The Perception of At-Risk Students on Caring Student-Teacher Relationships and Its Impact on Their Productive Disposition

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The Perception of At-Risk Students on Caring Student-Teacher Relationships and its Impact on Their Productive Disposition

Brittany Hopper

A thesis submitted to the faculty of Brigham Young University in partial fulfillment of the requirements for the degree of

Master of Science

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ABSTRACT

The Perception of At-Risk Students on Caring Student-Teacher Relationships and its Impact on Their Productive Disposition

Brittany Hopper
Department of Mathematics Education, BYU
Master of Science

The importance of a positive, caring relationship with students in the classroom is under-researched in mathematics education. Research shows that a positive student-teacher relationship can have many long-term positive results for the student. Many of these results directly impact a student's productive disposition towards mathematics. At-risk students are in greater need of positive relationships and an increase in productive disposition. Using Joan Tronto's (1993) elements of care, I examine the student perspective of these kinds of relationships and how the student sees development of their own productive disposition.

Keywords: at-risk, caring, productive disposition, relationship, student-teacher relationships
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CHAPTER 1: INTRODUCTION AND OVERVIEW

In *Adding It Up* (2001), the National Research Council (NRC) introduced five strands of mathematical proficiency. They include Conceptual Understanding, Procedural Fluency, Strategic Competence, Adaptive Reasoning, and Productive Disposition (NRC, 2001). “The five strands are interwoven and interdependent in the development of proficiency in mathematics. Mathematical proficiency is not a one-dimensional trait, and it cannot be achieved by focusing on just one or two of these strands” (NRC, 2001, p. 116). This means that each strand is a necessary and vital part of every student’s mathematical proficiency.

Productive disposition is the “habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy” (NRC, 2001, p. 116). As one of the 5 strands of mathematical proficiency, productive disposition should be considered equally important to the other strands. As Kilpatrick et al. point out, if students are going to develop the other strands, “they must believe that mathematics is understandable ... and that they are capable of figuring it out” (NRC, 2001, pg. 131).

My first two years teaching were spent at an alternative public school for at-risk students. These students came from many different backgrounds and each had their own experiences with teachers and school overall. One thing many of them had in common, despite individual experiences, was their struggle in math. I found that these students were not like the classmates I had in honors classes throughout my own education. They did not do an assignment simply because they were told to do it. They needed a “why.” My students needed to feel like I was giving them something that I believed mattered and they needed to understand why it mattered.

I would often hear in my classroom that these students had previously not felt seen. They felt lost in a sea of students. Some said they did not feel like their previous math teacher cared about them. Others said they liked their teacher but did not feel their teacher had time for them.
As many teachers do, I found myself developing relationships with the students in my classroom. I worked to develop a rapport in the classroom with these students, who had struggled in school for a long time. As time went on, my relationship with many students grew to a level of trust. They knew my expectations and worked hard to reach them. If this relationship was lacking, students were often unmotivated to participate and engage in my class. Students I connected with would start to come into class and tell me how they had actually used math at work the day before, or at home with a family member. Others would begin to participate more, or have a better attitude about that day’s activity or assignment. I could see students develop a more productive disposition as time went on.

This experience suggested to me that positive relationships between teachers and students had a critical role to play in the development of students’ productive dispositions, especially for the population of at-risk students I taught. Because of this I set out to study the relationships teachers develop with at-risk students. Specifically, I examined, from the students’ perspectives, the nature of relationships developed with teachers who have been able to build positive relationships with at-risk students. My end goal was to know more about the kinds of relationships that can help students develop productive dispositions towards mathematics.

One way of capturing what I mean by a good relationship is through the concept of care. There are many ways to characterize what a caring student-teacher relationship might mean (e.g. Anthony and Walshaw, 2009; Averill, 2012; Bartell, 2011; Noddings, 2001). I have chosen a framework on ethical caring from Joan Tronto (1993) to operationalize caring relationships. Tronto suggests four elements of caring that I used to study student-teacher relationships: attentiveness, responsibility, competence, and responsiveness. Using these four elements, I analyzed the results of interviews with at-risk students to identify and characterize the kind of
relationship they see as caring in the context of their learning mathematics.

In the next chapter I review the relevant literature on at-risk students, the importance of student–teacher relationships to students’ development of productive dispositions, and caring student-teacher relationships. I also present Tronto’s (1993) framework for ethical caring and show how it relates to caring relationships between students and teachers. Finally, I state my specific research questions.
At-Risk Students

The term *at-risk* has been used in many ways. With students, it is usually used to describe students who are at-risk of failure or dropping out. Identifying risk factors is one way students are determined to be at-risk. Common risk factors include those listed in Table 1 (Bulger & Watson, 2006; Gleason & Dynarski, 2002). Importantly, students with disabilities may be identified as at-risk, but not all students with disabilities are at-risk and not all at-risk students have disabilities. It should be noted that these risk factors do not necessarily put a student at risk, but may increase the likelihood they will become at risk over time. Gleason et al. (2002) examined the strength of these factors in predicting if students will drop out and found that many students who dropped out were not identified, indicating that this list of risk factors is not exhaustive. These factors are a starting place and should not be taken as foreordination. Students who feel in control of their future or have the ability to endure difficulty are likely to be more successful in school, but this is difficult to measure (Gleason et al. 2002). In many school districts, students who are identified as at-risk (for any number of reasons) are encouraged (or directed) to attend an alternative school specifically geared towards at-risk students. I collected data from such a school and define the students in my study as at-risk as a result. By virtue of how students are chosen to attend this school, being at-risk means the students are at risk of dropping out or failing school.
### Figure 1

**Risk Factors for Determining At-risk Students**

<table>
<thead>
<tr>
<th>Demographics and family background</th>
<th>Past school performance</th>
<th>Personal/psychological characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-parent family</td>
<td>Absent 20+ times in a school year</td>
<td>Spends no time reading outside of school</td>
</tr>
<tr>
<td>Low socio-economic status</td>
<td>At least 1 year older than avg grade level</td>
<td>Feel a lack of control over their own life</td>
</tr>
<tr>
<td>English not primary language at home</td>
<td>Has previously dropped out</td>
<td>Low self-esteem</td>
</tr>
<tr>
<td>Mother is not a high school graduate</td>
<td>Poor grades (C’s or below)</td>
<td>Not confident they will graduate</td>
</tr>
<tr>
<td>Sibling has dropped out</td>
<td>Disciplinary problems at school</td>
<td>Physically challenged</td>
</tr>
<tr>
<td>Doesn’t discuss school with parents</td>
<td>Has attended five or more schools</td>
<td>Emotionally impaired</td>
</tr>
<tr>
<td>Student is a parent</td>
<td>Doesn't spend over 1 hr/week on hw</td>
<td>Weak self-concept</td>
</tr>
<tr>
<td>Has adult responsibilities</td>
<td>Has repeated a grade</td>
<td></td>
</tr>
</tbody>
</table>

### Literature on Teacher-Student Relationships

McGrath and Van Bergen’s (2015) study on the impact of negative student-teacher relationships identifies several characteristics that make students susceptible to these negative relationships. Students who are older, students with a negative temperament, students with disabilities, students with low academic performance, and students with low parental involvement (McGrath & Van Bergen, 2015) are all affected more by negative relationships. All of these factors can put a student in the at-risk category. What this study indicates is incredibly
important, as it suggests that students who are at-risk of dropping out are also at-risk of having negative relationships with their teachers. McGrath and Van Bergen claim that these students “may attend school less” (p.11). Thus it is possible that a negative relationship between student and teacher is detrimental to the student’s academic success because it contributes to the student’s risk factors (e.g. poor attendance). Decker et al. (2007) also suggest that negative student-teacher relationships contribute to negative outcomes for at-risk students. This potential downward spiral is why teachers need to strive to develop meaningful and supportive relationships with their students in order to contribute to their productive disposition and mathematical proficiency overall.

A logical conclusion from this information is that students who are at-risk are greatly in need of positive student-teacher relationships. Davis and Dupper (2004) identify the importance of “educators [developing] and [maintaining] positive relationships” with at-risk students (p.185), calling such a relationship an “overlooked factor in school dropout.” In a study on motivating students in an online course, Lehman et al. (2001) also came to this conclusion, stating that positive student-teacher interactions “may be even more important to at-risk student success” (p.15) as opposed to the success of students who are not considered at-risk. These interactions should naturally contribute to an overall positive student-teacher relationship. Findings from Muller (2001) support the idea that at-risk students are in greater need of positive student-teacher relationships as well. She concludes:

Teachers may be acting as gatekeepers of knowledge for at-risk students in a way that is associated with students’ perceptions that teachers care. For at-risk students, perceptions that teachers care may be a function of access to learning. Students may perceive teacher behavior that supports access to instruction as caring, especially if they are at risk of
dropping out of high school. (p.252)

So for students who are at-risk of dropping out, knowing that their teacher cares about them may contribute to their ability or opportunity to learn. In addition, when teachers behave in a way that students see as giving access to instruction, that behavior can be seen as an act of caring, particularly by students who are at-risk. Each of these studies emphasizes not only the importance of positive student-teacher relationships, but of positive student-teacher relationships with at-risk students who are arguably more in need.

A positive student-teacher relationship in the classroom has shown to positively impact the student in multiple ways, including socially, behaviorally, and academically. Positive social effects are listed as increased social competence and engagement as well as students better learning to get along with others, deal with conflict, and problem solve in their everyday life (Davis & Dupper, 2004; Decker et al., 2007). These have clear positive effects on the classroom. Effects on behavior include fewer office referrals, fewer suspensions, and more time spent on task (Decker et al., 2007). Academically, positive student-teacher relationships are also seen as decreasing the number of dropouts and increasing academic success for at-risk students (Davis & Dupper, 2004; Decker et al., 2007; Lehman et al., 2001). In general, McGrath and Van Berger (2015) conclude:

Experiencing a positive relationship with a teacher can protect against numerous other negative influences including maladaptive behaviour, negative life events, poor quality child–parent relationships, and referral to special education settings. It can also predict a range of behavioural and academic outcomes: not just within the school years, but perhaps also in adulthood. (p.13)

This evidence makes clear the need for positive student-teacher relationships in the classroom.
The commonly proposed solution to help create more positive student-teacher relationships is teacher training of some type. Davis and Dupper (2004) describe a program where educators work directly with social workers to better understand student needs and effective methods of connecting with students. They also discuss a program aimed at enhancing school culture with communication, a more caring environment, and better relationships peer to peer as well as student to teacher. These types of programs address the need for positive student-teacher relationships at the entire school level as a major cultural overhaul. On a smaller level, Decker et al. (2007) propose school psychologists work with teachers to communicate the necessity of positive student-teacher relationships and to help teachers find ways to better create those relationships with students. From a somewhat broader point of view, McMillan and Reed (1994) suggest that teachers be given training or seminars that help them understand how to work with at-risk students and the meaningfulness of developing positive student-teacher relationships.

