the answer like right before me, and so, and it's hard … I mean, I like studying with Stephanie but she just gets answers a little faster than me sometimes….
>
> RESEARCHER: Okay, um, is she your friend like outside of academic things?

[3] The full transcripts were used for analysis; however, for the purposes of readability, I have eliminated redundant phrases, false starts, and (sometimes) my questions or comments. Longer areas of transcript that were deleted for this purpose are marked with ellipsis. Actions taken by the speaker are included in brackets.

> COURTNEY: Mm-hmm Yeah, yeah. She's actually...It's funny 'cause she's a very hard to handle person, like I said she's cocky she's easily offended and offends easily. She's got a very out there personality. If you, some people just absolutely can't handle her. But, ya know what, I like have learned to just become her friend. She's, I dunno, she's just really smart and so, she's actually applying to like a college that's like, some like 11% acceptance rate and I'm like "Uh, okay!" [laughs] and she'll probably get in. She got into another California school already with a huge scholarship but…Um, she, we're friends and [nods] she's, ever since, we we're actually best friends in 10th grade and then little bit drifted apart just because of you, know, like friend differences, but yeah, so. We've been, I still talk to her, she's in my classes 'cause she's in all the AP classes with me so…yeah (I1, p. 8-9).

After identifying Stephanie as the actor in this section of the interview, I engaged in the other phases of data analysis, looking for actions, communication acts, rights and duties. Stephanie's actions described in the denotational text were being "irked" when Courtney received a higher score than her, getting higher scores than Courtney on the ACT and AP tests, being in the same classes as Courtney, thinking faster than Courtney, taking BC calculus, and applying to colleges with low acceptance rates. Based on those actions, Stephanie's rights (from Courtney's perspective) were the right to compete, to always be better, to have people notice when she was better than them, to think highly of herself, to be cocky and a little offensive. Her duties were to supply competition for Courtney, to always beat Courtney, and to think faster than Courtney. Courtney's actions in the denotational text were scoring one point lower than Stephanie on the ACT and AP test, comparing scores with Stephanie, being in the same classes as Stephanie, and thinking a little slower than Stephanie. Courtney's communication acts toward Stephanie in the denotational text were "Dang it, Stephanie!", "Dang it!", "Ya know…", and "Uh, okay!" In the interactional text, Courtney made general statements about how having a friend that is a little better at something can motivate and inspire a person to work harder and to be more like the friend. Based on Courtney's actions and communication acts within both interactional and denotational text, Courtney's right was to compete. Her duty was to strive to be better than a

person (like Stephanie) that has beaten her at something, to supply competition for Stephanie, and to comment when Stephanie did better than she did. The competition between them required that each girl had the duty of being similar enough to the other to be comparable. This necessity was seen in Courtney's telling me that they had been in the same classes and had the same teachers.

In viewing the actions, rights and duties of each girl, I labeled each with the positions within the *Rivalry*[4] storyline. Rivals are similar enough that a competition is possible, and when rivals face each other there is almost always a winner. Because of her rights and duties to always be ahead of Courtney and to seek special attention, I specifically labeled Stephanie's position as *reigning champion.* Courtney was the *runner up* with the rights and duties to admit when the reigning champion wins and to always strive to better the reigning champion in a competition. The storyline, positions, rights and duties associated with this experience are in Figure 3.

Storyline	Positions	Rights and Duties with each position
Rivalry	Reigning Champion (Stephanie)	R: Compete R: To always be better R: To have people notice her R: Be cocky and a little offensive D: Supply competition D: To always beat and think faster than the runner up D: Be similar enough to the runner up to be a viable competitor
	Runner Up (Courtney)	R: Compete D: Strive to surpass the reigning champion D: Supply competition for Stephanie D: Comment when the reigning champion wins D: Be similar enough to the reigning champion to be a viable competitor

Figure 3. Chart of Rivalry storyline involving Stephanie and Courtney. Rights and duties abbreviated as "R" and "D."

Courtney's rivalry with Stephanie showed her focus on academic ability and, thereby, her emphasis on academic status when comparing other students and herself. No matter Stephanie's

[4] At first mention, storylines are both capitalized and italicized; positions are only italicized.

personality (be it a little offensive or cocky) what matters is that she is always a head of Courtney academically. She used evidence like test scores and grades to prove that she was always the runner up. These measures were part of Courtney's definition of success in learning mathematics.

Mr. Mackey. In addition to measures of academic ability like grades, Courtney also included the habit of question-asking in her definition of success in mathematics learning. In part because of her experience with Mr. Mackey in seventh grade, Courtney valued asking questions in mathematics class. Mr. Mackey was an engaging mathematics teacher and taught Courtney the importance of asking questions, especially in mathematics class. The storyline in Figure 4 is about when Courtney first learned this important principle from Mr. Mackey.

Storyline	Positions	Rights and Duties with each position
Chemical reaction	Catalyst (Mr. Mackey)	D: Teach, Engage, open to Questions D: Encourage Questions D: Act as a student D: Change the student's perspective on questions R: to student participation and questions
	Chemical Substrate → Product (Courtney)	R: to have a teacher like that D/R: to be a learning participant with him D: Change D: ask questions

Figure 4. Chart of Chemical Reaction storyline involving Mr. Mackey and Courtney.

Courtney recalled that on the first day of Mr. Mackey's mathematics class in seventh grade, he "was basically like, 'If you have a question, you need to tell me. You can't go through math without asking questions'" (I1, p.6). Previously, Courtney had been shy about asking questions in class, saying to herself that the question was "dumb" or had already been answered (I1, p. 6). In Mr. Mackey's class she became a seventh grader who was comfortable asking questions, even in a class that included eighth and ninth graders. Courtney said that Mr. Mackey was very involved and engaged with the students in his teaching style. He would go up to the board and work through problems and rarely used electronic presentations. Students would also

have the second half of class to work on homework with each other and he was available to answer questions. In this way, the norms of his classroom and teaching style reinforced that the students should and could always ask questions of each other and of their teacher. He not only preached question-asking but provided a classroom culture where asking questions was a comfortable and natural habit for the students. In this storyline, *Chemical Reaction*, Mr. Mackey was given the position of *catalyst* in Courtney's perspective. In a chemical reaction, the catalyst is introduced, becomes involved, changes the substrate into the product, and then remains with the product. His duties were to teach, engage, be open to questions, encourage questions, act as a student himself, and to change the student's perspective on questions. In addition he had a right to student participation and questions. As the catalyst, he instigated and also was involved in changing Courtney, the *substrate* into a question-asking *product*. As the substrate, it was her right to have access to the catalyst or, in other words, to have a teacher like Mr. Mackey. Courtney had the duty to be an active learning participant in order to fulfill her other duty – to change. After changing and becoming the new product, Courtney had the right to learn along with Mr. Mackey and the duty to ask questions, not only in his class but other classes in the future. From this experience with Mr. Mackey, Courtney gained the belief and associated habit that asking questions is part of gaining academic status. In some of her negative experiences learning mathematics (discussed later), her definition of successful academic status clashes with teachers that have a different view than Mr. Mackey. However, her positive experiences in learning mathematics were centered on the definition of academic mathematical success that is measured with scores and grades and requires question asking.

Positive experiences with academic status. When Courtney spoke of the people who were positive influences and the times she considered positive experiences within her

mathematical life story, her discourse underlined her focus on academic status. She described her mother as someone she trusted to help her with her mathematics homework, not only because of her maternal care but also because of her academic abilities as a former physics student. And even when describing her favorite teacher, Courtney had an underlying focus on academic status.

Courtney's Mother. When describing a positive influence on her mathematics learning, her mother, Courtney focused on academic abilities. Her mother, a former physics major, spent hours helping Courtney catch up and succeed in calculus. Courtney attributes most of her success in calculus to her mother's help and almost none of it to her calculus teacher, Mr. Leverett.

Courtney's mother is her "math teacher at home" (I1, p. 8) who supports Courtney, listens to her explanations, and understands and interprets the textbook. The following two storylines show positions of both Courtney and her mother that are centered on academics.

In the *Foreign Language* (Figure 5) storyline, Courtney was the *foreigner* and her mother was her personal *interpreter*. An interpreter is trusted by those for whom they interpret as Courtney trusted her mother. Courtney told me that she would often seek out her mother's help with her mathematics homework. Her mother was someone she trusted to listen to her and to help her to understand. In addition to retelling how she could sit down with her mother and receive one on one support, Courtney felt it important to mention proof of her mother's academic abilities. Because of her mother's mathematical background as a physics major, she also trusted her mother's mathematical skills and her ability to interpret the textbook. Her mother, as the interpreter, had the duty to help and understand the foreigner, then to interpret for her. Courtney's mother had the right to have Courtney, come to her and value her help and trust her interpretations of the foreign language. A foreigner must, as a duty, seek out the help of an interpreter in order to not be lost or confused in a place where the dominant language is not her

native tongue, and it is her right to have an interpreter. Courtney sought out her mother's help on occasions where she could not interpret the language of mathematics on her own. The trust that Courtney placed in her mathematics interpreter was founded in her mother's academic status and in her constant support of Courtney.

Storyline	Positions	Rights and Duties with each position
Foreign Language	Interpreter (Mother)	D: Listen to Courtney D: Understand and Help her D: Read and Interpret the textbook to Courtney R: To have Courtney come to her for help R: To have Courtney value her help/trust her
	Foreigner (Courtney)	R: To have Mother's help D: Understand and trust Mother's explanations D: Let Mother know when she needs help.

Figure 5. Chart of Foreign Language storyline involving Courtney and her Mother.

In the *Fitness* storyline (Figure 6), Courtney's mother held the position of *personal trainer* and Courtney was an *unfit* person. This storyline occurred when Courtney spoke of the lowest point in her mathematics experience, when she fell behind in calculus class. Her mother came to her and, at first, was "fed up" (I1, p. 3) and threatened to pull her out of the class. If she failed the class or dropped out, Courtney would lose her chance at a specific college scholarship. But Courtney did not want to give up on that goal. Her mother came to her a few days after the initial threat with what Courtney called "a change of heart" (I2, p. 3) and an ultimatum. She told Courtney "If you're willing to work, then, we're gonna do this" (I2, p. 3). As the unfit person, Courtney had the duty to be willing to work and to reach a health goal. In her case, the goal was to pass the class and maintain her scholarship eligibility. She also had the right to receive help and training from her personal trainer, her mother. As the personal trainer, Courtney's mother had the duty to issue tough instructions and threats to those she trains. This duty was seen in Courtney's mother being fed up and threatening to pull Courtney out of class. Then, her duty was, if Courtney was willing, to motivate and to work with Courtney through all the calculus material. Her mother knew what was important academically and pushed Courtney to increase

her academic ability both at the time of this experience and in the future (with an academic college scholarship). Both Courtney and her mother were motivated by her current poor grade and an academic scholarship. This experience showed that Courtney and her mother both agreed on the importance of academic achievement and status.

