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Promoting Academic Talent Development in Adolescents: Protective Factors and Linkages to Summer Program Participation

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Promoting Academic Talent Development in Adolescents: Protective Factors and Linkages to
Summer Program Participation

Kelly L. Kearney, Ph.D.

University of Connecticut, 2014

Special summer programs are considered a popular service-delivery approach to bolster the talent development of all students, not just those at risk. Rather than taking a deficit approach by studying underachievement, this study seeks to explore protective factors that influence high-ability students' talent development. Factors influencing the talent development of high-ability students are understudied, often in favor of researching underachievement and resilience.

Because very little research seeks the perceptions of these students *in their own words*, this study used a grounded theory approach to explore 54 students' perceptions of their own talent development within the context of a residential, inquiry-based summer program for high-ability adolescents. Responses across all parts of the study revealed three key findings: (a) participants recognized a variety of internal and external influences on their talent development and pursuit of academic success; (b) students' self-perceptions around ability, motivation, and effort were revealed in how they compared themselves with peers; and (c) students' views of the value of protective factors were linked to their perceptions of the factors' utility in reaching goals as well as perceptions of corresponding underlying support.

Students perceived protective factors to include support from significant persons, challenge seeking, goal setting, and effort. Participants related these internal and external factors to their ability to set and take steps toward the attainment of goals in the future and viewed external support more positively when they perceived it had utility for their reaching their goals. Comparisons to similar peers revealed how students viewed their own ability, motivations, and

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effort as key pieces of their identity. Overall, responses did not vary greatly across gender or ethnic and socioeconomic groups.

Promoting Academic Talent Development in Adolescents:
Protective Factors and Linkages to Summer Program Participation

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B.S., University of Connecticut, 2007

M.A., University of Connecticut, 2008

A Dissertation

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2014

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APPROVAL PAGE

Doctor of Philosophy Dissertation

Promoting Academic Talent Development in Adolescents:
Protective Factors and Linkages to Summer Program Participation

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CHAPTER 1: INTRODUCTION TO THE STUDY

Gifted education is founded in the belief that students demonstrating high ability have educational needs that differ from those of the majority of their classmates (Renzulli, Gubbins, McMillen, Eckert, & Little, 2009). Though they may have a similar need for academic challenge, high-ability students are not a homogeneous group; each student's talent development is affected by his own environment, personality, community, relationships, and previous educational experiences (Bailey, 2007). This point may be particularly relevant for gifted students from minority and economically disadvantaged backgrounds, who are considered to be at risk for academic underachievement due to their exposure to higher rates of adverse environmental and societal factors (VanTassel-Baska & Stambaugh, 2007).

Out-of school-time programs are frequently recommended as a service-delivery approach for gifted students of all backgrounds because of documented academic, social/emotional, and occupational benefits (Olszewski-Kubilius, 2003). Because supplementary gifted programs have a similar goal to aid the talent development of gifted students, whether academically, socially/emotionally, or professionally, participation may not only be a positive influence on talent development, but also an added protective factor for at-risk gifted students.

However, despite considerable evidence that out-of-school-time programs benefit advanced learners, little is known about what influences students to attend such programs or how to increase their motivation and resiliency once attending (Cross & Swiatek, 2009). Potential influences are known collectively as *protective factors*, "traits, conditions, situations, and episodes, that appear to alter or even reverse predictions of negative outcomes and enable individuals to circumvent life stressors" (Benard, 1991, p. 6). Exploration of students' perceptions of these factors not only during, but after the conclusion of a program may inform

educational professionals and parents about how to encourage protective factors in talented students.

Statement of the Problem

In contrast to underachievement and resilience literature, there is not a wealth of research that focuses specifically on characteristics influencing the talent development of high-ability students. Therefore, this study was a targeted effort to focus on factors influencing talent development, not underachievement. It further explored potential differences between the influential factors of students from different demographic groups.