Several studies ask students directly to describe the qualities of teachers they have positive relationships with. Characteristics of teachers listed by students as important include being caring and respectful of the student (both as a person and a learner), listening, being available, providing help and encouragement, getting along with and laughing with the student. These studies also list being easy to talk to and professionalism as desirable qualities as well as fairness in discipline and grading (Geary 1988; McMillan & Reed, 1993, 1994). Teachers having genuine concern for at-risk students' lives and their progress in school was also listed as a positive quality in teachers (Muller, 2001). In my study, I applied the positive qualities of a teacher identified by students to the context of the mathematics classroom and the development of students' productive dispositions.
In summary, a positive student-teacher relationship is clearly important. Students who are at-risk for failure are most likely to be in need of these relationships. The student will not respond to the example of the teacher if they do not have a positive relationship with the teacher. The student will not be motivated to rise to the teacher's expectations if they do not have a positive relationship with the teacher. The student is less likely to see the math as worthwhile if they do not have a positive relationship with the teacher. For math teachers who are actively working to increase their students’ productive dispositions, and therefore their mathematical proficiency, establishing a positive relationship can be a catalyst for change in this area.

**The Role of Teachers in Developing Productive Disposition**

Research suggests that teachers can play an important role in helping at-risk students. Chapter 9 of *Adding It Up* (NRC, 2001) discusses teacher expectations and their impact on students in the classroom. “Low expectations can lead a teacher to interact with certain students in ways that fail to support their development of mathematical proficiency” (p. 338). In the context of teaching at-risk students, this issue is common. For example, the authors specifically address that teachers tend to give less wait time to struggling students when asking a question before asking another student to answer the same question. They also state that teachers will give more attention to failures with criticism than complementing successes of low achieving students (Good & Brophy, 2000, as cited in NRC, 2001). These problems directly relate to a student’s productive disposition and the relationship they have with the teacher; however, *Adding It Up* completely overlooks the social aspect of a student’s productive disposition in connection with a positive student-teacher relationship. When discussing teacher expectations, the overall message is about “teachers’ sense of efficacy… Successful teachers not only expect their students to
succeed but also see themselves as capable of motivating and instructing students effectively” (p. 338). It is pointed out that

Less successful teachers lack confidence either in themselves as instructors (e.g., “I don’t know the mathematics well enough to teach it effectively”; “I know what I want to teach, but I don’t know how to give my students what they need to be able to learn it”) or in their students’ learning potential (e.g., “No teacher could be effective with these students because they lack ability, motivation, supportive home environments, and so on”). (p. 338, emphasis added).

This type of attitude about students with a lack of motivation is far too prevalent among educators and has a further negative impact on the education of at-risk students. Building a relationship with struggling students is one way to mitigate such a negative outlook, and to learn how such relationships can help students in these situations. The authors go on to point out that teachers with a high sense of efficacy are overall more effective in running the classroom with a positive and confident outlook. This is used to explain why teachers need to be prepared to enter the classroom confidently. Knowledge of mathematics, student thinking, teaching strategies, and “meeting students’ learning needs” (p. 339) are all cited as important for teacher success. Adding It Up brings up all the right issues but completely misses a vital part of the solution: positive student teacher relationships.

The authors (NRC, 2001) continue by discussing student motivation and acknowledging it as necessary for students to continue developing mathematical proficiency.

Students are motivated to engage in a learning task to the extent that they expect to be able to perform the task successfully if they apply themselves and the degree to which they value the task of the rewards that performing it successfully will bring. Therefore,
teachers can motivate students to strive for mathematical proficiency both by supporting their expectations for achieving success through reasonable investment of effort and by helping them appreciate the value of what they are learning. (p.339)

This quote indirectly addresses the need for teachers to help students develop a productive disposition towards mathematics. As the NRC points out, students' motivation to learn mathematics is based primarily in their interactions with teachers and in the nature of the tasks they are given. When students have confidence that they will be successful when entering into a task and value the reward engaging in the mathematics brings, they are demonstrating a productive disposition. What the above quote (and the surrounding chapter) does not do is effectively address how teachers can help students achieve this. The authors claim that by making mathematics seem relatable and worthwhile, students can become motivated to engage. They also claim that teachers can foster a motivated classroom through communicated expectations and through example. I argue that while these things may contribute to student motivation, and therefore productive disposition, a positive relationship between the teacher and the student is the foundation of all of these solutions.

As an undergraduate, I often heard questions asked by prospective teachers about classroom management. These questions were most often addressed by professors suggesting that having engaging mathematical tasks will resolve most management issues before they begin. Naturally, students who are engaged, not bored, are less likely to act out and need behavior management. However, what students see as engaging and what teachers see as engaging can be entirely different. The teacher must get to know their students in order to know what is engaging for them. In addition, even if the teacher has painstakingly designed or selected a task they think will draw the interest of the students, some students still just do not want to
participate. There are a number of reasons for this, but in my experience nothing but a power struggle will result unless the teacher gets to know the student and approaches the matter in a way that shows the student they care. This type of relationship is necessary in the classroom, and the students who need it most are those who will likely require work to develop such a relationship with.

The Role of Student-Teacher Relationships in Developing Productive Disposition

As I argued earlier, a positive relationship is necessary to help students develop a productive disposition. I have also argued that a positive relationship is one where caring is present. A caring relationship has the power to help students see what they are capable of and so increase their productive disposition towards mathematics. Anthony and Walshaw (2009) base their study on “the understanding that teachers who foster positive student outcomes do so through their beliefs in the rights of all students to have access to mathematics education in a broad sense” (p. 149). With this belief, teachers are likely to go out of their way to bring the mathematics to their students and to set students up for success. When students feel successful, they begin to feel capable and confident. Anthony and Walshaw (2009) go on to say that “additionally, we claim that effective mathematics pedagogy acknowledges that all students, irrespective of age, can develop positive mathematical identities and become powerful mathematical learners” (p.149). This supports the idea that good teaching is facilitated by believing in the ability of the student to have a productive disposition and that a productive disposition increases mathematical proficiency. If the teacher believes that all students can develop a productive disposition, they are likely to care enough to help the student do it. On caring teacher practices, Averill (2012) points out that “students can find learning mathematics challenging, and caring, trusting relationships between participants in education focused on
enhancing learning offer a sound pathway towards maximising motivation and achievement” (p.123). This statement draws a direct connection between caring teacher relationships and developing students’ productive dispositions. Averill (2012) specifically comments on the relationship being “focused on enhancing learning” (p.123). I argue that this may not always be directly tied to something related to the curriculum. Such a relationship is demonstrated in this quote on caring relationships from Anthony and Walshaw (2009):

In establishing equitable arrangements, effective teachers pay attention to the different needs that result from different home environments, different languages, and different capabilities and perspectives. The positive attitude that develops raises students’ comfort level, enlarges their knowledge base, and gives them greater confidence in their capacity to learn and make sense of mathematics. Confident in their own understandings, students will be more willing to consider new ideas presented by the teacher, to consider other students’ ideas and assess the validity of other approaches, and to persevere in the face of mathematical challenge. (p. 150)

As is pointed out, teachers must recognize the many different needs of their individual students in order to foster a positive relationship. This is caring. This caring increases productive disposition in students even when recognizing a need might mean talking about something other than mathematics because it is addressing a student need. For students at-risk, these needs may be stronger and/or more diverse on a given day, as is the need for a productive disposition toward mathematics to increase mathematical proficiency.

Anthony and Walshaw (2009) highlight 10 principles of effective pedagogy of mathematics, one of which is *An Ethic of Care*. In general, they “claim that effective mathematics pedagogy… is based on interpersonal respect and sensitivity and is responsive to
the multiplicity of cultural heritages, thinking processes, and realities found in everyday classrooms” (p. 149). This claim supports the idea that a positive relationship between teacher and student is a part of teaching mathematics effectively. In the section of their paper titled “An Ethic of Care”, they say that “the relationships that develop in the classroom become a resource for developing students’ mathematical competencies and identities” (p.150). More than the curriculum, standards, or testing, it is the teacher—the one implementing and prioritizing these things—that has the greatest impact on what the student learns. The relationship with the teacher is at the core of every student’s mathematical experiences, no matter how big or small. According to Anthony and Walshaw, the most positive effects come from a positive, caring relationship.

A caring relationship is one that engenders the positive results and impact on the student that every teacher hopes to create. By focusing on the existence or non-existence of care in a relationship, we can better understand what caring relationships look like. On caring teaching practices, Averill (2012) points out that “understanding effective teacher-student relationships will help inform ways that academic, emotional, and social aspects of teacher practice can be improved, and thereby enable the quality of, and equity in, student learning opportunities to be enhanced” (p. 106). By understanding effective relationships in the classroom, we can improve teaching practices, and thus improve the student experience. Averill (2012) brings out the cultural aspect of care and how teachers must be in tune with cultural norms and differences in their classroom and among their students. This applies to at-risk students who are often minority students, but can be considered a unique demographic of their own because of their difficulty in school. This difficulty creates a common need, a need for care to be taken in the development of their mathematical proficiency. What resonates with at-risk students is often different from what
a teacher might expect and so the ideal classroom culture will be different and the relationship between teacher and student must reflect that and honor that in order to be a positive relationship. It requires caring. Without caring, teachers will not see what students need to be truly motivated to engage in the learning process. Bartell (2011) examines “what an effective caring teacher-student relationship that supports student learning might look like” (p. 50) among low-income and minority students. She points out that a teacher’s relationship with a student will impact how capable the teacher judges the student to be, and this judgment has a direct impact on the opportunities the student is given to increase their abilities. At risk students are different from typical students. It is easy to use the label of at-risk as a reason to believe that the student is capable of less than their grade-level peers. If the relationship is not a caring one, this will largely limit students’ opportunities to grow. If the relationship is a caring one, the teacher will work to understand their at-risk students so that they can create meaningful opportunities for the students to grow in mathematical proficiency.