Storyline	Positions	Rights and Duties with each position
Fitness	Personal Health Trainer (Mother)	D: Tough love ("threaten" to pull her out if class) R: To be "fed up" D: Go through the work with Courtney D: Be an expert at "fitness"
	Unfit (Courtney)	D: Keep Scholarship (←Health goal) D: Be willing and work R: To receive help and motivation

Figure 6. Chart of Fitness storyline involving Courtney and her Mother.

In both of these storylines involving Courtney's mother, I have given evidence of Courtney's focus on academic status. In the Foreign Language storyline, Courtney gave evidence that her mother could help her with mathematics homework by appealing to the academic subjects that her mother had studied in college and to her mother's great capacity to understand mathematics textbooks. In the Fitness storyline, Courtney and her mother both used academic measures to motivate Courtney to work hard to learn calculus. The next experience with Ms. Stack showed another experience where academic status was associated with a positive influence in Courtney's mathematical life story.

Ms. Stack. A few years previous to her experiences in calculus with her mother, Courtney found herself generally annoyed with mathematics due to some negative experiences with a teacher in eighth grade. She was hesitant to take mathematics in the future. Courtney was hopeful, however, because she had heard good things about Ms. Stack, her 9th grade Algebra 2 teacher. These hopes were fulfilled, as Courtney said Ms. Stack was her favorite teacher (I1, p.1). She described Ms. Stack as someone relatable, engaging and direct who always had multiple explanations to help her students. Ms. Stack also taught her students valuable note

taking strategies that Courtney continued to use in subsequent mathematics classes. At the end of this year, Ms. Stack gave Courtney an award for achievement in mathematics. The storyline in Figure 7 shows that Courtney was able to feel increasingly like an equal learning participant in Ms. Stack's mathematics classroom.

Storyline	Positions	Rights and Duties with each position
Apprenticeship - Assimilation into a discourse	Master (Stack)	D: Relate to Students D: Give direct attention to students D: Solve problems with students (on the board) D: Teach students how to take notes R: Students who take ownership of their own learning R: To student participation and questions
	Apprentice (Courtney)	R: To have a Master (Stack) teach her R: Teacher's direct attention and care D/R: To be a learning participant with the Master D: ask questions D: Take notes

Figure 7. Chart of Apprenticeship storyline involving Courtney and Ms. Stack.

Courtney described the *Apprenticeship* storyline when discussing Ms. Stack's classroom. Here, I give evidence that Ms. Stack's position was that of m*aster* and Courtney was her *apprentice.* Her experience learning mathematics in this classroom was the first one that came to mind when I asked Courtney about positive experiences learning mathematics. Ms. Stack was Courtney's favorite teacher. Courtney said that she related to Ms. Stack in both attitude and appearance. An apprentice sees in their master a likeness to themselves so that mastership seems attainable. At the beginning of the school year, Ms. Stack gave each of the students a notebook. At the start of class each day the students would take a note page made by Ms. Stack and glue it into their notebooks. Then they could write on the note page, taking notes in their own words. Ms. Stack was treating each student like an apprentice to the field of mathematics. They had the duty and the ability to take meaningful notes.

I asked Courtney to tell me about a time that Ms. Stack had helped her learn a mathematical concept. The following account shows another aspect of the apprentice-master relationship: trust.

> But it was just kind of beyond me and I was just like "I don't know what this is about." ... and then she was directing her attention towards me and answering my specific question which, I don't know why, but math teachers tend to answer your question in a roundabout way that doesn't ever make sense. She would get straight to the point with the question so, yeah. I really like that about her. (I1, p.2)

In this instance, Ms. Stack treats Courtney like a person that she trusts with direct answers to her mathematical questions. She would also work out problems with the students on the board like Mr. Mackey had done previously. Ms. Stack gave her apprentices, including Courtney, her trust and opportunities to gain the skills with her as a guide. The trust that Ms. Stack gives Courtney as an apprentice, strengthens Courtney's academic resolve to do well and to ask questions. The apprentices became increasingly close to becoming an equal learning participant with their teacher. This increasing proximity to a mastership in mathematics increased Courtney's academic status. The positions of master and apprentice imply not only that Ms. Stack has high academic status but that it is possible for Courtney to have high academic status. Thus, when describing experiences that involve her favorite teacher, Courtney has an underlying focus on academic status.

Negative experiences with academic status. Courtney also focused on academic status when she was describing negative experiences and influences within her mathematical life story. Her calculus teacher, Mr. Leverett, would compare students academically. Courtney took offense and she, along with the other students, felt excluded. He was also closed towards questions from students, something that Courtney defined as an academic habit. Similarly, another teacher, Mrs. Noland had treated all of her students as academic infants that were not equal learning participants with her. The reasons that Courtney gave for not liking these two teachers were centered in academic status.

Mr. Leverett. The reason that Courtney had fallen behind in Calculus class was because of her dislike of her teacher, Mr. Leverett. Courtney described her time in his class as her nadir in learning mathematics. She found Mr. Leverett to be boring and unhelpful. He had favorites in the class and Courtney often felt singled out or picked on especially for talking with two other students in the class. He also singled out other students in the class for doing well on tests, including Stephanie, which downplayed the efforts of the other students like Courtney. Because of this situation in calculus, Courtney let herself fall behind; she did not want to do mathematics. She did not do about three units because she was not motivated and began to not understand it. As the end of that term approached, Courtney and her mother realized that she had the possibility of losing the aforementioned scholarship because of her bad grades in calculus. Her mother spent hours helping Courtney catch up and succeed in calculus. Courtney attributes most of her success in calculus to her mother's help and almost none of it to Mr. Leverett.

There were three storylines that came up in the experiences Courtney told about Mr. Leverett. Each one gives evidence of her focus on academic status. The first two storylines that involve Mr. Leverett are related because within each he ordains or ostracized his students by means of academic comparison.

In this first instance (Figure 8) Mr. Leverett handed back tests and congratulated Stephanie on her score in front of the other students. Courtney said that Mr. Leverett glorified Stephanie by saying that she was "a mathematical genius" and that she could go "anywhere [she] want[s] to in math" (I2, p. 2). Mr. Leverett, the *ordainer* in the *Glorification* storyline, had ordained Stephanie as someone he deemed to be good at math and someone that could and should achieve mathematical greatness. Thus, Stephanie became the *consecrated* with the associated rights or duties to be put on a pedestal and achieve that academic success. Courtney

said that she felt uncomfortable because Stephanie had been publicly praised in this way and that she was not the only one that had felt that way. She described the reaction of herself and the other members of the *congregation* when she said "and everyone else was like 'Ok, alright, like, thanks a lot' (in a sarcastic voice)" (I2, p. 2). Courtney's reaction along with her retelling of the other students' reactions, showed her distaste for the academic status bestowed upon Stephanie. Mr. Leverett had used academic reasons to set Stephanie apart. That glorification is one reason that Courtney gave for her distaste for Mr. Leverett as a teacher. Thus, even her negative experiences were focused around comparisons in academic ability.

Storyline	**Positions**	**Rights and Duties with each position**
Glorification	Ordainer (Leverett)	R/D: Glorify the Consecrated D: Predict future of the Consecrated D: Define "genius" or "good"
	Consecrated (Stephanie)	R/D: to be on a pedestal R/D: to go anywhere in math
	Congregation (Courtney and other students)	D: Hear the Ordainer's praise of the Consecrated D: compare themselves to the Consecrated

Figure 8. Chart of Glorification storyline involving Stephanie, Mr. Leverett, and the other students in class.

Still acting as one with the authority to *ordain*, Mr. Leverett ostracized Courtney in the second experience (Figure 9) I have listed here. In her first interview, Courtney said that Mr. Leverett would pick on her and her group of friends. So, in the second interview, I asked her to think of a specific experience that showcased this oppression. She could not think of a specific experience but she did speak of a reoccurring situation with him. Near the end of class she would be working with two other students on a homework assignment. According to her experience in other classes, Courtney would talk with her friends about the assignment and they would help each other to finish. At the end of class, Mr. Leverett would say things like "Thank you to everyone else, except for that little corner over there for working quietly" (I2, p. 2) and "I'd really appreciate it if you guys would like get stuff done" (I2, p. 2). These snide remarks showed that Courtney felt Mr. Leverett was trying to use the actions of her and her friends to entertain

the other students. Furthermore, as the ordainer, Mr. Leverett had the duty to ordain what it takes to be successful in mathematics. He ordained that being good and successful at mathematics and welcome in his mathematics classroom meant being quiet and working alone. In response to that ordination and how he spoke to and about Courtney she felt "victimized" (I2, p.2), *ostracized* and unwelcome. This feeling stems from Mr. Leverett's view of academic ability and status being different from Courtney's own perspective. He equated quietness and good test scores with intelligence. While Courtney also held good scores and grades as valuable measures of academic success, she also valued communicating with other students mathematically. The academic habits, like communicating and question asking, that she associated with academic status were denied validity by Mr. Leverett's views of academic success.

Storyline	Positions	Rights and Duties with each position
Exclusion	Ordainer (Mr. Leverett)	D: Define "good" as "quiet" and working alone D: entertain
	Ostracized (Courtney)	D: to get her work done R: talk with friends

Figure 9. Chart of Exclusion storyline involving Courtney and Mr. Leverett.

Those differing of views were again seen in this last instance with Mr. Leverett. The *Visit to the Doctor* Storyline (Figure 10) described an experience Courtney had when she went to ask Mr. Leverett for help. Mr. Leverett had been teaching at her high school for many years but "he doesn't have a great reputation" (I1, p. 3). When she would go in for help (as a *patient*), he would ask her "Well, have you read your notes? Have you looked in your textbook?" (I1, p. 4). When relating this experience to me she imitated his voice in a monotone but stern voice. She then responded, in an exasperated and annoyed voice "K, fine. I won't ask you. I'm sorry, I thought you were a teacher; I thought you were supposed to HELP[5] the students" (I1, p. 4).

[5] Capitalized to reflect emphasis.

When a patient goes to a doctor for help they usually expect a remedy that only the doctor can give. Here, Courtney was seeking similar help from Mr. Leverett. She became annoyed when he told her to find her own answer in the notes or textbooks. Mr. Leverett was an established doctor but to her and the other students that give him a bad reputation, he was a *fake*. Courtney was seeking help academically and Mr. Leverett failed to provide it to her. Her annoyance in response to him showed that she was provoked by the fact that her academic habits that she considered successful were being ridiculed. They were again denied validity, and therefore, Courtney's own academic status was the focus of this negative experience.

Storyline	Positions	Rights and Duties with each position
Visit to the Doctor	Fake Doctor (Mr. Leverett)	D: Help his students (failed) R: To appeal to textbook to do that for him
	Patient (Courtney)	R/D: To be a judge of good teaching and classes R: To good help

Figure 10. Chart of the Visit to the Doctor storyline involving Courtney and Mr. Leverett.

Mrs. Noland. A similar situation had happened a few year's previous. In eighth grade, Courtney's personality clashed with that of Mrs. Noland who often treated her students "like babies" (I1, p. 10) and was also "girly" (I1, p. 10) and uninteresting. Courtney said that she did not feel like she was "an equal learning participant" (I1, p. 10) with Mrs. Noland, which led Courtney to characterize this teacher as having a strong negative influence on her experiences in learning mathematics. Because Courtney was annoyed with her 8th grade geometry teacher, she became annoyed with mathematics and was hesitant to take more mathematics in the future. The next two experiences evidenced that Courtney's focus on academic status within the context of the stories (denotational text) about Mrs. Noland.