Research has documented differences between students identified as gifted and those who are not, as well as between achievers and underachievers (Ford, Grantham, & Whiting, 2008; VanTassel-Baska & Stambaugh, 2007; Wyner, Bridgeland, & DiIulio, 2007), and many studies about underachievement and educational resilience exist (see Fong, Snyder, Barr, & Patall, 2014). Yet, there is no clear understanding of the factors that lead some students to succeed and some to underachieve. Various stimuli have been suggested to influence underachievement or achievement, including the presence or absence of social support, peer influence, and personal characteristics such as motivation and self-concept (Kitano & Lewis, 2005; McCoach & Siegle, 2003; McMillan & Reed, 1994; Murakami, Garza, & Merchant, 2012; Neihart, 2006; Ogbu, 1994; Rak & Patterson, 1996; Reis & McCoach, 2000; Wentzel, 1998), but little research has included students' own perceptions of their protective factors.

Schools often have limited resources with which to provide advanced enrichment opportunities for high-ability students. This issue is particularly evident in states without mandates to serve gifted and talented students or in districts with limited funding for gifted programs (National Association for Gifted Children [NAGC] & Council of State Directors of

Programs for the Gifted [CSDPG], 2013). As a result, many academically talented students must seek these experiences within the context of afterschool, weekend, or summer programs (VanTassel-Baska, 2007), collectively known as out-of-school-time (OST) programs.

Research on OST gifted programs suggests that they are beneficial to participants. Some of the benefits include increased skills aptitude or knowledge of academic content areas (Little, Kearney, & Britner, 2010; Miller & Gentry, 2010; Olszewski-Kubilius, 2006; Olszewski-Kubilius, Lee, Ngoi, & Ngoi, 2004), increased interest in learning (Johnsen, Witte, & Robins, 2006), exposure to like-minded peers (Miller & Gentry, 2010; Olszewski-Kubilius & Scott, 1992), increased confidence about success in college (Olszewski-Kubilius & Scott, 1992), and improved career competence (Johnsen et al., 2006; Little et al., 2010). Though OST programs are frequently recommended for enrichment of all gifted students and benefits of the programs have been documented, there is a call for continued evaluation and research in this area (Miller & Gentry, 2010). In particular, student voice should be included in program planning and evaluation (Buchanan & Woerner, 2002). Studies that include a follow-up are rare (e.g., Clasen, 2006; Dai, Rinn, & Tan, 2013); efforts to include this component need to be expanded to understand influences of OST programs more holistically. This study included contact with participants months after the program had ended, when they had resumed life in their regular schools, to respond to the need for investigation of potential benefits after the program has concluded.

To address the gap in research about what mechanisms are behind attending an academic OST program, as well as to address the aforementioned issue regarding limited data about factors that influence talent development, this study attempted to reveal students' perceptions and represent them *in their own words*. This work is important as their insights may inform

educational professionals and parents about how to encourage protective factors in talented students. Further implications of building students' protective factors are that they will pursue involvement in extracurricular programs, such as OST programs, that will further build their competencies. This study used qualitative methods to address this important gap in the research and better portray students' perceptions of themselves and their experiences.

Purpose of the Study

The primary purpose of this study was to explore factors influencing high ability students' talent development and the mechanisms behind their decision to seek enrichment through OST programs. I also wanted to explore the possibility of differences in factors between groups traditionally underrepresented in gifted programs and their majority peers. This study may inform educational professionals and parents about how to encourage protective factors in talented students, including those who may be at risk for underachievement.

A secondary purpose of this study was to offer further evidence around the lasting influences of OST programs, since most studies are not longitudinal and many do not have a follow-up component.

Theoretical Framework and Research Questions

The field of gifted education has yet to agree on a universal model for talent development, and there are many from which to choose. This study used Gagné's Differentiated Model of Giftedness and Talent (DMGT; 2009) as a context to explore talent development. In this study, I use the term *talent development* broadly to include general academic success as well as pursuit of talents in particular areas of study. In the DMGT, the process of talent development, while influenced by natural ability (i.e., giftedness), may be facilitated or impeded along the path of learning and practice by intrapersonal and environmental catalysts and further influenced by

situational chance. Intrapersonal catalysts include psychological factors such as personality traits and motivation. Environmental catalysts include significant persons, situations, activities, and events. The element of chance further influences any or all catalysts.