**Theoretical Framework: Ethical Caring**

I used the concept of care to examine relationships between teacher and students in the math classroom from the perspectives of the students. Joan Tronto’s (1993) four elements of ethical care will provide the framework for this study.

In defining care, Tronto (1993) says, “First, care implies a reaching out to something other than the self: it is neither self-reaching nor self-absorbing. Second, care implicitly suggests that it will lead to some type of action” (p.102). Care cannot be for one’s own gain. To care is to look beyond yourself and see a need in another. There must be some action taken to truly care for something or someone. A teacher can say they care about their students, but their actions are what really show this to be true. Together Tronto (1993) and Bernice Fisher (who originally
help Tronto develop the idea) describe what they call the four “ethical elements of care: attentiveness, responsibility, competence, and responsiveness” (p. 127).

Attentiveness is the idea that the carer is paying enough attention to recognize a need for care. This is the first element of ethical care because, as Tronto says, “If we are not attentive to the needs of others, then we cannot possibly address those needs” (p. 127). First must come the recognition of a need or needs, and this cannot happen if the carer is not being attentive. Tronto also points out that “attentiveness, simply recognizing the needs of those around us, is a difficult task, and indeed, a moral achievement” (p.127). For a teacher in a classroom of students, attentiveness becomes one of many things the teacher is asked to master. Referring to students who might complain about what is being asked of them, Nel Noddings (2001) said, “In caring, one must try to find what lies behind the complaint and help the student to understand better both his own attitude and that of the carer’s” (p. 100). Each student has individual needs and the class has needs as a collective whole. Attentiveness to these needs is indeed a difficult task and takes concentrated and deliberate effort. As one example, being attentive to student needs might look like noticing when a student is down or uncomfortable in the classroom.

The second element of ethical care is responsibility. A distinction is made by Tronto between responsibility and obligation. Obligation is created by mandated duty (like responsibilities in a workplace), where as responsibility to care is a decision to take up a need that is seen and do something about it even if the act of caring does not necessarily fit the job description. Responsibility is seen differently by different people. Examples include familial responsibility or assuming responsibility “because we recognize a need for caring, and there is no other way that the need will be met except by our meeting it” (p.132). To continue with the
above example, in the classroom, a teacher taking responsibility to care might look like choosing to do something about the down or uncomfortable student in their classroom rather than ignoring it to move on with the lesson or other obligations.

Competence is the third element of ethical care. Tronto points out that “intending to provide care, even accepting responsibility for it, but then failing to provide good care, means that in the end the need for care is not met” (p. 133). Competence is important to the idea of ethical care specifically because if materials or resources are not provided that would allow the need to be met, which causes the care to be inadequate, that could reflect on the competence of the organizer rather than the care-giver, e.g. boards of organizations, administration, medical boards, higher ups, etc. Thus the ethics of the care being provided comes into question. Similarly if someone incompetent is assigned, the fault could lie with the one making the assignment instead of the one who is incompetent. According to Tronto, if competence is not achieved, care cannot be fully provided. In response to noticing the uncomfortable student, a teacher may act in a number of ways to meet the needs of the student. Taking the student aside for a conversation, expressing concern, giving space for the student to communicate is one possibility. The teacher’s competence is reflected in how the teacher handles the conversation, especially if the student pushes back or expresses frustration with the teacher’s actions.

The fourth and final element of ethical care is responsiveness. Responsiveness refers to “the responsiveness of the care-receiver to the care” (p.134). This element addresses the ethic of care because if the care is not being received, it calls into question whether needs are being met, and thus whether the ends of caring acts have been met. In humanitarian work it is possible to see a lack of responsiveness to efforts of care when the care provided does not mesh with the culture of the people receiving the care, and so the care is rejected, or ineffective. Tronto states,
“Adequate responsiveness requires attentiveness, which again shows the way in which these moral elements of care are intertwined” (p.136). That is, for care to result in appropriate levels of responsiveness, attentiveness is necessary to see what type of care is truly needed and will be received. These needs may be different than what a teacher hopes a student will spend time in their classroom doing. Instead of working with their peers, a student may need a social break for the period. The teacher must be attentive to the student's response in determining how effective their act of care was and how to proceed, continuing to provide care. Returning to the teacher caring for a student in her classroom, her attentiveness to the student determines the care she gives. What she knows about the student and notices in their disposition play a part in choosing to take responsibility for the need. Her level of competence can be influenced by continued attentiveness as she communicates concern for her student. The way the student responds to the attempt to care is what determines all future attempts to care, if the teacher is attentive to how her care is received. The student may respond by opening up to the teacher about whatever issue is bothering them, and again the teacher has the opportunity to provide care in response. Or the student may not wish to communicate about the issue and may even express displeasure at being singled out in conversation by the teacher. Still, how the teacher responds is another opportunity to provide a form of care.

Clearly, care in the classroom, or in any relationship setting, is complex. Action must be taken thoughtfully and purposefully, and even followed up on. As Tronto (1993) states, Care as a practice involves more than simply good intentions. It requires a deep and thoughtful knowledge of the situation, and of all of the actors’ situations, needs and competencies. To use the care ethic requires a knowledge of the context of the care process. Those who engage in a care process must make judgements: judgements about
needs, conflicting needs, strategies for achieving ends, the responsiveness of care-receivers, and so forth. (pp.136-137)

**Tronto’s Elements of Care in the Literature on Teacher-Student Relationships**

Examples of Tronto’s (1993) elements of care are prevalent throughout the literature I have cited. I review them in this section.

*Attentiveness.* Some examples of attentiveness within a student teacher relationship include behavior such as paying attention to student needs and showing sensitivity to student differences (Anthony & Walshaw, 2009, p.150). This behavior can assist a teacher in getting to know their students better, which is in itself an example of attentiveness, however it is done. Bartell (2011) emphasizes the need to get to know students so that teachers can better engage them in the learning process and more easily relate to them. Clearly, attentiveness in a relationship is key in order to enact care (specifically if the need being addressed is to improve a student’s productive disposition). To care in this way, teachers must be attentive to what is important to the student so as to help them see the importance of mathematics in their lives. Bartell (2011) points out that “teachers that care with awareness know their students well mathematically” (p. 65). Saying that a teacher cares “with awareness” is just another way of saying that the teacher is being attentive. Teachers who know their students mathematically have more opportunity to meet the need of developing a productive disposition. As pointed out by Averill (2012), when a teacher is not attentive, students act out more:

Teacher perseverance appeared to encourage student perseverance. The collated data also indicated that the students of the teachers typically exhibiting fewer caring practices were more likely to exhibit off-task, disruptive, unresponsive, and challenging behaviour, and negative body language (such as turning away from the teacher). These
students tended to take much less care with their learning, bookwork, and homework (when it was attempted) than those of the typically more caring teachers. (p. 121)

Although this does not immediately address a student's productive disposition, a deficit of sorts exists here and it seems very likely that productive disposition can be addressed much more effectively if these negative attitudes and behaviors are also being addressed.

The scenario above demonstrates how students react when there is a lack of “receptive attention” (Noddings, 2001, p. 100) given by the teacher, which Noddings lists as a characteristic of someone who cares. Previously mentioned characteristics of positive student-teacher relationships, including being respectful and good at listening, would qualify as examples of attentiveness on the part of the teacher. Being attentive is vital to identify student needs, and after identifying student needs, the teacher then can take on responsibility.

*Responsibility.* Responsibility within a student-teacher relationship looks like commitment to address student needs (such as a students need for productive disposition) and explicitly attending to issues in the classroom (Anthony & Walshaw, 2009; Bartell, 2011). As Tronto (1993) put it, “to care implies more than simply a passing interest or fancy but instead the acceptance of some form of burden” (p.103). The acceptance of a burden highlights the element of responsibility within a caring relationship. When a teacher accepts the goal that their students develop a productive disposition towards mathematics, they are taking responsibility. Tronto also describes the act of caring as “assuming some responsibility for the identified need and determining how to respond to it” (p.106). Taking responsibility, and thus showing care, in this way can also be seen in Bartell’s (2011) description of teacher care: “A teacher’s care manifests in a willingness to reflect on her or his attitudes toward diverse students; this reflection communicates a sincere commitment that the teacher has toward students’ success” (p.60). First,
reflection requires the aforementioned element of attentiveness. Then, a commitment to the students shows the teacher taking responsibility.

**Competency.** The next necessary element of care is competency. The goal of a competent teacher is demonstrated in one of the qualities of effective mathematics teaching as given by Anthony and Walshaw (2009), which is that “effective mathematics pedagogy... is focused on optimizing a range of desirable academic outcomes” (p. 149). In order to optimize the desired outcomes, the teacher must be competent. Both Noddings (2001) and Tronto (1993) mention that competency varies, and can be complicated. “A caring teacher is someone who has demonstrated that she can establish, more or less regularly, relationships of care in a wide variety of situations. This approach reminds us, too, that a teacher who fails in one situation may succeed in another and vice versa” (Noddings, 2001, pp. 100-101). In the case of this study, the teacher also ought to be able to maintain a positive relationship with a variety of students. Sometimes, humans misjudge things, and the teacher will not get it right every time. “Perceptions of needs can be wrong. Even if the perception of a need is correct, how the care-givers choose to meet the need can cause new problems” (Tronto, 1993, p.108). This chance of failure increases the need for acute attentiveness within the relationship to increase the opportunity of competency.