In the next storyline (Figure 11), Mrs. Noland and Courtney were part of a *Dysfunctional Family*. Mrs. Noland came up in Courtney's interviews as someone who had a negative influence on Courtney's mathematical life story. Courtney was annoyed by Mrs. Noland's manner of dress,

voice, overall appearance, and topics of conversation (her family life). So, she also became annoyed with the subject of mathematics, specifically geometry. Furthermore, Courtney said that she often felt babied by Mrs. Noland and that she did not feel like an "equal learning participant" with her teacher (I1, p. 10) and that Mrs. Noland only had one way of explaining things. Courtney's use of the term "babied" inspired me to use the family storyline here. In a family, family members trust each other to take on specific duties. As the *mother,* Mrs. Noland expected her *children*, the students, to love her, to listen to her and to obey her. This is the positon that she reinforced for her students and that Courtney recognized but resisted. Courtney saw Mrs. Noland as a *dysfunctional mother* because she had treated them like babies even though they were in eighth grade, had not shared the responsibility of learning, and had only explained the mathematics in one way, not appreciating the diversity of student thinking within her group of children. Courtney reacted to this dysfunctional mother in two ways - she was annoyed with both the teacher and the subject but also rebelled by getting good grades in the class. In her interview, she made this statement about the subject that shows her rebellion: "I'm not gonna be like, 'I hate you so I'm gonna get a bad grade.' I got amazing grades in that class but ... I don't want anything to do with geometry" (I1, p. 10). The fact that Courtney defended her grades above her dislike for the teacher's personality and attitude toward students showed that academic status has a high standing in her mind.

Storyline	Positions	Rights and Duties with each position
Dysfunctional Family	Failing Mother (Mrs. Noland)	R: Children who love and obey her. D: Treat them like babies Duties she failed at according to Courtney: D: Be professional D: Make mathematics content interesting D: Be an equal learning participant
	Baby (position assigned to Courtney by Noland)	D: Listen D: Love Mother D: Obey
	Rebellious Teenager (position assigned to Courtney by herself)	R: To be treated her age R/D: Receive good grade R: To be an equal learning participant R: To not be annoyed by her teacher

Figure 11. Chart of Dysfunctional Family storyline involving Courtney and Mrs. Noland.

In her second interview, Courtney relayed another story (Figure 12) in which she resisted the position assigned to her by Mrs. Noland. She was going over a test review with Courtney and the other students. Courtney realized that Mrs. Noland had done something incorrectly in solving the problem. Mrs. Noland denied the error. In the interview, Courtney said, "They don't like to be wrong, no one likes to be wrong, but especially math teachers, I don't know why" (I2, p.5) and that mathematics teachers only admitted their errors when "a smart kid in the back" (I2, p.5) could give infallible, complicated evidence that Courtney did not understand. This idea of mathematics teachers was inherent in the storyline that Mrs. Noland presented in the experience Courtney shared. Mrs. Noland was the *dogmatist* who was always correct and she gives the position of *sycophant* to her students. Courtney resisted this *Dogma* storyline and introduced her own. In the *Falsehood* storyline teachers of mathematics can be wrong and their students can censor them. After Mrs. Noland continued to claim that she was right, Courtney turned to a student near her and conferred with him. He agreed that he thought the teacher was incorrect because he also had something else written in his notes. Courtney expressed her concern for the other students as if she were speaking to Mrs. Noland in the moment, "The class is being taught wrong right now, we're reviewing and they're gonna get this wrong…Can we not like, talk about it? And like prove that you're right so that, if you are right, I can learn it. And if you're not right

then the class can learn it" (I2, p.5). A *censor* not only edits content but protects viewers from inappropriate or otherwise harmful material. Courtney, as censor in her own storyline, was attempting to protect the other students from learning incorrect procedures in mathematics at the sacrifice of the teacher's position as dogmatist. In terms of academic status, Courtney risked the academic status of Mrs. Noland in order to protect the academic status of herself and the other students. This academic status struggle was evidence of why Courtney considered Mrs. Noland a negative influence on her mathematical life story.

Storyline	Positions	Rights and Duties with each position
Dogma (introduced by Noland)	Dogmatist (Mrs. Noland)	D/R: to be right all the time D: Correct herself and the students D: Believe a "smart kid in the back" (I2, p.5) when he raises his hand
	Sycophant (Courtney)	D: believe that the dogmatist (Noland) is always right R: have someone to follow
Falsehood (introduced by Courtney)	Censor (Courtney)	D: Check the teacher D/R: Check with the other students D: Help the other students
	Fallible (Mrs. Noland)	D: Admit mistakes D: receive censorship from censor (Courtney)

Figure 12. Chart of the Dogma storyline and Falsehood storyline involving Courtney and Mrs. Noland.

A peer status shift. It is also evident in the previous stories about Mrs. Noland and Mr. Leverret that even though Courtney focused on academic status, she also was considerate to other people involved. She had been concerned about her friends when they were ostracized by Mr. Leverett and concerned that she and the other students would learn incorrect principles when Mrs. Noland was persistent in her own dogma. Sometimes within Courtney's mathematical life story, she showed a shift in focus from academic comparisons to a focus on relationships with other people (in terms of status, a shift from academic status to peer status). Courtney was embarrassed when receiving an academic award in mathematics because of the potential harm to her reputation with her peers. She also cared more about her relationship with her friend, Levi,

than his academic standing and her academic status in comparison. I discuss each of these experiences and hypothesize why Courtney had these momentary shifts in focus.

Mathematics. Both of the experiences where Courtney shifts her focus to peer status involve resisting praise. One time that Courtney resisted praise was at the end of her ninth grade year. As previously mentioned, Courtney received an award from Mrs. Stack for achievement in mathematics. I asked Courtney to describe this experience more in detail in her second interview. I expected to hear more about her relationship with Mrs. Stack, but was surprised to realize that the subject of mathematics itself played a role as an actor in the ensuing storyline (Figure 13).

Storyline	Positions	Rights and Duties with each position
Glorification	Ordainer (Mathematics)	D: Award achievement R: To associate with the ordained D: To change reputations
	Ordained (position assigned to Courtney by Mathematics)	R: To receive recognition D: Live up to the "ordainment"
Embarrassment	Ashamed (position assigned to Courtney by herself)	R: To have a "cool" award D: Be embarrassed by math D: Be conscious of her appearance
	Mediators (Parents/Friends)	D: Reinforce acknowledgement of achievement D: Convince the Ashamed that she deserved praise and that praise is not embarrassing.

Figure 13. Chart of the Glorification storyline and Embarrassment storyline involving Courtney and mathematics.

Courtney recalled that when she heard her name called for a mathematics award she felt, "embarrassed," "nerdy," and "dumb" (I2, p.1). She felt self-conscious and uncool in comparison to other students who had received awards for extracurricular activities such as music. She reflected, "Of all the awards to get, I get the math award. I'm just a nerd" (I2, p.1). Within the *Glorification* storyline, mathematics itself was an actor. Ms. Stack was not the actor because within Courtney's description of this event, she spoke little of Ms. Stack and more about how she felt towards mathematics within this experience. Mathematics, as an acting *ordainer*, had the duty to award achievement and, according to Courtney, change reputations. Concomitant to

those duties, it had the right to be associated with those students it awarded. Mathematics ordained Courtney as good at mathematics and was, therefore, associated with her. As the *ordained*, Courtney would have had the right to receive recognition and the duty to live up to her ordainment. However, Courtney resisted this association for the sake of her reputation and introduced the *Embarrassment* storyline, giving herself the position of *ashamed* instead of ordained. Her parents and friends later reassured her that the mathematics achievement award was not an award that she should be ashamed to receive. They acted as *mediators* between Courtney and the subject of mathematics. They had the duty to convince Courtney (the ashamed) that association with mathematics was less embarrassing than the associations of some other awards. For example, she recalled that her parents had said to her "Really Courtney, like, over like, some dumb little, like, student of the day award, this is really cool" (I2, p.1). By doing so, the mediators were able to reinforce the recognition of her achievement. With the help of the mediators, Courtney was able to admit that she had "thought it was embarrassing but it wasn't" (I2, p.1). She had changed the storyline to one about embarrassment instead of glory because she did not accept the rights and duties associated with being ordained. Those rights and duties associated her with mathematics, and thus threatened her peer reputation. The academic status of one who is ordained was minor to the threat to her peer status.

Levi. Courtney also resisted praise from her friend, Levi. In Courtney's second interview I asked her to describe a time when someone had told her she was good at mathematics. Levi is a friend that she spoke of in her first interview as "not a numbers person" (I1, p. 14). In the second interview, she told me how he would praise her mathematical skill. The *Praise* storyline is summarized in Figure 14.

Storyline	Positions	Rights and Duties with each position
Praise	Praiser (Levi)	D/R: Compliment Courtney D: Reassure and Convince her D: Use grades and scores as evidence of "goodness" R:to have his own opinion
	Good at mathematics (position assigned to Courtney by Levi)	R: to have reassurance and praise D: accept compliments
	Humble (position assigned to Courtney by herself)	R/D: deflect compliments by blaming others R/D: be a praiser of others

Figure 14. Chart of Praise storyline involving Courtney and Levi.

Levi is the *praiser* in the *Praise* storyline. He had the duty and the right to compliment his friend to reassure and convince her using evidence. He also had the right to have his opinion of her success in learning mathematics. As support for his praise, Levi would remind Courtney that she had not dropped out of calculus when he had, that she did well on the advanced placement test, and that she received good grades in mathematics classes. These affirmations were the same things that Courtney said describe someone good at mathematics. Levi's praise would give Courtney the position of *good at mathematics* with the right to his praise and assurance and the duty to accept it. Yet, she still resisted the position given to her by Levi, the *praiser*. She instead took on the position of *humble* by deflecting the compliments instead of accepting them. As the *humble*, she had the right and duty to deflect compliments by blaming other people for her success or by redirecting the compliment to someone else and praising them instead of herself. She would say that her mother had helped her to succeed or that Stephanie understood the mathematics better than she had. Her need for humility was also heightened by the fact that Levi himself had dropped out of the calculus class, so she tried to avoid making him feel bad about it. This need to not put her friend down was a large motivator for Courtney to resist the praise. Her relationship with him was more important than the boost in her academic status that his praise would give her. She chose to change her position to protect her friendship with Levi. Her peer status with him at this moment was more important than her academic status.

In Courtney's second interview after discussing the experiences of the mathematics award and praise from Levi, she admitted in the interactional text that her perspective had changed since those two stories. She confessed that "at this point, if I could get a math award, I would be so happy" (I2, p.1) and that she "would give anything to get like the top math award in high school, ya know?"(I2, p.1). After talking about deflecting Levi's praise, which had happened one year previous, she said that she had grown to appreciate compliments that are academically based. She said,

> I would love a math compliment. Like, I'm realizing that like academic compliments are just so much more or so much better than some dumb like "Your hair looks good today!" Ya know?, like because that's what I'm gonna be doing, like, I really appreciate academic compliments, at this point. I still don't take compliments well, but I appreciate them. (I2, p. 6)

In this quote, Courtney gave some purpose to her focus on academic status in the other parts of her mathematical life story (as previously outlined). She had decided, at the time of the interview, to pursue a career in accounting. This career was very academically and mathematically based to Courtney. So, because academic status was important to her future self, it was important to her present identity.