While Gagné’s model offers a broad view of influences on talent development, the Three Ring Conception of Giftedness (Renzulli, 1978) places particular emphasis on the influence of task commitment and motivation on observable “gifted behaviors,” which in the context of this study may be considered achievement in the form of the creation of advanced academic products. Gifted behaviors “reflect an interaction among three basic clusters of human traits—above average ability, high levels of task commitment, and high levels of creativity” (Renzulli & Reis, 1997, p. 8). The three rings are situated in a houndstooth-patterned background, which represents the interactive influences of personality and environment.

Within the context of this framework, this study was organized around three broad questions:

1. What factors do student participants enrolled a summer program report as contributing to their talent development?
 - a. How and in what way do students’ reports of these factors change during and after their participation?
 - b. How might these reports vary by students’ demographic information?
2. What influences do students perceive the summer program had on their (a) responses to challenge and (b) academic goals?
3. How do academically successful students feel they differ from similar peers who do not seek extracurricular talent development?

The importance of representing students' perceptions of their talent development in their own words was a key factor to consider while designing the study. To remain true to their experiences of meaning-making, I chose a constructivist grounded theory approach for my methodology. Therefore, while the research questions were based in existing literature about talent development, I did not hypothesize about my potential findings. This position was purposeful, as the constructivist grounded theory approach emphasizes the mutual creation of knowledge by the participants and the researcher throughout the course of the study (Charmaz, 2006). In the final stage of the study, I compared my findings with the aforementioned models.

Subjectivity Statement

“Interaction between researcher and participant is recognized as a key component of data generation and valued as such, because it is a means of getting close to the experiences of participants so that phenomena can be viewed from their own perspective,” (Morgan & Drury, 2003, p. 74). That said, I acknowledge that, as a qualitative researcher, my subjectivities and life experiences will influence any research endeavor I undertake. I serve as an instrument, a filter for the data, and an interpreter, therefore perpetuating the complex relationship between the research and the researcher (Wolcott, 1990). My own perspectives on the topic of this study stem from my own experiences as a student, a teacher, and assistant for an extracurricular gifted program.

From the time I was in first grade, it was clear to me that I was different from the other students. Though I could read fluently since the age of three, this was the first time I noticed that I was “not normal.” After being bored in reading group every day, I would sit with my teacher and read one-on-one, and she would often take me to the library during recess at my request. Though I had other teachers that went above curricular expectations and encouraged my

academic growth, they were the exception in my elementary school career. However, I was satisfied for the time being because my parents did their best to supply me with an endless inventory of books. When I enrolled in high school, I became involved in as many extracurricular opportunities as I could. However, classes were still not much of a challenge and I exceeded expectations without having to put in much effort.

My breakthrough came when I enrolled in Honors chemistry with a teacher who was new to the school. He had worked in industry for many years and wanted to give back to the community by becoming a high school science teacher. Not only did he teach the classes, but he made the material hands-on, relevant, and interesting. He invited students to pursue projects outside of school, alerted them to extracurricular opportunities, and was constantly available for extra help or just to talk. I still consider him to be one of the most influential people in my life, especially because he brought back a love of learning. These experiences in school sparked my early interest in education, so that maybe I could help students like me to have more meaningful learning opportunities.

Ironically, I found that the classroom was not for me. As a classroom teacher, I was bound to a very strict curriculum that left little room for creativity and had very few resources to make learning as meaningful as I would have liked. I did make a point to differentiate learning for each student as much as possible within the constraints that I faced. In the summers, I worked for a residential program for talented high school students. I loved the hands-on, interest-based instruction that went on there and decided to refocus my career towards extracurricular programming and research. Therefore, in while undergoing this research, I am very much aware that I have “been there” as a student who wanted to do more, as a teacher who wanted to do

more, and as a professional who has seen both the shortcomings and the benefits of extracurricular academic opportunities.

I have an eight-year history with the program profiled in this study. Additionally, I had prior knowledge of students' backgrounds, potential strengths and shortcomings, interests, and goals from reviewing their application materials prior to the program. I am undoubtedly a stakeholder in positive outcomes of the program.

From my varied perspectives and with the experiences of the participants, I interpreted the data to reveal insights into a population that are not often represented through their own voices. I believe that my experiences only served to enhance my understanding and interpretation of common themes, experiences, and modes of expression of this unique group of students.