**Responsiveness.** In the end, the only way for care to be complete and confirmed is through the element of responsiveness. In a student teacher relationship, the responsiveness comes from the student. In describing what it looks like when a teacher cares for her students, Noddings (2001) makes a strong case for the importance of how acts of caring are perceived by the student. Noddings defines the cared-for by saying, “The cared-for contributes by acknowledging the care, sometimes directly, sometimes in seemingly spontaneous growth that can be easily traced (whether voiced or not) to the efforts of the carer” (p.100). Here we see that
the cared-for (in this case, the student) contributes to the care by accepting it in some way. This is responsiveness. The idea of caring is a complex one and we cannot simply make a list of what actions equal caring and what actions do not (Noddings, 2001). Some things may be considered an act of care by one student and something completely disrespectful or pointless by another. This is why the students’ perceptions of the relationship are so important. “It is important to include care receiving as an element of the caring process because it provides the only way to know that caring needs have actually been met” (Tronto, 1993, p.108). Noddings further supports the importance of the student perspective when she says that

the cared-for’s rejection of a claim does not by itself invalidate a claim to care; time may change rejection to acceptance. But rejection of a claim raises a question, and that is the important point here. Any relation in which one person claims to care and the recipient of that care denies the claim is one that demands close scrutiny (p.101).

Without an eventual acceptance of the care from the student, the relationship cannot truly be labeled as a caring one. Again, “the reaction of the cared-for is essential in establishing a relation as one of caring” (Noddings, 2001, p.101). Thus attending to responsiveness is necessary to get a full understanding of caring in teacher-student relationships.

Anthony and Walshaw (2009) identify what responsiveness in a student might look like to a caring relationship with their teacher. These things are a positive attitude which raises the student’s comfort level, as well as a greater willingness to demonstrate an open mind in relation to new concepts and other student methods, and to persevere in difficult mathematical instances. These responses indicate an increase in student productive disposition. It is important to note that while this is a desired outcome, the needs addressed do not have to be directly mathematical, or even academic in nature. Instead, it is the overall act of caring which
often has the natural consequence of increasing a student's positive disposition towards the subject matter in the classroom (in this case, mathematics).

We also must acknowledge that humans in general are complicated and can be finicky. It can be argued that students do not always know or want what is best for them. A caring teacher would want what is best for their students, and attempts to provide this type of care might easily be rejected. An example of this might look like a student asking for yet another extension on an assignment or project they do not plan to do. It may look like a student asking to leave class before an important discussion or assessment. It could look like a student asking to watch a movie or play a game instead of participating in the planned class activity. Denial of these requests are less likely to be received as an act of caring, but this should not invalidate the teacher’s good intentions or stop such actions from being called caring.

Addressing such situations Noddings (2001) says,

Even when we have to say no, we have the responsibility to convey our continued concern to the cared-for. Conscientious parents and teachers know that it often takes prolonged conversation to convey care convincingly when proposed projects of young people must be re-evaluated or rejected. When the cared-for recognizes our care, the caring is complete. (p. 100)

Tronto’s (1993) elements of care confirm this idea that if the care is not received, then the care is not adequate; for this reason, responsiveness is Tronto’s fourth element. This both validates the efforts of the carer while also maintaining the importance of the student perspective. It may take some convincing on the part of the teacher that the reason they have denied a request is truly because they care. The student still must eventually acknowledge that it is an act of care for the care to be complete. At-risk students, especially in adolescence, are more likely to
participate in these kinds of power struggles and hesitate to accept the care. What is important, is that the student acknowledges that care is being given, which is responsiveness. This is vital to the caring relationship and resulting benefits.

Kilpatrick et al. (NRC, 2001) claim that “the teacher of mathematics plays a critical role in encouraging students to maintain positive attitudes toward mathematics” (pg. 131). I argue that a crucial part of this is teachers establishing a positive relationship with their students. The acknowledgement of the necessity of such a relationship is vital to enact change in the classroom experience of at-risk students. The question I examined in this study is as follows: From the perspective of at-risk students, what does a caring relationship with a mathematics teacher look like?
CHAPTER 3: POSITIONALITY STATEMENT

I grew up without much understanding of at-risk students. I was a straight A student who took advanced and AP courses whenever they were available, starting with a gifted program in 3rd grade. I knew there were students at my school who did not take the same classes as I did but I did not think about it or associate with those students very much. I grew up in the north west valley of Phoenix, Arizona, in a conservative household. My high school was rather diverse, but most of my classes were less representative of that. I was raised in and still am a member of The Church of Jesus Christ of Latter-day Saints and this was a minority identity in my community that I clung to.

In my junior year of high school, my family moved to Highland, Utah. The high school I attended there was predominantly white and also predominantly LDS. This was a major change from what I was used to and I found myself missing the racial, religious, and cultural diversity of people I grew up with more than finding comfort in making friends with similar beliefs. It was the first time in my life that I found myself advocating for diversity and sharing with people how that diversity helped my convictions in my faith. One of the ways I did this was to tell the people I knew about the great things Arizona had to offer that I felt Utah was missing. I shared how much I love the Mexican food in Arizona and how many places you can find delicious and authentic Mexican dishes. I talked about how my closest friends in Arizona were not LDS but that did not change how much I loved and admired them. I had a hard time accepting the common mentality that Utah was the best place to live purely because the people there were predominantly LDS. I did then, and do still now love my church and religion. However, when I heard people speak this way, I felt like they were talking down about other people and places, such as my home state and the friends (and family) there that I loved and missed dearly. The high school dating culture was also vastly different at my new school in Utah compared to my
previous school in Arizona. The girls I knew in Utah would giggle and squirm at the show of any public displays of affection. I found myself rolling my eyes at this attitude and would take it upon myself to explain to them that holding hands was not as scandalous as they thought it was.

One day on the bus home from school, a kid was looking out the window and saw a black student outside. They shouted, “Wow! A black kid!” I felt so mortified for that person and for all the other kids on the bus who immediately rushed to the window to see this black person. I saw black people every day in Arizona and so it was not shocking or novel to me. It felt concerning that so many other students reacted the way they did. I shared this anecdote with my parents, and with other friends occasionally, as a way to illustrate that I did not think Utah was as great as people wanted me to think it was. These ideas of advocacy took a backseat to other focuses in my life during my undergrad years, of which the majority was spent at a predominantly white and LDS school.

After graduating with my Bachelor’s in Mathematics Education, my first job was at an alternative school in the district I did my student teaching in. I did not know anything about the school when I applied for the position. Before I interviewed, I did some research about the school and talked with my dad about what “alternative” meant. He prepared me to pay attention in the interview and ask about the school environment. The principal was very honest with me about the differences at his school, but emphasized the efforts that administration and teachers made to create a family environment and build strong relationships with the students. Ultimately it was the only job offer I got, so I took it. I was looking forward to the autonomy it would allow for in my teaching methods. My student teaching mentor told me that I would do great with “those kids” and the job would be challenging but rewarding.

I had that job lined up for the fall, but nothing really going on in the summer between
graduation and starting my career. I decided to go to Uganda with a humanitarian group. This was my first time out of the United States. I saw completely different cultures than I had ever considered to exist and I fell in love with it all. I loved how simple a life Ugandans lived and how much joy they found in it. I remember riding with a friend on a motorcycle taxi from a village to our home in the small town of M’bale. We were on a hillside and I looked out over a valley of thick, deep green trees. We rode down a dirt road the color of dark copper. As we drove, my friend and I reflected on how surreal it was to literally be on the other side of the world from our homes and families. I told her that I always knew everyone in the world was a Child of God, but the idea of just how many people that was had never been something I really considered. I had no concept of just how many people there were or how different people were from myself and my family. That moment was so eye opening for me in such a beautiful way.

Not only did I learn about Ugandan life and culture while I was abroad, but I learned about the lives of the people I lived with. There was a group of about 15 of us living together in a house and working on projects together. We were strangers up until meeting in the Ugandan airport and traveling the 6 hours to the house we would call home for the next 6-12 weeks. In an email to my dad after being in Africa for 2 weeks, I said, “Lots of liberals like to go abroad.” This was my first time ever living with and regularly talking with people who had vastly different political and religious views than myself. The biggest difference between this situation and the diversity I grew up with was that now we were all adults and had more time to have developed our opinions on policies and society. In high school, we were not even old enough to vote. If my friends had any idea what they were talking about, I did not notice because I had no idea what to think about politics except for what my parents talked about with each other that I overheard. So in our home in Uganda, we had a lot of conversations that were very eye opening.
for me. I came to understand how other people, who I also saw as reasonable people, saw the world. My perception of things began to shift as I accounted for these different lifestyles, cultures, preferences, and opinions that I was coming to understand for the first time.

When I returned from my summer in Uganda, I began my teaching job at the alternative school soon after. My first impression of the school was that many of the adults I encountered did not seem to have a high opinion of the students’ capabilities. This was discouraging to me. I somewhat confided in my mentor when asking her if I was supposed to teach the grade level curriculum or not because other people I had encountered told me my students would not be able to complete the grade level curriculum. Her response was to teach the proper curriculum, but be patient and aware of what my students needed to be successful. I am so thankful for her advice. I quickly fell in love with my very difficult job at the alternative school. The majority of my colleagues were supportive and encouraging. Something about the way I approached my classroom and students seemed to work. I was shocked and touched by the comments in class that students would casually make about the difficulty of their lives. This was once again a world I had never seen. I thought everyone in Utah had “pretty” lives. This school was much more diverse than many Utah schools, which reminded me of where I grew up. But these students were not the classmates I had. These students generally did not have supportive parents or parents who had time to sit and do homework with them. A few moments from early on stick out to me as impactful:

I had a student we will call Jameson. Jameson had a lot to say. He was high energy and high volume. I had a soft spot for him immediately despite that he was quite exhausting and it seemed he would do whatever he could to derail the lesson every day. As a result of his efforts, I spent a lot of time engaging with him. Always wanting to avoid a power struggle, I generally
tried to meet him with a positive response and worked to engage him in the lesson by first engaging in his topic. I wrote down in a social media post at the end of the semester how Jameson told me I should get a proctor parent license so he could come live with me. His conditions were that he be able to eat whenever he wanted and drink as much milk as he wanted. I wrote “I am thankful I get to be his teacher and have some kind of influence on him every day.”

My first truly heartbreaking moment was when a student turned in a paper with lyrics written on the back about suicide. I went to my mentor teacher and she walked me through proper steps to address the situation. The student and I had many conversations after that and most of them were not about math. During the course of the school year I saw her come out of her shell and blossom in so many ways.