Summary. Courtney focused on academic status when telling her mathematical life story. Courtney described people as good or bad at mathematics by using measures of academic ability (like test scores or visible, traditional academic habits).When speaking of success in learning mathematics, she spoke of her competitiveness in grades and test scores and learning the academic habit of asking questions. Her positive experiences were centered on the academic status of her mother and Mrs. Stack, and how her academic status grew by influence of these actors. Her negative experiences were also centered on academic ability. Mr. Leverett and Mrs. Noland ostracized people or were unhelpful to Courtney academically. Even when Courtney

deflected praise to help her peer relationships, she refocused on academic status by reinforcing how she would appreciate an academic compliment at the time of the interview.

Eleanor

When recounting her own mathematical life story, Eleanor had a very different focus than Courtney. Instead of focusing on academic ability and comparisons, Eleanor focused on the relationships she had with other students, family members, and teachers. As described in my theoretical framework, peer status focuses on a person's relationships with others. Analysis of Eleanor's discourse thus revealed that peer status was very important to her within the realm of learning and even teaching mathematics. In the following section, I will use my analysis of Eleanor's experiences to give evidence of that peer status focus.

As I will show in the following subsections, Eleanor showed her focus on peer status in a number of ways. The first way I noticed this focus was in her interactions with me during the interviews; she seemed to focus on making her relationship with me, as a researcher, a friendly relationship. Not only did she focus on peer status in how she spoke, but also in what she said and recalled. She recalled times in mathematics class when she was up in the front or at the center of the class's attention, which indicates that she had high peer status with the students. When Eleanor described her teachers, she focused on the relationships or friendships she had made with teachers. She also talked about times when she had used her relationships (with teachers and peers) to help her to succeed in mathematics. In fact, she defined success in mathematics as finding a person that can teach you or help you to understand. In the next sections, I give examples of each of these ways in which Eleanor focused on peer status when relating to me her mathematical life-story.

Interactions with the researcher. As I analyzed the experiences Eleanor retold to me, I noticed that I placed most of her dialogue in interactive text, meaning that most of her language was speaking to me and not about other people. Thus, she was even focused on her peer status in interacting with me, the researcher. She was making efforts to build a friendly relationship with me. She would include short anecdotes or jokes to make me laugh. At the end of the second interview, she was excited to draw a picture on the whiteboard and show me what she had drawn in one of her classes. She would also think about the questions in between interviews and tell me about what she had realized or done as a result. Even within the study, she was focused on her relationship with me as an interviewer, consequently revealing her focus on peer status.

At the forefront of class. The experiences that Eleanor retold also revealed her focus on peer status. She chose to tell stories that related to her relationships with other people, teachers and students. The first of these experiences, that I discuss here, showed that Eleanor's relationships allowed her to be herself in mathematics class. In Eleanor's first interview, she admitted that the other students in her then current mathematics class allowed her to do what she enjoyed in class. She said, "The person that I love to be is loud and funny and in front of people. So, having people that I like in my math class helps me to be myself, I guess" (I1, p. 4). Her relationships with other people gave her access to the peer status necessary to be "loud and funny and in front of people." The following examples show that status. Additionally, I describe here another experience in which her peer status allowed her to have academic status among her fellow students.

Laughter. Eleanor focused primarily on her relationships with others in the class as opposed to focusing on the academic content being learned (as Courtney often did). She thought it was most important to develop her relationships with others in class. For example, she stated

that her goal one day was to make each person in her mathematics class laugh. In order to reach her goal, she focused on one person at a time, found something to make him or her laugh and then used it. After reaching her goal with every other student in the class, she realized that she had neglected to include the teacher in her goal. Eleanor raised her hand and asked the teacher, "Ms. Radcliffe, have I ever, ya know, made you laugh like so hard, maybe you couldn't continue teaching" (I2, p. 1)? Ms. Radcliffe replied, "Eleanor, I'll go home and I'll tell my husband things that you've said that made me laugh so hard" (I2, p. 1-2). Eleanor then rejoiced, having completed her relationship goal.

As displayed in Figure 15, I entitled this storyline, *Comedy show*. Ms. Radcliffe, as the teacher, ran the show and was the *producer*. She ran the class but allowed Eleanor to start the class for her. Thus, Eleanor was the *headliner* of the comedy show. She had the right to start class and the duty to make every person laugh. Her *audience members* were, at first, the other students. They had the right to enjoy mathematics class and the duty to laugh at Eleanor's jokes. When Eleanor asked her teacher if she had ever made her laugh, Eleanor offered her the position of audience member. Ms. Radcliffe, in her reply, agreed with that position. This agreement showed that in this experience, Eleanor held high peer status, even with her mathematics teacher. That peer status with the students and teacher allowed Eleanor to be the person that she most likes to be, the person at the center of attention. The position of headliner worked perfectly with her desire. Furthermore, in telling this story, Eleanor showed that peer status was her focus not only in the interview but also within the context of the stories she told. As headliner, she focused on her relationship with the audience members and with the producer as an audience member.

Storyline	Positions	Rights and Duties with each position
Comedy show	Headliner (Eleanor)	R: Start class D: Make people laugh
	Audience (Classmates)	D: laugh R: to enjoy class
	Producer (Ms. Radcliffe)	D: allow Eleanor to start class
	Audience (Ms. Radcliffe) Position assigned to her by Eleanor	D: laugh D: confirm Eleanor's hilarity

Figure 15. Chart of the Comedy Show storyline involving Eleanor, Ms. Radcliffe, and the other students.

Drawing on the board. As mentioned with the last experience, Eleanor would often start class for her mathematics teacher. In her second interview, she described how that tradition began by recounting the following two experiences. In her retelling of these stories, her focus on relationships was evident. It was also evident that her peer status is what allowed her to be up in front of the class.

She began in mathematics class the previous year, by first going up to the board and drawing pictures. In the experience described in Figure 16, Eleanor was the *infiltrator* in the *Espionage* storyline. Her mission was to take over control of the class. As the infiltrator, her rights were to be random in her act of taking control of the class, to draw on the board and to later have her work acknowledged by her captive audience. She went up to the board and drew a picture while the teacher, Mr. Jensen, was lecturing. Mr. Jensen acted as the *diversion*, with the right and duty to lecture his class and the further duty to acknowledge Eleanor's picture. The teacher and other students did not notice her or the picture until Mr. Jensen turned around, saw the picture and asked about it. Thus, he became a *captive* himself and allowed Eleanor to take temporary control of the class when she admitted that she had drawn the picture. The other students reacted in surprise because they had not seen Eleanor approaching the board or drawing the picture. Eleanor successfully gained the attention of the *captives* (the other students) and momentary control of the class. Because she was able to succeed on this mission and because of

the reactions of the teacher and students, Eleanor was given the unspoken right and duty to continue to infiltrate the class and take control. This right was given to her because of her friendly relationship with the teacher and her peers. After that time, Eleanor continued to draw on the board at random times or before class started. Again, due to her relationships with the teacher and students, she was able to have a high peer status. This level of status is visible in her control of the mathematics classroom dynamics.

Storyline	Positions	Rights and Duties with each position
Espionage	Infiltrator (Eleanor)	R: Be random R: Draw on the board R: Have work acknowledged D: Admit guilt D/R: To keep doing it
	Diversion (Mr. Jensen)	R/D: lecture D: acknowledge Eleanor's work
	Captives (Classmates and, later, Mr. Jensen)	D: pay attention to Mr. Jensen D: acknowledge Eleanor's work

Figure 16. Chart of Espionage storyline involving Mr. Jensen, Eleanor, and her classmates.

Becoming the teacher. This high peer status was not only evident when Eleanor joked or drew funny pictures on the board. In her current mathematics class, her peer status also gave her some level of academic authority. In the second experience (Figure 17) related to beginning the class for her mathematics teacher, Eleanor spoke of the first time she started class for her mathematics teacher this school year. Class had not yet started because the teacher, Ms. Radcliffe, was busy. Eleanor saw that Ms. Radcliffe failed at her duty to start class. So, Eleanor took up the right to start class. She said that she "went up, I was like 'Pull out your homework!' I was kinda being funny just acting like the teacher" (I2, p. 4). The teacher was the main *actor* in the *Play* storyline of the classroom, but when she was unavailable, her *understudy*, Eleanor took on her role. Eleanor had the right to have class start and to be the one to start it. Her duty to be funny, in this instance, was showcased by her action of being like the teacher. The other students, again, acted as *audience members*. As an understudy, Eleanor was surprised that the audience

members were convinced by her acting skills. She said that "a kid actually was like, 'Well, I didn't understand number 2 (said in a lower voice).' I was like, 'Okay, Well I actually did get that one! So, here, let me do it.' So I did it on the board. And then kids actually started asking me questions" (I2, p. 4). To these students, she replied, "K, I'm not your math teacher, but I can help you" (I2, p. 4). Eleanor's peer status allowed her to start class and be in front of the class acting as the teacher. It enabled the other students to believe in her academic abilities as well.

Storyline	Positions	Rights and Duties with each position
Play	Understudy (Eleanor)	R: Have class start on time R: Start class, act like the teacher D: Be funny D: Help students when she "gets it."
	Actor (Ms. Radcliffe)	R: Be busy at the start of class D: Have class start on time (failed)
	Audience (Classmates)	D: Ask questions R: Have questions answered by someone who "gets it."

Figure 17. Chart of Play storyline involving Ms. Radcliffe, Eleanor, and her classmates.

Academic experiences through a peer status lens. The previous experience also showed that within a fairly academic context (starting class and answering mathematics questions for other students) Eleanor's focus was on having a fun and friendly relationship with the students. She was surprised at the fact that students asked her academic questions and that they treated her like the main actress, the teacher. When that happened, Eleanor reinforced that she was only the understudy, only pretending to be the teacher to get a laugh. This reestablishing of her position as the understudy refocused the situation on peer status, both in the denotational and interactional text. So even though her actions brought her some level of academic status with the students, she brought the focus back to peer status through her communication acts. The next two stories also establish that Eleanor's perspective was focused on peer status even in academic situations.