I quickly became passionate about these students and their lives. I wanted to do more than teach them math. I did not get along with every student that came into my classroom, but I tried my best and made myself available as much as possible. My next year teaching I had a student that seemed to click with me, but not with many other teachers. Let’s call him Jesse. It was difficult to get him to focus and I would not describe him as a rule follower. He was very smart and capable, but he also had a lot of adult responsibilities. One day Jesse was in trouble with another teacher and I was in my classroom during my prep period. He came into my classroom and confided in me what was going on and how the teacher had sent him out of her classroom. I walked him downstairs to the administration where he was supposed to be, talking with him about the situation and what could have gone better. Jesse came to me after school regularly to get help with his work and to catch up on his packets to get enough credits to graduate. His graduation status was commonly discussed among the teachers as deadlines drew closer. He was given several packets to complete in order to get him graduated “on time.” When
he graduated I shook his hand and told him I was proud of him, not knowing what choices he would make later that year.

A few months into the beginning of the next school year, I heard from some other teachers that Jesse had been arrested for multiple felonies. I was heartbroken. I had known about many things going on in his personal life that made it hard for him to see the value in school. I knew he did not have strong role models at home. I had tried to be a strong role model for him. I think I was one. But I think the time was too short. I think he was pushed through school too fast just to say he was “on time.” I do not have any guarantee that it would change much, but I could not help but feel that, if he had been required to come back to school the next year, maybe he would not have gotten into such trouble. That was a devastating reality for me to confront and it really had me examining my influence and what I wanted for my students.

These experiences opened my eyes to the vast differences in lives all around me. It opened my eyes to the ability I had to help, even just one person at a time. I recognized that my relationship with my students was key if I wanted to be a positive influence for them.

As I mentioned previously, my first teaching job was at an alternative high school. It was in fact, this same school where the students in this study attended. I told them this information in order to ally with them in the interview and classroom settings. I believe I did connect with these students differently as a result, in part, because of the family atmosphere the school strives to create. I felt as though the demeanor of the students in the classroom changed when they learned I had taught at their school. Knowing that I had taught students who were in similar life situations as they were seemed to help them feel more comfortable around me and be more accepting of my presence. I also did my best to come off as trustworthy and non judgemental throughout the process. I emphasized the fact that I wanted them to be completely honest with
me and give me the truth, and that nothing would get back to the teachers. I worked to avoid stepping into any role that would seem corrective or evaluative in order to help them feel safe around me.

Because I have worked closely with at-risk students, I have an informed perspective on who most at-risk students are in general. Before working at the alternative school, I had a vague idea of what it might be like. But after working there for two years I had an understanding of what matters to these students. I know better their motivations and their general interests as well as things that feel irrelevant to them. For example, most students at this school are not motivated to graduate by the prospect of going to college. Many high school teachers might push the need to get to college as the “why” for their subject or the “why” for completing high school. At this alternative school, there are very few students to which that applies—they are very capable, but it is not what they want. It is not part of their goals for the future.

I have seen patterns of how they talk about themselves in both positive and negative ways. I have seen what kinds of responsibilities and difficulties they are dealing with at home. I have a more clear understanding of why school is harder for these students than a teacher outside of this community would. I am not naive to the things these students talk about and it would be hard for them to shock me with stories (unlike my first semester teaching at-risk students when I had no idea what it was going to be like and was regularly shocked). At-risk students tend to push the boundaries in most if not all aspects of what a mainstream teacher would accept in the classroom. I have had practice going along for the ride and hearing them out as well as seeing where a topic of conversation is going in case, as the teacher, I had to shut down inappropriate conversations. Having previously spent time with and formed meaningful relationships with at-risk students, helped me to be able to understand the things these at-risk students brought up in
the interviews with more context.

For example, one student mentioned the possibility of having a difficult home life. For an at-risk student, this is incredibly common. Contrasted with mainstream students where an admission of this sort would feel monumental and possibly be rare, this type of conversation is something at-risk students mention in passing and as an explanation every week (if not every day) of the school year. Because of my experience in hearing this kind of conversation, I feel I was able to take the information in stride and use it to see just how valuable the caring relationship between student and teacher is. At risk students often do not feel they have a caring relationship with the adults in their home. So to have one with a teacher at school is arguably much more valuable to them than it might be to a student who is not at-risk. This information allows me to give credit to the importance of the relationship while interpreting the data, and to see better from the perspective of the student what really matters to them and why.

This similarly applies to the student who mentioned how her teacher advocated for her. Again, it is possible she does not feel like the adults in her home life would be able to or would choose to advocate for her in such a meaningful way. The extra weight that this gives such an action from the teacher is vital. My understanding of this possible reality allows me to interpret the data in a way that can make such an importance clear.
CHAPTER 4: METHODS

My study was conducted in a mathematics classroom at an alternative school in a suburban western community. I chose the classroom based on availability and responsiveness of the teacher. Because I knew the SpEd teacher (Hannah) who co-taught with Jessica\(^1\), she responded to my email request to observe and helped me to communicate and plan a time to observe. I am using first names for the teachers because students also address teachers and administration by their first names at this school. The school strives to create a family environment on campus and feels that using first names helps contribute to the desired atmosphere. Jessica taught 4 class periods, 3 of which were co-taught with Hannah. Jessica did the content teaching regularly, while Hannah sat with specific students throughout the lesson to keep them on task, or moved about the room checking on students as they worked. I was told that for one class in particular, Hannah would sometimes take half of the students to her room to work while the other half stayed in Jessica’s room.

In observing Hannah’s and Jessica’s classroom, it was obvious to me through many interactions and conversations that there was an atmosphere of caring between teachers and students in the classroom. For example, the day I observed was picture day and when students returned to class after having their picture taken, the teacher would ask them if they smiled for their picture and welcomed them back to class. Other times there would be joking back and forth between Jessica or Hannah and students. Sometimes the teacher would joke with a student about staying awake or the student would give the teacher a hard time about something she said. As is to be expected, not every student in the classroom was in the best mood but even students who had their heads down or resisted doing the work responded when directly addressed and showed

\(^1\) Hannah and Jessica are pseudonyms for the teachers’ first names
the teacher respect or showed some renewed effort after the teacher talked with them. In the room was a bulletin board that was filled with sketches signed by various students. The back whiteboard had doodles drawn on it by students and jokes added by Hannah.

After observing to determine that care was visible in the classroom, I gave the students in each class period a survey. (see Appendix A) The survey consisted of ten questions. The first was a free response question and asked students to identify what their teacher does to show she cares about them as a math student. The rest of the questions asked for responses on a Likert-type scale. Two questions each were meant to target attentiveness, responsibility, and competency while the last three were meant to target responsiveness. In using the surveys to choose students to interview, I looked at surveys with a variety of ratings in these questions. I also picked half males and half females, and I had to account for which students gave me their contact information, indicating they were willing to be interviewed. I also chose students from different class periods. I attempted to get in contact with 6 students to interview, but on the day of the group interview I was only able to meet with four of them. The ones who did not show had originally agreed on the planned time and place but never showed up or explained to me why they decided not to participate. This resulted in 2 of the 4 students being in the same class period. The first interview was a group interview with all four students. Then I met once with each student during their lunch period on subsequent days to interview them individually. The interviews took place over a number of weeks when both the student and I were available. All interviews were audio recorded.

After each interview, I transcribed the recorded interview, and then coded the transcripts to identify where Tronto’s (1993) elements of care appeared in the students’ responses. I analyzed the data sentence by sentence while taking into account surrounding sentences for
appropriate context. Using a spreadsheet program, I made a table with a column for each element of care as well as for noteworthy comments that did not seem to easily identify with an element of care. Quotes in all columns were shaded if they related to the student’s productive disposition.

Each time a student mentioned that their teacher notices when they have a need, the comment was coded as *attentiveness*. Comments such as the following were coded as attentiveness:

"She comes up, always asks if we need help, always is walking around and offering help to people even if they don’t need it."

"She’s always aware of how most of the kids in class are feeling… she sort of knows with her spidey sense, I guess."

"She can tell if you're not understanding. And like not only that but she can tell if you’re having a rough day too."

These comments are all examples given by the students that their teacher is attentive to their needs in the classroom. Phrases like “she can tell” and “she’s always aware” indicate that the teacher is paying attention to the student needs. The picture painted by the first quote that Jessica is ever present for her students when they need her and is always checking up on them also indicates a level of attentiveness because the teacher is looking for a need to fill.

Comments were coded as indicating *responsibility* when students mentioned specific actions taken by their teacher to address their needs. This shows the teacher committing to do something to address what she notices going on with the students. The following comments were coded as showing responsibility:

"She’ll always come up and ask me, you know- hey are you doin' alright? Do you need help with anything?"
"Jessica knew that I was having a rough day and so instead of like getting on my ass about work she just left me alone because she knew that like I wasn’t having the best day. She just like gives you your space when she knows that you need it. Like she can tell."

"[She] lets us get up [when we are tired]"

Each of these quotes mentions a specific action taken by Jessica, showing her efforts to take responsibility for a need. Asking a student how they are doing is choosing to address their needs and therefore taking responsibility. In a different context, backing off from the student and giving them the space needed is also consciously taking responsibility for their needs in that given time. Similarly, letting the class take a moment to get up and stretch is a specific action taken to address a need. These specific actions demonstrate Jessica taking responsibility for a need.

Competency is more subjective than responsibility and judged with responsiveness from the students. Whenever the students were complementing or evaluating the teacher in how she teaches or helps them learn, the example was coded as competency. Here, I see teaching and helping them learn as including creating an emotional supportive atmosphere. For example, these comments were coded as competency:

"Jessica always makes everything exciting."

"When Jessica knows that a student’s upset she’ll do anything to help."

“And it wows me how much patience she has. Like [students at this school] can be a lot. And like- [students at this school] don’t like to follow certain rules and stuff but Jessica is so patient! She’s so patient. And there’s only those blue moon times where like she gets frustrated but it’s not even frustration. She just sits there until you calm down. She’s very patient.”
These kinds of comments did not necessarily name a specific action Jessica took to help her students, but instead seemed more like an evaluation of what Jessica did, which is why they were coded as showing competency.