Test score. The following story (Figure 18) retold by Eleanor was another case where a potentially strictly academic situation became focused on relationships through Eleanor's perspective. When asked about her good experiences in learning mathematics, Eleanor recounted finding out her score on a test that had worried her. Her peers in the class had known about her concern. In the class and among her friends, Eleanor had the position of *commissioner,* while her peers were the *constituents*. Constituents give another person, like a commissioner, the authority to act and choose on their behalf. In this story, the constituents gave Eleanor permission to decide their emotions. She was very vocal in her mathematics class and as she started class (as was her habit) that day she expressed her anxiety about the test. In articulating her apprehension, she performed the duty of commissioner to voice her concerns and let her constituents know that anxiety was the emotion that she had chosen for them. After taking the test, Eleanor was still anxious to know her score and worried about it all weekend. This anxiety was apparent in how her peers, the constituents, acted toward her. As constituents they had the duty to know her concerns and ask her about them. She realized she could look up her test score on the internet when a friend in the hall at school asked her how she had done on the test. As she was "literally freaking out" (I1, p.2), Eleanor saw that her score on the test was 105%. She told her friends facetiously, "You're not gonna be happy with what I got on my math test" (I1, p.2) and her friends responded with concern. Her joking manner was her way of showing her constituents what emotion to feel. Then she showed her friends her score and "they all freaked out and I freaked out" (I1, p.2). As commissioner, Eleanor's emotions of first concern and then joy were mimicked by the constituents, her peers. Later, in class, she received her test back and "just kind of like hugged it" (I1, p.2). Eleanor said that everyone in class knew that she had been worried about her score and asked her about it. When they all saw her score, they were "jokingly mad"

(I1, p.2) that the person who was the most concerned about doing well had received the highest score on the test. Then, the other students were happy for her and she was happy. Again, her emotion dictated the emotions of the other students. Because of this focus on emotions and her own position as the commissioner to her friends, this situation, that could have been very academically focused (scoring well on a mathematics test) became about Eleanor's relationship with her friends and the other students in the class.

Storyline	Positions	Rights and Duties with each position
Emotional Commission	Commissioner (Eleanor)	D: Voicing her concern D: Worry, Freak out R: Have her friends/classmate ask about her score R: Joke about her score
	Constituents (Friends and Classmates)	D: Ask about Eleanor's score D: Know her concerns D: Feel concern for her D: Freak out/celebrate/Joke with her

Figure 18. Chart of the Emotional Commission storyline involving Eleanor and her friends.

Question asking. Like Courtney, Eleanor believed that the habit of asking questions was very important to learning. However, from Eleanor's perspective, the fact that she asked questions in mathematics class was not only very important to her learning but to the learning of the other students as well. In the following situation (Figure 19), Eleanor's peer status helped the other students to learn. Once, in her pre-calculus class, Eleanor had "zoned out for a couple seconds" (I2, p.2) and missed how to solve a problem that the teacher, Ms. Radcliffe had been doing on the board. Eleanor noticed that she had missed something when the teacher was done with the problem and some of the other students were nodding and expressing their understanding. Eleanor felt left behind and alerted the teacher by making a concerned sound and convincing the teacher to redo the problem. Then, she noted that "three other kids, that aren't very vocal in the class, they were all like '(speaks quieter, mumbles a little) Yeah, yeah (nods) can you do that?'" (I1, p. 2). In retelling this experience, Eleanor said, "I was glad that I asked the question for her to repeat it and kind of go over it slower. 'Cause if I hadn't asked, I don't

think they would have. And so, I can help others figure out what was going on by asking too." The three other students in the mathematics class have the position of *disabled*[6] (Rogers & Swadener, 2001) and Eleanor is their *advocate* to the teacher *authority*, Ms. Radcliffe. Eleanor feels that she helped the other students to succeed by asking the authority to repeat her solving process. The other students reinforced Eleanor's position as advocate by agreeing with her request. This agreement is one of the duties of those students. As I said earlier Eleanor feels her place is up in front of the class and acting on that desire gave her the privilege of being the voice for these other students. As advocate she had the right to receive help and the duty to ask for it and, thereby, help other students. Also, in the telling of this story, Eleanor did not focus on how asking questions helped her to understand and learn mathematics but instead focused on how her act of asking questions helped other students. Thus, she focused on her relationships with them and building that relationship by helping them to learn. Here, where she could have been focused on the academic status that asking questions affords her, her focus instead was on her peer status with the other students.

Storyline	**Positions**	**Rights and Duties with each position**
Advocacy	Advocate (Eleanor)	R:To be lost and find out where they are D: Let people know she's lost D: Ask questions D: Help other students by asking questions they wouldn't ask themselves
	Authority (Ms. Radcliffe)	D: Help Eleanor/other students D: Redo a problem so Eleanor understands it D: Listen and answer questions
	Disabled (Three other Classmates)	R: Have questions asked for them R: To have those questions answered D: Agree with Eleanor

Figure 19. Chart of Advocacy storyline involving Ms. Radcliffe, Eleanor, and three of her classmates.

[6] I use this term, like Rogers and Swadener (2001) to mean *at a disadvantage in a particular context*. (Dis)ability is culturally and socially constructed and is not a result of physical impairment (Rogers & Swadener, 2001). Thus, the students in this storyline were at a disadvantage because they did not feel that they were able to ask questions on their own behalf.

Teacher relationships. In addition to Eleanor's love of being at the forefront and focus on her relationships with the students (as opposed to an academic focus) in mathematics class she also often mentioned her relationships with teachers. The teachers that Eleanor enjoyed were teachers that made jokes, were relaxed or found ways to connect with their students. In short, she appreciated teachers that built relationships with her. This focus is further evidence of her emphasis on peer status in mathematics learning and even, mathematics teaching. The next two examples showed the importance of the teacher relationships in Eleanor's mathematical life story.

Choir drama. The importance of Eleanor's teacher relationships was evident in her reaction to a dramatic episode that happened between herself and a classmate. Eleanor told the following story (Figure 20) after being asked if anyone had caused her to have a negative experience in mathematics class. While on a trip for choir, Eleanor and a friend "got in a big fight" (I1, p.3). She and this friend sat next to each other in mathematics class. When Eleanor returned to class, she asked the teacher to change the seating arrangements so she was not required to sit by the person with whom she had fought. Eleanor said, that she and the teacher "got along" and that he changed the seats so she and this friend sat on opposite sides of the classroom. This experience followed the *Coddling* storyline. Eleanor felt that the other student was a *threat* to her success in mathematics, because a comfortable environment was very important to her and was necessary to what she feels insures mathematical success. In order to ensure her comfort and mathematical success, Eleanor needed to be coddled by the teacher. He coddled her by allowing her to change seats in class. If Eleanor had not had this good relationship with her teacher, the *coddler*, her success in this mathematics class would have been threatened. Evidence of the threat she felt was in what she said after describing this situation,

"But, having that, ya know, it doesn't make the environment really nice when you don't get along with a student in the class. So, it's hard to have fun and then you kind of dread going to class" (I1, p.3). Eleanor's relationship with the teacher gave her the ability to have fun and not dread going to class, two things that to her ensured a successful and good experience in learning mathematics.

Storyline	Positions	Rights and Duties with each position
Coddling	Coddled (Eleanor)	R: to be comfortable in the mathematics classroom R: Not to have to sit by the other girl
	Threat[7] (Other girl)	
	Coddler (Mr. Jensen)	D: insure that Eleanor's rights are met.

Figure 20. Chart of Coddling storyline involving Mr. Jensen, Eleanor, and one other girl in the class.

Missing teachers. The importance of teacher relationships to Eleanor's success in mathematics learning was also reflected in how Eleanor reacted when teachers were often absent. She had a teacher that was a golf coach and missed a lot of school for tournaments, and she also had a teacher who had been on maternity leave with a long-term substitute teacher. After being asked about any negative influences in her mathematics life story, Eleanor specifically expressed concern about a time (summarized in Figure 21) when she had gone to get help at lunch from a teacher. When Eleanor arrived at the classroom, the teacher was not there. Eleanor's reaction, as retold in her interviews, was "then you realize you just missed eating lunch and you're searching all over the school for her and she's nowhere to be found" (I1, p. 9) Similar to the experience with the girl from the choir trip, here, Eleanor was seeking to be *coddled*. She was seeking individual attention and help. That one-on-one attention was her right as the coddled. However, the teacher, in this case, failed to coddle Eleanor. She felt that teachers need to be available to

[7] Because of the limited description of the girl positioned as "threat" in the data, her rights and duties were not apparent and are not listed here.

help students. After recounting that experience, Eleanor said, "I really need a teacher that is there to help you when you need it cause sometimes, you don't…like everything's going in one ear and out the other in class and you really need to sit down one on one" (I1, p.9). As seen in the previous experience the coddling was something that Eleanor felt was needed in order for her to succeed. Positive relationships (the peer status) she held with teachers were key to succeeding in learning mathematics.

Storyline	Positions	Rights and Duties with each position
Failed coddling	Coddled (Eleanor)	R: Sit down one-on-one with a teacher D: Get help R: To have lunch (Denied by duty)
	Coddler (Teacher)	D: help Eleanor (failed) D: Skip lunch to do it (failed)

Figure 21. Chart of the Failed Coddling storyline involving Eleanor and her teacher (not named by Eleanor).

Using her peer relationships to succeed. Just as teacher relationships were very important to Eleanor, so were her relationships with other peers. She used relationships with peers and friends in order to feel successful in mathematics. This claim was evident as Eleanor told me about the "study parties" she held for her friends.

Study parties. Eleanor felt that no one was inherently good or bad at mathematics but rather that by working together, someone would be able to communicate about mathematics in a way that could support others in learning. For example, she stated:

> ELEANOR: Yeah I dunno, if you, there's always somebody out there whose gonna make sense to you, no matter what, I think. 'Cause everybody's different but you're gonna find somebody. It might take a while but—
>
> RESEARCHER: like a teacher or?
>
> ELEANOR: Yeah or a friend or somebody that's gonna make sense to you.
> RESEARCHER: the way they explain it?
>
> ELEANOR: Yeah, yeah. So, I dunno, I don't think there's anybody that's just born bad at math and will never be good at it. (I1, p. 13)

With her current teacher missing for maternity leave and a long-term substitute teacher, Eleanor decided to start having "study parties" (I1, p. 6) with a few of her friends from class. They met as often as they had class, about three times per week. The purpose of the study parties was to provide a place where peers could support one another in learning mathematics. As the instigator of these study groups, Eleanor again takes on the position of *commissioner* within the storyline shown in Figure 22. She and her friends, the *constituents*, would all do the math together "so [they] are all pretty much on the same page" (I1, p. 6). The commissioner and constituents had some rights in common. They both had the right to understand mathematics, hold and attend study parties, receive help from their friends, and to have fun doing mathematics homework. The commissioner, in addition, had the right to come up with the idea of having the study parties and to give help to her friends. Eleanor gave help to the others, but sometimes she received help from them. When this shift happened, the constituents had the duty to take a new position, assigned to them by the commissioner. This new position was the *delegate*. The delegates had the duty to give help to the commissioner and check answers with her. Also, if none of the attendees at the study party understood a problem, the commissioner and delegates made up a good portion of the class and would convince the teacher not to grade the homework until they understood how to solve that particular problem. Both the commissioner and the constituents-turned-delegates had the right to approach the teacher with this request and it was their duty to do so. It was evident from the interviews that Eleanor, as commissioner of this group of mathematics students, or constituents/delegates, contributed much of her success to those relationships. She said later in the interview that this group of friends was among her positive influences in learning mathematics and that "it's good to have somebody who knows what they're doing. And, and that you're friends with, like, that you get along with, so you can have fun doing math, which is an

oxymoron but, ya know, it happens" (I1, P.8). Eleanor's role as commissioner showed that she held peer status in this situation and that her peers in the study group agreed with her position and their own. They helped her to succeed, and she helped them to succeed as well. Her relationship with these students was imperative. The next two experiences I discuss showed even more Eleanor's defining and achieving of mathematical success through peer relationships.

Storyline	Positions	Rights and Duties with each position
Delegation	Commissioner (Eleanor)	D: Start study parties R: Understand mathematics R: Receive help from teachers/friends D: Teach her friends R: Check answers with other students R: Have fun doing homework R/D: Convince teacher not to grade the homework until after she and her friends have fixed their answers.
	Constituents (Friends)	R: understand mathematics R: help from their friends R: attend study parties R: Have fun doing homework D: Take on position of delegate when necessary
	Delegates (Friends)	D: Help Eleanor in return D: Check answers with Eleanor R/D: Convince teacher not to grade the homework until after they have fixed their answers.

Figure 22. Chart of Delegation storyline involving Eleanor and her friends.

Getting help from Theo. Eleanor spoke about two specific experiences with these study parties—one where she was helped and the other where she was able to help someone else. In the first experience (Figure 23) she had missed school for a competition and had to retake a mathematics test soon after returning. She was very worried about the test because she had missed three days of class and notes. So she went over to her friend, Theo's house and implored him to show her his mathematics notes and teach her the material. Theo was a usual attendee at the weekly study parties. In the interview, Eleanor confided that Theo had only received a score of 80% on the same test, but she said "80% is fine with me, like I just need to get it done. And I need the points, I can't have a zero on my grade" (I2, p.6). She confessed to having a break down and crying at Theo's house because she did not understand the material that would be on the test.

In this storyline, both Eleanor and Theo had the position of *comrade*, though that position was manifest in different rights and duties for each person. Eleanor had the duty to take the test and the rights to get help from and break down in front of her comrade, Theo. Theo, as Eleanor's comrade, had the duties to show her his notes, help her and let her breakdown. Because Eleanor is his comrade, Theo also has the right to be considered helpful to her even though he only received a score of 80% on the mathematics test. This experience displayed that Eleanor used her friendship to succeed in mathematics but it also showed that her camaraderie with Theo was more important than academic success. Instead of going to the teacher or possibly another student who had received a higher score for help, she turned to Theo because of their friendship. Further evidence of that claim is in this quote from Eleanor, "he taught me how to do it all, and obviously, it was Theo so it wasn't like the best way to teach 'cause he's kind of not that good at teaching me, without being mean, I love him, but yeah" (I2, p.6). Her love of her comrade, Theo, made it okay that he was not very good at teaching her and that their academic statuses differed. So for Eleanor to succeed in mathematics she did not necessarily need a high score on the test but needed a friend that was willing to help her. Her peer status with Theo was more important to her than her academic status in the class.

Storyline	Positions	Rights and Duties with each position
Camaraderie	Comrade (Eleanor)	D: Retake the test R: Get help from Theo R: To break down
	Comrade (Theo)	D: Show Eleanor his notes D: Help Eleanor D: Let Eleanor breakdown R: Be considered helpful even though he only got 80% on the test.

Figure 23. Chart of Camaraderie storyline involving Eleanor and Theo.

Helping Britney. When Eleanor's friend, Britney missed mathematics class, Eleanor helped her learn the material at a study party. However, they both quickly became frustrated when Britney was "not getting it at all" (I2, p. 6). Eleanor said that she usually loves to help and

teach other people, but that day she was discouraged because Britney was taking so long to be able to solve the mathematics problems. Britney was able to understand "eventually, we just had to kind of do a bunch of problems over and over. I'm like 'Just look at the pattern, just look what's happening.' And then, um, she eventually got it" (I2, p.6). Putting Britney through these training practices ("Just look for the pattern, look what's happening…") makes Eleanor the *trainer* in this storyline (Figure 24). She demonstrated the belief that learning mathematics is equivalent to watching for patterns and following procedures. If Britney had been able to follow the procedures, she would have been successful at learning mathematics. Britney just had to remember the pattern and order of the procedures. An *abecedarian* learns something rudimentary and elementary. This position is given to Britney by Eleanor. Britney was learning something very procedural, and all she needed to learn it, according to her trainer, was to practice and watch for patterns. As the trainer, Eleanor had the duty to help the abecedarian and to keep doing problems with her until she was able to mimic the patterns. She had the right to have Britney be able to do that in a short amount of time. The abecedarian, Britney, had the right to be trained by Eleanor and the duty to understand (or at least be able to mimic the actions of the trainer) and to keep doing problems with the trainer until she does. Eleanor, as the trainer, had the duty to continue to do mathematics problems with Britney. Because of her initiative in starting the study parties, I inferred that Eleanor felt an obligation to continue to train Britney even after the attempt seemed fruitless. Eleanor could have given up her position of trainer and had someone else teach Britney or claim that Britney would never understand. But because of her relationship with Britney and her belief that "there's always somebody out there whose gonna make sense to you, no matter what" (I1, p.13), she persisted in training the abecedarian. Eleanor's recognition

of this obligation, showed her focus on peer status, again, even in academic situations such as this one.

Storyline	Positions	Rights and Duties with each position
Learning the basics of mathematics	Trainer (Eleanor)	D: Help her friend R: Have a student understand in less than "20 minutes" (I2, P.6) D: Keep doing problems with Britney until she gets it.
	Abecedarian (Britney)	R: Receive help from Eleanor D: Understand quickly D: Keep doing problems until she understands

Figure 24. Chart of the Learning the basics of mathematics storyline involving Eleanor and Britney.

Summary. Analysis of the stories and positioning discussed, revealed that peer status was very important to Eleanor within the learning and teaching mathematics. Eleanor's focus on peer status was evidenced in her communication acts and actions in the interviews and also within the context of stories she chose to make a part of her mathematical life story. In other words, her focus on peer status was found in both interactional and denotational text. In interactional text, Eleanor's actions and communication acts with me, as the researcher, displayed that she was attempting to make a friendly relationship, focusing on her peer status with me. In the denotational text, Eleanor spoke of being at the forefront of her mathematics classes and making students and teachers laugh. In stories about academic situations (like a test score or asking questions in class), Eleanor still focused on her relationships, or peer status, with the other students. In describing her teachers or telling stories that involved her teachers, she was focused on her friendly relationships with them and how they helped her to feel comfortable. Feeling comfortable in mathematics class was necessary for Eleanor to feel successful. It was also necessary that she had a group of peers that could help her and whom she could help to learn mathematics. In these ways, in both interactional and denotational text, Eleanor confirmed her focus on peer status in her mathematical life story.

Discussion

In the previous sections, I have shown the results of the analysis of the mathematical life stories of Courtney and Eleanor. Courtney was focused on academic status and I have shown that focus through the positions and storylines found in the experiences she related. On the other hand, Eleanor focused on her peer status with other people and I have shown that focus through the positions and storylines evident in what she related. I will now summarize and discuss the storylines and positions for each participant and answer my research question: What positions (and concomitant rights and duties) are associated with particular kinds of status (e.g. academic, peer)?

Academic Status. The following figure (Figure 25) summarizes the positions and storylines found in Courtney's mathematical life story as discussed in the results section of this thesis. The positions or storylines marked with an asterisk were introduced by Courtney within the same experience. In the majority of these experiences Courtney had lower academic status than the other actors involved. Courtney held reasonable academic status in her perspective but often thought that other people with higher academic status (peers, family members, and teachers) held the responsibility to help her increase in academic status. Because of this need, when she spoke of her mathematical life story, Courtney focused on those people with high academic status that should be able to help her. When they could or would not help her increase in academic status, she would often change the storyline or her own position within the storyline in reaction. She would act similarly when she was given positions with academic status that was too high to give her a comfortable peer status. In the following paragraphs, I explain further how Courtney's view of academic status played out in the individual storylines within her mathematical life story.

Storyline	Courtney's Positions	Others' Positions
Rivalry	Runner Up	Reigning Champion
Chemical Reaction	Substrate →Product	Catalyst
Foreign Language	Foreigner	Interpreter
Fitness	Unfit	Personal Health Trainer
Apprenticeship	Apprentice	Master
Glorification	Congregation	Ordainer, Consecrated
Exclusion	Ostracized	Ordainer
Visit to the doctor	Patient	Fake Doctor
Dysfunctional Family	Baby Rebellious Teenager*	Failing Mother
Dogma Falsehood*	Sycophant Censor*	Dogmatist Fallible*
Glorification Embarrassment*	Ordained Ashamed*	Ordainer Mediators
Praise	Good at Mathematics Humble*	Praiser

Figure 25. Summary of the positions and storylines found in Courtney's mathematical life story. An asterisk indicates where Courtney changed her position, the position of another person or the storyline.

In the first seven listed experiences related in Courtney's mathematical life story, a hierarchy of academic status was present. There was always an actor with higher academic status than Courtney. In the *Rivalry* storyline, Courtney's friend Stephanie was the reigning champion and Courtney was the runner up. Because of her better test scores and grades, Stephanie's academic status was higher than Courtney's in that instance. In the *Chemical Reaction, Apprenticeship, Glorification*, and *Exclusion* storylines, the other actor was given a higher academics status than Courtney because she saw the role of mathematics teacher as accompanying a higher status. In the two experiences involving Courtney's mother, Courtney gave evidence of her mother's higher academic status—her mother's college major and her ability to interpret the textbook. In each of those experiences the position held by Courtney had a lower academic status than the other actor involved.

Courtney's lower academic status relative to others was both helpful and harmful to Courtney's access to learning mathematics—varying by instance. It benefited her when other people's higher academic status either motivated her to learn or the person with higher academic status was willing to help her learn. Stephanie's higher academic status, because of their friendly

competition, motivated Courtney to be more like her and to also improve in academic status herself. In the storylines involving Mr. Mackey, Courtney's mother, and Ms. Stack, the positions of catalyst, interpreter, personal health trainer and master are all positions that help other people either to change, understand or a combination of the two. Their high academic status coupled with these helpful positions brought about an increase in Courtney's academic status and her subsequent access to mathematics.

In contrast, the academic status of other actors was harmful to Courtney when she felt inferior to her peers. When Stephanie was ordained to mathematical greatness by Mr. Leverett, Courtney felt inferior to her and sensed the same from the other students. She felt barred from full access to learning mathematics because she could not perform as well as Stephanie. In the Exclusion storyline, Courtney felt barred from that access again when her academic status was questioned because of her habit of working with her friends and talking in class. In instances where the academic status of the other actors caused a negative environment, Courtney had limited access to mathematical learning.