Coding responsiveness was difficult at first. Because I am examining the student perspective on this relationship and what is seen as caring, all of the data is responsiveness to some degree. I decided that any time a student specifically said that Jessica cares, it was coded as responsiveness. I chose this because with these statements it did not feel as much like they were passing judgment on a mentioned action from Jessica, which suggests she was competent; they were simply stating the fact that she does care. This indication read as responsiveness to me since responsiveness is the majorly determining element when deciding if an action is caring. For example, when one student said, “She puts so much time into everything for them and she always makes sure that grades are in and everything, like she’s very caring to the students.” Here the student is identifying the teacher’s actions as caring. This was coded as competency because it sounded more like an evaluation. When the same student said, “She definitely cares for all of her students, you can tell she does,” this was a statement of fact. Judgment was passed by the student and she responded with the knowledge that Jessica cares about her students.

The other way that responsiveness was coded was when students identified what they chose to do as a result of their relationship with their teacher. An example of this kind of comment is when one student said, "Because if me and Jessica weren’t as close, like I wouldn’t go out of my way to ask her to help me. But since I do know Jessica I don’t feel uncomfortable being like “Jessica! Get your butt over here!”" In this quote, the student says she feels comfortable asking the teacher for help because of the close relationship between teacher and
student. This demonstrates responsiveness from the student because she is responding to the care her teacher shows her.

When looking for comments that indicated that the student’s productive disposition was impacted, I looked specifically at the responses to questions I asked purposefully to inquire about their productive disposition, and I looked for when students mentioned their motivation or attitude towards the mathematics. The questions asked about productive disposition were as follows:

- “Does your relationship make you want to learn mathematics?” (group interview)
- “Does your relationship make it easier to learn mathematics? How so?” (group interview)
- “Does this relationship change what you would say or do in the classroom? How?” (individual interview)
- “Does your relationship motivate you to participate in class?” (individual interview)

When students answered “yes” to these questions, their responses and explanations were marked to indicate that the teacher care influenced student productive disposition. Students sometimes made spontaneous comments about their motivation in or enjoyment of the class; these comments were also marked as relating to the student’s productive disposition.
CHAPTER 5: RESULTS AND DISCUSSION

Results

The first question in the survey given to students read, “Describe something your teacher does that shows she cares about you as a math student.” The responses to this question mostly demonstrated the teacher taking responsibility for student needs. Out of the 64 students who answered this survey question, 58 of them gave answers that were coded as responsibility. This indicates that nearly all of the students mentioned some sort of action their teacher takes that indicates to them that their teacher cares. This sort of response makes sense, given that the question was phrased with “something your teacher does.” Almost half of those 58 responses use the word “help” to describe what their teacher does to show she cares. All of these references to “help” seem to refer to the teacher helping students complete or understand what they are working on in class. Other responses were very specific about how they see that their teacher cares, addressing their emotional needs in the classroom or mentioning non-academic ways they feel care from their teacher. The following are a sample of some of those specific responses:

- “Yesterday I was telling her how I feel embarrassed about doing math in front of other people because I feel stupid. She understood but she said that I'm smarter than I think. She also explains the math very well to the point that I actually understand and that doesn't usually happen for me. She's the best and I'm lucky I got her class instead of stupid [other teacher]. She doesn't get mad or irritated at me when I don't understand the math problems.”
- “They try to accommodate my needs because I'm kind of slow with math. When I have a hard time understanding they'll dumb it down for me. When I can’t focus they'll try and eliminate the problem or something else for me to focus on. They also have a good sense of humor. I can make jokes without them getting upset.”
● “They wake me up to do my work :) But also they always come walk by and check to see if we need help one on one”

● “She helps us when we ask for help. She also helps us by giving us breaks when we struggle. She also gives us candy. She also lets us play black jack (no gambling)”

● “Jessica explains things in a way that's gentle. I feel like as a student she wants me to do well. I often ask her questions and she's always happy to answer them. One thing Jessica does is she never makes me feel stupid. She understands that not everyone likes or enjoys math. Seeing both my teachers passionate about what they teach helps me to want to do well.”

● “She teaches in a way that is easy to understand and is very helpful. She isn't super controlling about how we do the problems as long as they're correct & use a correct formula”

● “She takes the time to hear your problems and thinks of a way to help you. They do their best to understand what's happening and how they can make the classroom a place to feel safe”

● “Nothing (No offense) Well, She gives us Jolly Ranchers once in a blue moon but besides that nothing & Jessica helps me with my work”

It is clear from these responses that students value help from their teacher, as well as emotional support and encouragement. These students feel cared for when their teacher takes responsibility for their needs and works with them to give help in the way that they need. These students also appreciate humor and fun, as indicated by the comments about joking and playing games.
Data from Interviews

In the group interview and the individual interviews, there were 15 instances where students identified behavior from their teacher that showed she was attentive to her students’ needs. The element of care that came out the most in the interviews was responsibility. There were 24 instances coded as examples of responsibility to show care and fill a student need. There were 16 instances from the interviews coded as competency, and 10 student comments that showed responsiveness to caring from the teacher. Of the four students interviewed, all four of them talked about how their teacher cared in terms of attentiveness and responsibility and three out of the four students also commented on their teacher’s competency and responsiveness. The same student who did not have any statements coded for competency and responsiveness was quieter and had a shorter interview overall compared to the other three students. There were 15 comments in the interviews that were marked as relating to the students’ productive dispositions. Comments that clued me in to a student’s productive disposition fell under the codes for responsibility (1), competency (4), responsiveness (6), and other (4). The frequency of the appearance of each element of care, shows that these students feel cared for by their teacher. Responsibility being the most frequently coded element of care indicates that the students see a lot of action from their teacher that indicates she cares about them. I discuss the significance of at-risk students seeing and acknowledging care from their teacher in later sections.

Attentiveness. Attentiveness was coded when a student statement indicated that the teacher noticed when the student had a need. Usually they said something like, “she sees I need help” or “she can tell the class is having a hard time.” Students gave these examples when asked how they developed a positive relationship with their teacher and how they know their teacher cares about them. They also responded this way when giving examples of how their math teacher
is a good teacher and how their relationship with their teacher has made it easier for them to
learn mathematics. Students identifying how their teacher is attentive to their needs as a sign that
she cares and is a good teacher shows that these students value attentiveness in their teacher and
see this kind of attentiveness as caring.

From students’ comments, three aspects of teacher attentiveness stood out. The first
focused on students’ individual mental struggles with academic tasks. Students noted that
Jessica was not only willing to help them if asked, but that she was proactive in noticing their
struggle. Significantly, several students pointed to their teacher offering help “even when they
don’t need it.” As one student put it, “She’s always there when I need help. Even when I don’t
ask.” There was almost a “sixth sense” to the teachers’ actions implied in some comments, such
as, “Yeah, most of the time if I need help I’ll just look at her and she’ll just look at me” [and
know I need help], or, “You’re just sittin’ there you don’t know they’re coming” [to help].

A second important aspect of teacher attentiveness was expressed by one student who
said, “She can tell if you’re not understanding. And like not only that but she can tell if you’re
having a rough day too” (emphasis added). This aspect goes beyond a focus on struggle with
tasks to include students’ emotional states affecting their academic work. It is interesting that
students described the teacher as having a “sixth sense” for this aspect as well. One student put
it this way: “She’s always aware of how most of the kids in class are feeling,” and continued to
say, “She sort of knows with her Spidey sense, I guess.” This also occurred in cases where
ADHD or similar challenges were causing fatigue or frustration. One student said, “She knows
that I get very distracted and sometimes I don’t have those days where I wanna learn…. She
knew that like I have ADHD and stuff, and so like I don’t focus and stuff.”

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The third aspect of teacher attentiveness that emerged from interview data was an ability to notice not just individual academic or emotional struggles, but the general atmosphere among her students: “She just notices when we’re like tired and bored of everything.” This is often cued by disengagement or negative behaviors on the part of the students: “Whenever she sees me not working” [she comes over to me]. Another student mentioned that “If they notice that you’re doing something wrong or you are acting like you don’t know quite what you’re doing but you’re still doing them” [the teacher will help you].

Taken together, it is clear that for these students, having the teacher be aware of their needs, particularly in such a proactive manner, was very meaningful. For these students, having someone available to help and trying to anticipate their needs is a major sign that they are cared about. It is important to the students that their teachers know what their needs are, perhaps because knowing their needs are being seen means they themselves are being seen. I discuss this further in the implications section.

*Responsibility.* Responsibility was coded when specific action was taken by the teacher to address a student need. Two of the emergent aspects of responsibility arising from the interviews followed in part from those of attentiveness: following through to provide help to students when they struggled with tasks, and providing individual or whole-class relief from emotional struggle or just fatigue or boredom. Two other emergent aspects of responsibility were slowing the pace of the class in order to meet the needs of the students, and advocating for students’ success.

Most of the instances where the teacher took responsibility were when students said she would always help them with their work. This alternative school specifically for at-risk students has much smaller class sizes than a typical public school. This environment helps give more time for the teacher to work one on one with all the students in the classroom. It is obvious that
Jessica takes advantage of that time to work with students individually and more importantly, it is clear that these students appreciate her taking that responsibility. The teacher was proactive in offering help. As one student noted, “She’ll always come up and ask me, you know- Hey are you doin’ alright? Do you need help with anything?” Another student mentioned, “She sits down and helps you, which shows that she cares about your grade and your homelife, because who knows like if you have bad stuff going on at home because bad grades, ya know?”

Students also mentioned that the teacher followed up when she noticed students needed special attention or just a break from the usual classroom routine. Her actions ranged from giving students freedom to take a physical break (“she lets us get up and move around”; “she’ll let us go for a walk or she’ll let us go get water or something”) to adapting to special circumstances. For example, one student noted that “instead of trying to push me to keep working, um, she understood that I had a horrible headache and she let me lay down for the day.” Another related that “[she] knew that I was having a rough day, and so instead of like getting on my ass about work, she just left me alone because she knew that like I wasn’t having the best day. She just like gives you your space when she knows that you need it. Like she can tell.” All four students expressed appreciation for these kinds of actions by the teacher.

A third aspect of responsibility that emerged from the interviews was the teacher’s “slowing down” the course work to help make sure everyone understood. This was also mentioned by all four students. One said, “Teachers want us to get our assignments done. But when it comes to Jessica, she wants us to like learn, if anything. Like the assignment obviously will get done in time, but it’s more of like the learning. Like she goes so slow just to make sure everyone’s caught up and makes sure everyone is on the same page.” One student described how the teacher would “like only do a certain amount of the notes and then do a certain amount of the
thing, and she’ll call that it, and she’ll let you relax like– she’ll let you have your time.” One student mentioned the teacher modifying exams to have fewer questions, which I believe was an effort to make the tests less intimidating for the students.

Finally, one student described how the teacher went beyond just the concerns of her classroom to advocate for a student who was going to be removed from her class for having too many absences: [she] “told them like basically how I’ve been doing good and how it’s not fair towards me if I’m gonna lose my schedule when I have all A’s and stuff, and she stuck up for me and….Yeah.”

**Competency.** In general, student comments were coded as giving evidence of teachers’ competence if they were complementary of teachers’ actions that showed caring behavior. Such compliments were evidence that the teacher was seen as being “good at” caring for her students. One aspect of Jessica’s behavior that elicited praise from the students was a positive, kind, and patient attitude. One student mentioned “her kindness and how she words things…she’s always got a good attitude about everything.” Another said, “It wows me how much patience she has. Like students [at this school] can be a lot. And like, students [at this school] don’t like to follow certain rules and stuff, but Jessica is so patient! She’s so patient. And there’s only those blue moon times where like she gets frustrated, but it’s not even frustration. She just sits there until you calm down. She’s very patient.” A student summed up this aspect well by noting, “It shows that they care, and they like come up to you in a positive way.”

A second aspect of the teacher’s competence arising from the interview data was her ability to motivate students to get their work done. This ability is particularly relevant to the population of students at this school. At times this was done using rewards. As one student pointed out, “Like she always motivates us in some way to get our shit done. Or like, if we finish
it, she lets us have games and stuff.” The students seem to see this more as a matter of mutual respect than of bribery, however. One student put it this way: “When you get your stuff done in her classroom and like, she rewards you for the goodness that you give back to her, if that makes sense.” The students appreciate her understanding that motivation is a particular issue for them, and her efforts to help them with that issue.

A third aspect of Jessica’s competence is the ease students have in talking with her. One student noted, “It’s really easy with her. You want to ask Jessica. Like even if you do understand, you want to ask Jessica!” Sometimes this manifested itself by her allowing students some interpersonal leeway for joking. One student described it this way: “I can sit there and like mess with her as I’m talking with her about stuff and she thinks it's funny.”

Finally, students recognized that Jessica put time and effort into helping them. One noted, “She puts so much time into everything for them and she always makes sure that grades are in and everything like she’s very caring to the students.” Another mentioned that the teachers “want me to come in during flex if my grade’s deficient, they want me to come in. They want to help me in any way that they can.” Flex is a short period once a week where students who have suffering grades report to the teacher and get help or do makeup work to increase their grade. Students who do not have deficient grades are rewarded with an extended off campus lunch period. It is common for students to skip Flex or try to get out of it in order to enjoy a long lunch off campus instead of doing school work. For an at-risk student to acknowledge that his teachers asking him to come in during this time to improve his grade shows that they care about him is significant.

**Responsiveness.** Student responses were coded as providing evidence of responsiveness if they showed student actions or beliefs that resulted from the teacher’s caring behaviors. Three of
the four students did provide such evidence. One student spoke of her comfort in both asking for help and participating in class because of Jessica’s efforts: “Because if me and Jessica weren’t as close like I wouldn’t go out of my way to ask her to help me. But since I do know Jessica I don’t feel uncomfortable being like ‘Jessica! Get your butt over here!’” In addition, this student is “comfortable like calling out answers and speaking my mind when it comes to things.” Another student spoke of their motivation to improve both scholastically and behaviorally: “So it makes you want to be more positive and go into it,” “I wanna stay in the class,” “it makes me wanna stay more focused and be more polite for them.” A third student affirmed that the teacher efforts had made a difference in his learning: “Being in her class, um, helped me understand that math isn’t as intimidating as it seems from the get-go.”

In addressing students’ responsiveness to teachers’ caring, it is important to remember that the simple fact that students know they are cared for, and are able and willing to acknowledge that fact, is significant for this population of students. Her patience, attitude, and sacrifice of time and effort does get that message through to students:

“I think the fact that like she just has so much patience with the kids shows that she cares. Like, she wants them to do good and she’s willing to put up with certain bullshit, and she’s willing to like sit here patiently waiting for everyone to shut up just so that she can teach them a subject. She cares. She cares a lot.”

And, as evidenced by students' comments reported above, the caring extends beyond mathematics to their personal and family lives.

**Productive Disposition.** In the last sections, I reported data that suggest at-risk students in the study did perceive teachers as demonstrating care, across the spectrum of elements delineated by Tronto (1993), and that they were responsive to the teachers’ acts. The question that remains is
the way the teacher’s caring affected students’ productive disposition. Recall that the two main components of productive disposition are 1) a “habitual inclination to see mathematics as sensible, useful and worthwhile;” and 2) a “belief in diligence and one's' own efficacy” (NRC, 2001, p. 116) Given the reported positive correlations between both self efficacy and perceived usefulness of mathematics with academic achievement (Kadijević, 2008; Multon, et al. 1991; Schommer-Atkins, et al. 2005), it is not unreasonable to expect that the productive dispositions of the at-risk students in this study would be low. In fact, there is no evidence in student interviews to suggest that they saw mathematics as useful or worthwhile, and very little to suggest that they saw it as sensible. However, there was evidence to suggest that students perceived an effect on their achievement and sense of efficacy as a result of teachers’ actions, as evidenced by the following quotations from students:

- “Being in her class um, helped me understand that math isn't as intimidating as it seems from the get-go."
- “Jessica is the only math teacher that has actually like made me understand what I am learning. And like- she’s the only teacher that’s gotten me to like actually be able to do my papers without needing help."
- [When asked whether their relationship with the teacher had improved their achievement in mathematics] “Oh yeah. I been, definitely doing way better."

These responses indicate that the relationship each student had with Jessica contributed to their productive disposition in mathematics. A previous example I gave in which the student took papers home to complete them because he knew his teachers would “get on his case” about it is an example of how the relationship between teacher(s) and student improved this student’s productive disposition. He knew his teachers cared about his grade and wanted him to do well.
He was motivated by this care to take work home and complete it, thus improving his grade. His productive disposition was increased. The evidence of this is that he remarked that students are generally discouraged from taking school work home because they may not bring it back. Instead, students are offered help and time to complete the work in the classroom. The act of taking his work home to finish it seems to be out of the norm for this student. Therefore, doing so was evidence of an increase in motivation, and thus productive disposition, to do so. As I argued in Chapter 2, motivation is also an important component of productive disposition, and is necessary to developing mathematical proficiency. There was further evidence from the interviews that students felt more motivated as a result of their teacher’s caring. One student noted they were “excited to come to class” and so “excited to learn about the subject.” Another mentioned that they “want to stay more focused and be more polite” for the teacher. Students also noted that they were more likely to participate in class because of their relationship with the teacher. And finally, they noted that “she always motivates us in some way to get our shit done.”

**Conclusion**

Overall, the majority of comments made by students that were coded as an element of care could be classified into a few subcategories. For attentiveness, students mostly commented about how the teacher “knows” they have a need, “notices” they need something, or “offers” to help them. The comments coded as responsibility mentioned the teaching giving the students come kind of “relief”, such as a break or some candy, the teacher giving “help” to the student with their work, or the teacher “advocating” for the student. For competency, students commented on the “effort” the teacher puts in such as grading or trying to help however she can, the “rewards” she gives to make class fun, like games after the school work is completed, and the “attitude” their teacher has about the students, like patience and kindness. Finally, comments coded as responsiveness could be divided completely into two categories. Either the students
showed more willingness to participate or make an effort with their work because of their relationship with their teacher, or the students directly said that the teacher cares for them and that it is clear to them that she does.
CHAPTER 6: CONCLUDING THOUGHTS

Answers to Research Question

The important teacher characteristics mentioned by students in this survey align with characteristics mentioned in the Literature Review. Respect from the teacher, being easy to get along with and laugh with, listening, being available, and providing help and encouragement were all identified in previous studies and all appeared in my research as well (Geary 1988; McMillan & Reed, 1993, 1994). Being respectful of the student aligns with Jessica being positive, kind, and patient. Getting along with students and laughing with them aligned with the comment, “I can sit there and like mess with her as I’m talking with her about stuff and she thinks it’s funny.” Listening aligned with students commenting on how easy Jessica is to talk with and approach. The characteristic of being available aligned with students’ identifying the time and effort Jessica puts in to help them, and this characteristic is elaborated on by Jessica’s “sixth sense” ability to anticipate student needs. Providing help and encouragement is an area that Jessica went above and beyond with as well. Not only did students mention that Jessica always helps them with their work and puts time and effort into doing so, but students also emphasized that Jessica was there for their emotional needs, worked to motivate and get relief to the entire class rather than just individuals, and was able to motivate students to do work they otherwise would not have done. Furthermore, students also appreciated that Jessica slows down the class material and breaks up assignments for them to help them succeed. Teachers having a genuine concern for at-risk students’ lives and progress in school is also previously listed as valued by students (Muller, 2001). This is also present in my study where students mention that Jessica advocated for their success, cared about their life in general as well as at school. When students mentioned that their relationship with Jessica helped them to actually understand mathematics, see it as less intimidating, and to accomplish more in class and at home, they
confirmed Muller’s (2001) statement that “students may perceive teacher behavior that supports access to instruction as caring, especially if they are at risk of dropping out of high school.” In supporting the students’ access to the mathematics, students saw Jessica as more caring.