In some circumstances, when Courtney had limited access to mathematics, she resisted the position that she was given or changed other people's positions to reduce their perceived status. In the next three listed storylines, Courtney again felt limited access to mathematical learning because of the academic status and negative experiences. However, for each of these interactions she reacted by introducing a new position to herself or the actor or even introduced a new storyline in her account of the experience and that new positioning results in a change in the status hierarchy. In the *Visit to the doctor* storyline, Mr. Leverret as the doctor, was given a trusted academic status. However, he failed to give Courtney access to mathematical understanding. As a result, in Courtney's retelling of this experience, she positioned Mr. Leverret

as a fake doctor, someone she expected to be helpful but, instead, restricted her access to mathematical understanding. In a similar way, in the *Dysfunctional Family* storyline, Courtney described Mrs. Noland as someone who failed in her responsibility to affectively teach and give students access to mathematical learning. In this case, Courtney changed her position from the one offered to her by Mrs. Noland (baby) to a position that still allowed her to have academic success and academic status (rebellious teenager). In the other experience with Mrs. Noland (*Dogma/Falsehood* storylines), Courtney found it necessary to not only change her position but to introduce a new storyline when recounting the experience. The change in storyline allowed for Courtney to have an increased academic status as the censor in the Falsehood storyline.

In the two instances where Courtney shifted to a perspective focused on peer status, she again used the strategy of changing either her position or to introduce a new storyline. In the *Glorification* storyline, she introduced the *Embarrassment* storyline in order to avoid the rights and duties associated with the ordained position. She saw the ordained position as "embarrassing" or "dumb" (I2, p.1) when considered in the context of her social network. This conflict between peer status and academic status was also evident in the *Praise* storyline, when Courtney repositioned herself as humble. She denied herself the academic status of the good at mathematics position in order to have a good relationship (high peer status) with her friend, Levi. She sacrificed an increased academic status to reinforce a high peer status, which suggests that Courtney views high academic status as unable to coexist with high peer status and prefers to protect peer relationships over her academic status.

The positions that were associated with academic status were positions that were hierarchal in nature. The positions that held high hierarchal rank were ones that could have helped to increase the academic status of a student, in this case, Courtney. Positions such as good

at mathematics or ordained held high academic status but low peer status. Often, in situations where the academic status of others was unhelpful in increasing Courtney's academic status or where an increased academic status would jeopardize her peer status, Courtney found it necessary to change the positions or storylines to secure her own academic status.

Peer Status. In contrast, Eleanor never found it necessary to change her positions or storylines in her retelling of her mathematical life story. Unlike Courtney, her positions were always associated with high peer status. The positions in her storylines only ever changed when the repositioning could reaffirm the high peer status she already held in the situation or to elevate the peer status of others through the authority she held with her high status. I will discuss this fact within each of the storylines in Eleanor's mathematical life story (summarized in Figure 26).

Storyline	Eleanor's Positions	Others' Positions
Comedy Show	Headliner	Audience, Producer → Audience
Espionage	Infiltrator	Diversion → Captive, Captives
Play	Understudy	Actor, Audience
Emotional Commission	Commissioner	Constituents
Advocacy	Advocate	Authority, Disabled
Coddling	Coddled	Threat, Coddler
Failed Coddling	Coddled	Coddler (failed)
Delegation	Commissioner	Constituents → Delegates
Camaraderie	Comrade	Comrade
Basics of Mathematics	Trainer	Abecedarian

Figure 26. Summary of the positions and storylines found in Eleanor's mathematical life story.

Unlike Courtney, Eleanor never saw the need to change her own positioning. However, she did reposition others to reinforce her high peer status or to increase the peer status of the other actors. In the *Comedy Show* and *Espionage* storylines, Eleanor repositioned her mathematics teachers, Ms. Radcliffe and Mr. Jensen as an audience member and a captive respectively, in order to reinforce her position at the center of the class's attention. Her centralized positions, reinforced by the teacher's new position at the sidelines, increased her peer status in her mathematics classroom. She centered the attention on herself in a similar way when

she literally positioned herself as someone to take over the position her teacher held in the *Play* storyline.

In the other storylines within Eleanor's mathematical life story, her positions were already associated with high peer status. So she did not, in the interactional or denotational text, need to change storylines or reassign positions as in other storylines as Courtney had done. In the *Emotional Commission* and *Delegation* storylines, Eleanor held the position of commissioner, within a hierarchy where she determined the focus or activity of the other people. This hierarchy implies that she had higher peer status than the others involved in those situations. She did reassign the positions of her friends from constituents to delegates, increasing their peer status but at the same time reaffirming her own status as one with power to reassign positions. In the *Basics of Mathematics* and *Advocacy* storylines, Eleanor also held high peer status. As the trainer in the basics of mathematics storyline, Eleanor held the peer status as she helped her peer, Britney. This peer status was high because she was training Britney and could determine how long they spent working on problems and declare when Britney understood the mathematics. As the advocate, even though her teacher held the position of authority, Eleanor held the peer status to be able to ask questions and make special requests of the authority, which is a right that the other students did not have when assigned the position of disabled. In both of the *Coddling* storylines, Eleanor used her peer status not with other students but with the teachers, positioned as coddlers. She expected her friendly relationships, or high peer status, with the teachers to allow her the right to be coddled and was surprised, in the second case, that it did not. In the *Camaraderie* storyline, Theo and Eleanor held the same position (comrade) but each were associated with different rights and duties. This difference was because Eleanor still maintained a higher peer status in the situation. Her higher peer status allowed her to receive help from Theo.

In each of these storylines, Eleanor did not need to reassign her own position or that of others because she already held positions that granted her or reaffirmed her high peer status. The positions of other people only shifted when she could elevate their peer status through the shift or reaffirm her place as the attention center.

Like academic status, the positions that were associated with peer status were positions that were hierarchal in nature. The positions that reflected high peer status, like Eleanor's, determined the focus and outcomes of social situations. These positions were associated with being the center of attention or with having the rights to receive help or other forms of attention. These positions allowed her to have greater access to opportunities to learn mathematics. Furthermore, Eleanor did not find it necessary to reject positions or introduce new ones because she held such positions with the rights associated with high peer status. Positions with high peer status also allowed Eleanor to increase the peer status of other people. These other people held positions with lower peer status with less privileges and decreased access to learning mathematics.

Summary. The positions associated with high academic or peer status reflected the hierarchal nature of status. The positions of higher status, for both types, held rights and duties that differed in their access to mathematics learning. Specifically, people's varied rights and duties either helped or hindered the status and access of themselves or other people. When positions were unhelpful or harmful to the status of the person, it was possible to change the positions or storyline. This change reinforced status situations or changed them by increasing the status of those involved. It is logical that this change could also decrease the status but that was not the case in the experiences within the mathematical life stories of Courtney and Eleanor. For Courtney and Eleanor, high status was something they sought after and each was savvy in asking

for assistance to achieve a higher status or maintaining their already high status. Reaffirming the hierarchal status (both academic and peer) had consequences for access to mathematical learning—that is, both Courtney and Eleanor were exercising their status to control the access to mathematical learning for themselves and others. Understanding how students enact these positions (with their concomitant rights and duties) can lead to opportunities to disrupt inequities and create more equitable access to mathematics.

Chapter 5: Conclusion

This thesis contributes to the literature that describes the importance of understanding experiences from the perspectives of students. In particular, developing a sense of how students interpret the range of possible positions in the classroom can be useful for teachers and researchers. That is, students only have equitable access to learning opportunities in mathematics classrooms if they can see positions that have rights and duties that are conducive to learning as available to them. Differential rights and duties influence the status that a person has in a classroom which affects their access to learning. This challenge of limited access is especially present in the arena of mathematics classrooms. Therefore, an examination of students' perspectives of their mathematical socialization, as described in their mathematical life stories, leads to greater understanding of how positions and status play a role in making learning opportunities available for students. Using discourse analysis, I illustrated two variations in perspective of status for two high school students, Courtney and Eleanor. Specifically, Courtney's perspective on her mathematical life story was centered in academic status. This focus was evident in how she spoke of success and in both her positive and negative experiences. Her experiences were positive when academic status of individuals (her own or others') supported the learning of mathematics. Her experiences were negative when the focus on academic ability limited her access or the access of other students to understanding mathematics or from the help necessary to understand mathematics. Courtney did shift to a peer status focus when avoiding harming her reputation with her peers or a good friendship. In contrast, Eleanor continually centered her mathematical life story in peer status. This focus was evidenced in both how she spoke with me and the topics of which she chose to denote her mathematical life story experiences. Eleanor focused on peer status when she spoke of loving attention and making

people laugh in class. Even in very academically based situations, Eleanor concentrated on her friends or other classmates. When Eleanor described both other students and her teachers, she described her personal relationships with them and how they were able to help her succeed because of those friendships. These findings contribute to both mathematics education research and mathematics teacher education research and practice. These contributions along with associated implications are described next and are followed by a discussion of the limitations of this thesis study.

Contributions and Implications

One contribution of this study is the addition of nuanced definitions of academic status and peer status to the field of mathematics education research. In previous studies of status, the focus has primarily been on researchers examining learning situations in classrooms (e.g., whole class discussions, small group discussions) and characterizing the various and differential statuses for each group member (e.g., Cohen & Lotan, 1995; Esmonde, 2009). Additionally, it has been noted that these statuses (whether academic, peer or societal) are associated with different opportunities to learn (Cohen, 1994). In this thesis, I give more robust characterizations of academic and peer status. In particular, I add to the definition of academic status positions that are associated with it. For example, the positions (and associated rights and duties) of interpreter, ordainer, ostracized, ashamed and health trainer are associated with academic status. So, storylines or experiences that include these (positions or rights and duties that are similar to those of these positions) can be recognized to have academic status at play. Academic status is defined as more than just comparison based on academic ability or grades (Cohen, 1994), but now includes such storylines as ordination, training, and victimization. The same can be said for such positions as headliner, commissioner, delegates, advocate or coddled with respect to peer status.

The definition of peer status (Cohen, 1994) is expanded to not only any comparison that deals with relationships but also to include storylines such as a comedy show, commission or advocacy. These interpretations are potent because of their foundation in student perspectives, and students see status at play in storylines that were not recognized prior to my research. Therefore, academic status and peer status as constructs not only describe what is happening in a group of students, but can describe a student's way of being in an experience. In short, these characterizations of status can help researchers describe a student's identity.

A related contribution of this study is that peer status and academic status are not static but are continuously shifting. That is, a student does not have a fixed, static status that is either strongly founded in academics or peer relationships. Other researchers have taken perspectives that sometimes imply that either academic status or peer status is the primary (or sole) status at play in classroom interactions (Cohen, 1994; Cohen & Lotan, 1995; Esmonde, 2009). In this thesis, I add to this existing research by showing that some kinds of status (from the students' perspectives) are the most important to how they consider their own successes in mathematics classrooms. These students' perspectives are likewise not always fixed. For example, Courtney's perspective was not solely one of academic status but also included experiences where she saw and focused on peer status.

With more refined interpretations of academic status and peer status, there are implications for mathematics education research. Because these definitions come from student perspectives, they can be used in research that uses participant-denoting discourse (Wortham, 2003) as data. Furthermore, researchers can look for positions (and associated rights and duties) similar to those I found in the mathematical life stories of my participants and continue adding to the field's understanding of what storylines, positions, and rights and duties are connected to

certain types of status (academic or peer). The expanded definitions of academic and peer status make them more recognizable. Status is no longer something that is solely articulated by a researcher observing a group of students working together (e.g., Cohen, 1994; Cohen & Lotan, 1995; Esmonde, 2009) but instead can also be used as a construct for researchers listening to stories that students (or other possible participants) tell about their experiences. This thesis, then, also contributes to the research on mathematical life stories (e.g., Drake et al., 2001) by illuminating the relationship between status and these life stories. After all, the participant perspective is what made these definitions so powerful.