**Implications For Instruction**

As I briefly mentioned in the results section, the kinds of behavior from the teacher that the students brought up as meaningful in regards to attentiveness seemed to imply the significance of being seen by their teacher. Students who are at-risk very often do not have adults at home who are available for one reason or another to give them the attention they want or need. Furthermore, at-risk students come to the alternative school used to sitting in the back of class, not getting work done, and not getting all the help they need (mostly because of time constraints). When these students then see that their math teacher at the alternative school will not only respond to them when they ask for help, but can actually anticipate when they will need help, they feel cared for. Being seen by their teacher in this way indicates that the teacher is present with the students and focused on them and their needs. The students can tell that their teacher is paying attention to them. Attention, in this caring and safe environment, is exactly what these at-risk students need to feel like they are capable of success. When the teacher offers to help the students, it indicates that she wants to help them and that she wants them to be successful, and therefore that they are worth being helped and finding success. It is very meaningful for at-risk students to have a respected adult available, present, and offering help. Paying attention to the needs of at-risk students allows them to feel cared for and to feel seen, as opposed to being the student in the back of the class who cannot keep up and who the teacher always runs out of time to help. This shift in where the students are in the classroom and what kind of priority they are shows a great amount of caring and as a result builds strong trust
between the students and the teacher. The trust built then furthers the ability for the child to be successful.

In terms of responsibility, the type of behavior highlighted by these students as important to them was genuine action that helped the students feel heard. For these at-risk students, a teacher who walks the walk is what they want. She does not just say she cares about them and wants to help them—she is right there sitting next to them working diligently with them. How many times in the math classroom (and in life) have at-risk students been dismissed or ignored? Sometimes, to no fault of the teacher, they cannot just sit with one student for the duration of a class period helping them step by step. It becomes easy for at-risk students to get lost in the mainstream sea of students with a high range of achievement in school. So to not feel lost, and to feel worth the effort they see their teacher putting in to help them when they need it, helps these students feel cared for. This is important to these students because likely it was very hard to get help or help came with too much pressure or judgment either from peers or previous teachers. This alternative classroom is a safe space, and many students comment on how the teacher will slow down, take her time, and encourage them when they express doubt in their own abilities. By helping these students, the teacher allows them space to grow and gives them encouragement to keep trying. They know they can rely on her to help and so they build more trust in her and feel cared for by her. It is a major advantage of the alternative school setting with smaller class sizes that a teacher can dedicate such time and energy to each individual student and create these kinds of relationships.

Furthermore, in an alternative classroom, it is so important for a teacher to read the room. The students feel heard and cared for when their teacher sees that students are wanting a break and gives it to them. To the student this says that the teacher cares about what they are saying and
will listen when the students express a need. Mainstream classrooms often do not have time to do this and teachers are pressured to keep up with a certain pace. So mainstream teachers often push classes through content, hush complaining, and move through units quickly. Generally, at-risk students find this pace to be too fast for them. Likely these students have complained about pace in a mainstream classroom and not felt heard. Maybe they have been ignored or maybe they have been kindly told that there simply is not time to slow down. So to have a math teacher that takes responsibility for the students' needs by slowing down a lesson or unit, and doing little things like giving candy or allowing time to stretch or take a walk, really makes the at-risk students feel heard and cared for.

The competency identified by these at-risk students shows that a teacher needs to know when to push and when to let things go. Knowing how to motivate a classroom of at-risk students in a way that goes beyond just bribery is a valuable skill. Such a skill takes mutual respect that must be built up over time. The positive attitude Jessica has with her students speaks volumes to that level of respect that exists within the student-teacher relationship. The teacher has a good attitude, so there is give and take between student and teacher. She is patient and the students see that as a big deal because it is hard to be patient with these at-risk kids and they know it! But the teacher chooses patience anyway, and the kids know that means she cares. She is kind and positive and happy and students see that means she cares. At-risk students are often easily met with a lot of opposition and hard discipline in their life (often going to the alternative school is a disciplinary action), and so it matters that the teacher is putting in visible effort with these students to help them be successful, and she does it with a smile on her face. The students see it and appreciate it, and it is huge for them. As a result, they give back respect and trust and a willingness to engage in the classroom. Kindness and hard work to help others is received
especially well by students who may not get a lot of it in other places or have not felt they were given it in the past. On the other side of knowing when to push and when to let go is giving rewards or breaks. These are the “knowing when to let go” piece of the puzzle. It is an important piece! Allowing students to play games when their work is done is not small or trivial to these at-risk students. These are things that were identified as caring actions by the students. The relationship developed through this give and take is one that builds trust between student and teacher. The students then feel comfortable with their teacher and the classroom environment is more positive as a result.

The significance of responsiveness on the part of the students in this relationship cannot be overstated. Responsiveness in an alternative classroom—at-risk students responding with increased motivation and willingness— is monumental. These students are in this position because they were going to fail out or drop out. That almost always means the student is not doing the work, and they may have very little motivation to do so. To see and acknowledge out loud that their teacher cares for them and then to decide to step it up as a result can be and often is life changing for at-risk students. It is life changing to decide to graduate high school for at-risk students. Math can very easily be the one class these students were worried about standing in the way of them graduating. Many at-risk students have been told for years that they will be lucky to graduate, that they did not need to graduate, or that school is a waste of time. Choosing to graduate anyway can present an entire shift in their attitude and approach towards school and then towards life. I do not intend to say that all students should go in with typical higher education or any more education at all. That is not the point. The point is that they can say they did it. They can say that they worked hard and they are capable. So then they can go forward in life choosing to be capable and motivated. To outright identify that their teacher cares is so
meaningful for at-risk students. The acknowledgement that they have a teacher who cares about them is likely something that they have not done very often. Some at-risk students may not feel like they have many adults in their life that truly care. So to be able to directly say "she cares" does a lot for that student and for the relationship they have with their teacher. It is this kind of relationship that propels the student forward in school and potentially in life to find further accomplishment and success.

I would not confidently conclude from the data that these at-risk students end up seeing math as useful and worthwhile in the traditional sense. It is entirely possible that they do come to this conclusion as they begin to gain more understanding and become more comfortable with the material. But I would argue that they can still have an increase in their productive disposition without seeing math itself as useful and worthwhile for themselves. Maybe at first, they are motivated because they will get candy for doing a worksheet. So it was worthwhile to do the work simply to get candy. Then perhaps they see that their teacher cares and so they do the work and participate in class because they respect their teacher. It is then worthwhile to the student to do as they are asked because they trust their teacher has their best interest in mind and so they want to reciprocate that caring or respect. At-risk students may take a while longer in general to come to seeing math as useful and worthwhile just for the sake of mathematics, that is, if they ever get there. It would not, however, be impossible to say that they were motivated by other factors in the classroom and still had a decent understanding of the mathematics, but never saw it as truly worthwhile for them. Because of this, I would challenge the meaning of useful and worthwhile as it is implied by Adding It Up or traditionally understood. Maybe at-risk students see math as worthwhile to others. Maybe they see that math makes the world go round and appreciate their computers and cars and houses and phones and clothes (or at least some of these
things) as a product of mathematics others have used. But a lot of at-risk students will likely say, "But I don't have to and will never have to use it that way". In my own experience, at-risk students even push back on the argument that you use math to budget your money because, yes you use math, but they learned that math in elementary school and now in this class we use letters and graphs and it is too much. Some at-risk students are more quick to say that doing this math allows them to get a high school diploma, which opens other doors for their future. They may say that their teacher helped them see that they were capable. Then the same students may simply feel that knowing they were capable helped them apply effort in other places in life besides mathematics. At-risk students may see mathematics was worthwhile because of these greater lessons they learned while they were sitting in a certain teacher’s classroom, learning what they were really capable of.

**Productive Disposition in At-risk Students**

New teachers generally leave their education programs bright eyed and ready to help students love mathematics. They are eager to dig into mathematical proficiencies, national standards, and innovative classroom methods. The majority of these teachers are at risk of entering a classroom of at-risk students (or noticing an at-risk student in their classroom) and feeling like they cannot fulfill their purpose as a math teacher because the at-risk student did not leave their classroom loving mathematics or because in the alternative classroom, they were not able to implement the newest teaching methods to their full extent. It is important that every teacher recognizes where their students are at in terms of a productive disposition towards mathematics and recognize that any increase is valuable. The students in this study made it clear that having a positive, caring relationship with their teacher increased their motivation to either complete their work, try harder, or ask questions. The students valued and appreciated what Jessica did for them and they were proud of their new achievements in mathematics which they
credited to their teacher and the relationship they had with her. They felt they could trust her, and they were confident that she would help them find success. As a result, they wanted to put forth more effort to reach that success. This was apparent specifically in the student who purposefully took his work home to complete when such a thing was out of the norm. Meeting at-risk students where they are and not judging them for it will get any teacher a long way with those students. Teachers should acknowledge that a student who previously refused to engage with mathematics at any level who now takes the initiative to complete work on time, ask questions, or make corrections on previous mistakes has seen an increase in their productive disposition. This is not the level of productive disposition that Adding it Up (2001) advocates for, but teachers need to recognize it and praise students for it nonetheless.

**Limitations**

The way that the questions were phrased in the survey left some room for interpretation. When students were taking the survey, I began to wonder if they understood what I was asking. The directions stated, “How often would you say the italicized action from your teacher indicates that they care about you? Circle your answer. Please answer as if your teacher might do the italicized action”. Then students were asked to circle “never”, “rarely”, “sometimes”, “often”, or “always” in relation to how often a teacher calling home, asking about work etc. would indicate that the teacher cares. However, I think it is likely that students could have been answering how often their teacher actually did the things listed. I think this could be the case for at least some surveys because next to questions like “gives me a bad grade”, some students wrote a note next to the question saying they have never gotten a bad grade in this class, and then they circled “never.” Thus, it is possible that their responses to the survey questions with this instruction were not answering what I had hoped they would answer.
References


Schommer-Aikins, M., Duell, O., & Hutter, R. (2005). Epistemological beliefs,

APPENDIX A
Questions 2-10 had the options Never, Rarely, Sometimes, Often, and Always for students to choose from.

Student Survey
1. Describe something your teacher does that shows she cares about you as a math student.

How often would you say the italicized action from your teacher indicates that they care about you? Circle your answer. Please answer as if your teacher might do the italicized action:

2. When my math teacher *asks me about my job* it shows they care about me
3. When my math teacher *asks me about my hobbies* it shows they care about me
4. When my math teacher *calls home* it shows they care about me
5. When my math teacher *calls on me in class* it shows they care about me
6. When my math teacher *moves my seat* it shows they care about me
7. When my math teacher *asks me to stay on task* it shows they care about me
8. When my math teacher *listens to my ideas* it shows they care about me
9. When my math teacher *gives me a good grade* it shows they care about me
10. When my math teacher *gives me a bad grade* it shows they care about me