There are contributions of this research that are important for the practices of mathematics teachers. Considering Courtney's results, it can be seen that students are concerned with comparisons the teacher makes and that they can feel ostracized as a result. Additionally, students might be particularly affected by the role of question asking and see their relationship with teachers as one between an apprentice and a novice. Therefore, two ways that academic status play a role in the classroom (from the students' perspectives) are through comparison to other students of mathematics and through ways that students can feel their academic status improving (in apprenticeship).

There are a few implications for teachers based on these findings. First, I learned from Courtney that students can recognize and often dislike academic comparison. Thus, there is an implication for mathematics teachers to avoid these comparisons that ostracize and limit student participation and access to mathematics. Second, Courtney felt the need to safeguard her right and duty to ask questions in mathematics classrooms. Teachers should protect that right for their students as well, creating classroom and mathematical norms and practices that contribute to an environment where asking questions is encouraged and comfortable. Third, Courtney's favorite

teacher made her feel as if she could master mathematics by giving her the tools of an apprentice. Mathematics teachers can encourage the notion that academic status is not fixed and can be improved through apprenticeship.

In this way, the analysis of Courtney's discourse contributes to understanding how status affects access to mathematical learning opportunities. Similarly, the analysis of Eleanor's discourse also develops understanding of how students see status affecting their mathematical socialization. Considering Eleanor's results, it can be seen that some students find their relationships with others (both their teachers and their peers) as critical to their enjoyment and the learning of the content. Furthermore, for some students access to mathematical learning opportunities comes only through cooperative learning and positive relationships with their teachers. Therefore, two ways that peer status play a role in the classroom (from the students' perspectives) are in the student's ability to find enjoyment in the mathematics learning and in successfully accessing mathematics learning and understanding. There are a few implications for teachers based on these findings. For example, teachers can recognize that some students need to build relationships with their teachers to feel comfortable and enjoy the mathematics classroom environment in order to feel successful. Also, teachers can use this understanding of the role of relationships by encouraging students to work together and making opportunities available for working together in the classroom in equitable ways.

Limitations

This thesis study is limited in generalizability and scope. The data resulting from the interviews is very specific to those being interviewed because it represents participant-denoting discourse (Wortham, 2003). The storylines and associated experiences did not involve the perspectives of the other actors. This limitation was, however, unavoidable because the purpose

of this study was to gain better understanding of experiences learning mathematics through the perspective of individual students. That purpose brings up another limitation, my analysis of the participants' perspective as the researcher cannot be shown to match the perspective of the participants. I could only analyze what the participants said and did in the interviews from my theoretical perspective, so it is infeasible to suggest that I could know their thoughts, beliefs or feelings about the experiences they shared. Further research could address this limitation in performing member checks during and after analysis.

My thesis study was also limited in scope and each of the following limitations can be addressed by further research. There were only two participants, both White, female and from the same geographical area. So, my findings can only reflect their perspectives and are not generalizable to all mathematics students. They were also both high school seniors for reasons discussed in the methods of this thesis. Because of this limited age range, my thesis only reflects their perspectives in a brief moment of time. Their perspectives can change during and after their collegiate years. These limitations can be overcome in further research with a larger number of more diverse students or a longitudinal study of student perspective of their mathematical life stories.

Perhaps because of the similarities of the participants in this study, in my analysis neither participant showed themes that centered on societal status (the status based in societally defined stereotypes or ideals). Using my analysis of mathematical life stories to see status, additional research with other participants might reveal the ways in which someone would focus on societal status. Then contributions could be made and understanding forged of the perspectives of students to whom societal status is of high importance.

Conclusion

Despite these limitations, this thesis study has made valuable contributions to the field of mathematics education research. The purpose of this research was to gain a better understanding of students' perspectives specifically when it comes to experiences in learning mathematics where access to that learning could be limited. To gain a better understanding of this perspective, I answered the question: What positions (and concomitant rights and duties) are associated with particular kinds of status (e.g., academic, peer)? The positions associated with types of status gave insight into the students' perspective of their experiences learning mathematics. I was able to learn from these students about status and positions and the roles these play in their mathematics socialization. However, students have more stories to tell about who they are and how they come to be in the realm of learning mathematics. Researchers and educators in the field of mathematics education have the opportunity to listen and learn from their students. Then strides can be made toward helping all students have access to learning mathematics.

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Appendix A

Interview 1 Questions

Following are the mathematical "life-story" interview questions for the three chosen participants. These questions have been adapted from the protocol in Drake et al., (2001).

To start off, I am going to ask you about three times in your past mathematical experience – a high point, a low point, and a turning point.

1. First, I am going to ask you about a high point in the story about mathematics in your life. This is a specific time when you experienced positive emotions (like joy, excitement, peace, confidence, etc.) after some mathematics experience.
Please tell me as many details as possible (what happened, who was involved, what you did and how you felt.).
What impact has this experience had on you?
What impact has this experience had on how you were able to do math after? What impact has this experience had on how you currently do math?

2. Now, I am going to ask you about a low point in the story about mathematics in your life. This is a specific time when you experienced negative emotions (sadness, anger, frustration, etc.)
Please tell me as many details as possible (what happened, who was involved, what you did and how you felt.).
What impact has this experience had on you? (follow up: Is this more of an impact than the positive experience?)

What impact has this experience had on how you were able to do math after? What impact has this experience had on how you currently do math?

3. Now, I am going to ask you about a turning point in the story about mathematics in your life. This is a point when something changed for you in your mathematical experience. This can be when your understanding or feelings toward mathematics changed.

Please tell me as many details as possible (what happened, who was involved, what you did and how you felt.).

What impact has this experience had on you?

What impact has this experience had on how you were able to do math after? What impact has this experience had on how you currently do math?

I will now ask you to describe another memory from your childhood or adolescence.

4. Are there any other memories (positive or negative) from your experiences in learning mathematics that stand out as significant?

What happened? Who was involved? What did you do?

What were you thinking or feeling?

What impact has the event had on you?

What does it say about who you were?

Why is it important?

The next two questions are about people who have been an influence to you in your mathematical experience.

5. Looking back over your experience with mathematics, please identify one or two people or groups of people that have or have had a positive influence on your mathematics experience. Please explain in detail how and why they have had a positive influence.

6. Looking back over your experience with mathematics, please identify one or two people or groups of people that have or have had a negative influence on your mathematics experience. Please explain in detail how and why they have had a negative influence.

Now, I'd like you to imagine two possible futures for yourself: one in which you are successful in mathematics and one in which you are not.

7. First, please describe a possible positive future in mathematics.
What dreams or goals would you accomplish in a positive future in mathematics?

8. Now, please describe a possible negative future in mathematics. What would be a highly undesirable future for yourself with regards to mathematics, one that you fear could happen but that you hope won't?

9. What do you think your actual future will be like in mathematics? Please describe it and give an explanation of why you think that.

10. Over the interview, you have sort of given me some ideas about what you think the answer to this question is. I am going to ask you directly though because I want to hear what you think.

When people say that someone is “good at math,” what does that mean to you?

Are you thinking of someone in particular when you answer this question?

What kinds of things do people who are “good at math” do or not do?

What kinds of things do people who are “good at math” say?

What kinds of words describe someone who is “good at math”?

11. Over the interview, you have sort of given me some ideas about what you think the answer to this question is. I am going to ask you directly though because I want to hear what you think.

When people say that someone is “bad at math,” what does that mean to you?

Are you thinking of someone in particular when you answer this question?

What kinds of things do people who are “bad at math” do or not do?

What kinds of things do people who are “bad at math” say?

What kinds of words describe someone who is “bad at math”?

Appendix B

Interview 2 Questions - Courtney

1. In your first interview you talked a lot about your favorite teacher, Ms. Stack from 9th grade. You said that you liked how direct she was in answering your questions and that she helped you gain confidence in mathematics. Specifically, you mentioned that she had given you an award that year for being her "outstanding math student" at graduation. Can you tell me a few more details about that experience? (i.e. how did you find out about it? What emotions did you feel (embarrassed, surprised, proud, happy)? How did other people react? etc.)

2. When recalling negative mathematical experiences, you talked about Mr. Leverret from last year in calculus. You said that among other things, like being boring, he also had favorites and that you didn't feel welcome in his class. You specifically mentioned that he would pick on you and your two friends. Can you tell me about a specific time that happened? (What happened? What did he do? What did you do? How did you feel? etc.)

3. In the first interview you mentioned your mom as one of your top positive influences in learning mathematics because of all her help and support. Can you tell me about a specific time that your mom helped you with a math concept? (This can be recent.)

4. The other positive influence you mentioned was your friend Stephanie because of your friendly, but unspoken academic competition with her and that she has been on the "advanced math track" with you. You also said that, as a person, she can sometimes be

"hard to handle." Can you tell me about a specific experience with Stephanie that illustrates that characteristic?

5. A negative influence you told me about was having Mrs. Noland in 8th grade geometry. You said that you were annoyed by her personality and often felt like she treated her students, including you, like babies. Can you tell me about a specific time you felt "babied" in her class? Also, how did that make you feel about learning math?

6. Several times in your first interview you stated that you like math, that you feel like you're good at it and that your experiences have reinforced that for you (i.e. getting good grades, getting into the advanced math track, getting good scores on AP tests, etc.). However, can you think of a specific time when *a person* has told you that you were "good at math?" Who was it? What was the context of that conversation? How did you react?

Interview 2 Questions - Eleanor

After our first interview, you asked if there was anything you could focus on before our second interview. These first three questions are about those items.

1. In your first interview, you said that you thought really anyone could be good at math if they tried, so it was hard for you to describe what it meant to be bad at math. I asked you to think more about that. After thinking more, do you have any more ideas about what it means to be bad at math? Have you thought of anyone that is bad at math even with trying?

2. I also asked you to pay attention to your role as the vocal one and the question asker in your current math class (pre-calculus). Can you tell me about a specific time (this can be recently) that you had this role in class? What happened? What did you say/do? How did other people react to your role as question asker? How do other students react to your vocal-ness in class?

3. Also, along with question #2, what made you the question asker in math class? Why do you believe it's important to ask questions in math? Where does that belief come from? Is there a specific time when you first started to act on that belief?

The other questions are ones that came up as I was reading and analyzing your last interview.

4. In your last interview you said that you often go up to the front of class to get things started. Do you remember the first time you did that and why? Describe in detail a time at the beginning of class, when you went up and got class started. What did other students do or say? What did the teacher do or say? How did you feel?

5. In your first interview, you talked a lot about doing study groups with your friends. You specifically mentioned Danielle, Levi, and Britney. Can you describe each of them for me? What are their personalities like? What do they contribute to your group? etc.

6. Also, I would like you to tell me about two study group times (if you have an experience for both) - One where you taught someone and one where someone else taught you.

7. Can you think of a specific time when a person has told you that you were "good at math?" If so, who was it? What was the context of that conversation? How did you react?