Organization of the Dissertation

I organized this research study around the factors supporting the talent development of talented students and the influence of extracurricular programs that meet their need for challenge outside of school. Each participant was the primary unit of analysis, with my ultimate goal being to illuminate students' own perceptions of the topics at hand. Chapter 1 introduces the key elements of the study. Chapter 2 explores each element that was briefly noted in Chapter 1, and also those themes that emerged during the course of the analysis through a grounded theory lens. Chapter 3 details the methodological and analytical processes used to answer the research questions. Chapter 4 presents the results of data analysis, with the findings and their illuminations organized thematically by research question. Finally, Chapter 5 represents a summative, comprehensive review of the findings, report of the overarching conclusions resulting from the study, and presentation of potential implications of the study as well as suggestions for future research.

CHAPTER 2: REVIEW OF LITERATURE

In this chapter, I review current literature relevant to the study. As this dissertation employed a grounded theory approach, this literature review emerged from the findings of the analysis, which are the themes that participants found most important when representing themselves. I will first discuss the concept of factors positively influencing talent development and protective factors, followed by a discussion of risk factors related to underachievement. I then present proposed benefits of summer programs.

Protective Factors and Resilience

Research demonstrates that there are a number of protective factors that resilient children exhibit. Despite risk factors, a number of students manage to “beat the odds” and excel academically. This phenomenon is known in the field of psychology as *educational resilience*, which can be defined as “the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences” (Wang, Haertel, & Walberg, 1994, p. 46). This construct usually is influenced by a combination of personal characteristics, environmental conditions, and skills that allow for positive growth despite adversity (see the review by Meroe, 2005), not unlike talent development. Underachievement, which is defined as a discrepancy between one’s potential and one’s performance (Reis & McCoach, 2000), seems to stem from similar causes. Indeed, researchers have found that achievement and underachievement are not disparate concepts and have similar foundations (Reis, Hebert, Diaz, Maxfield, & Ratley, 1995; Siegle, 2013; Siegle & McCoach, 2005). Students are thought to underachieve when barriers to success impede their talent development; therefore, the same factors influencing underachievement, when reversed or

removed, may also positively influence achievement and resilience. Therefore, these factors may also be viewed as protective factors or positive influences on talent development.

In their review of the educational resilience literature, Kitano and Lewis (2005) noted that there are several other potential protective factors that allow at-risk gifted students to overcome adversity in their educational endeavors. These include external influences of significant persons, including adults and peers, and internal influences of personal characteristics. These factors can also have influence on the talent development of students who are not traditionally considered to be at risk.

Significant Persons

One of the most influential factors supporting resilience is the presence of social support (Kitano & Lewis, 2005; Murakami et al., 2012; Neihart, 2006; Waxman, Gray, & Padron, 2003). Support can come from parents, teachers, other adults, and peers, but usually comes from adults who hold education in high regard (Reis & McCoach, 2000). Similarly, peers can have a significant influence on whether or not gifted students underachieve. Students belonging to a peer group that is supportive of doing well in school are more likely to achieve (Reis & McCoach, 2000; Wentzel, 1998). These persons can influence students in a variety of ways, including social and emotional support, active academic help, role modeling, and other social comparisons.

In a study of 167 sixth grade students, Wentzel (1998) found that perceived support from teachers and good family cohesion were predictors of interest in school. Additionally, perceived support from peers and teachers was a predictor of goal pursuit. The effects of having multiple sources of support were additive on motivational and academic outcomes.

Murakami and colleagues (2012) revealed the roles of several significant persons in their study of resilience within a predominantly Hispanic school. They found that building relationships with students, parents, and the community was key to sustaining student-centered goals and raising academic performance. Additionally, teachers who set high expectations while monitoring student progress promoted students' academic and social gains.

Matthews and Kitchen (2007) noted that in addition to academic strengths, social benefits were important for students. In their study of 227 gifted students, they found that 17% of students in one school and 31% of students in another school mentioned social interactions as a strength of an IB program. Students reported valuing the learning environment, interactions with students with the similar interests and goals, and better competition. They also reported acquiring positive learning habits, developing time management skills, and establishing closer bonds with other students in the program.

Social comparison and competition. In his social comparison theory, Festinger (1954) posited that when an objective standard is unavailable, people compare themselves to similar persons around them in efforts to make a judgment about their own abilities. A recent review of social comparison and its role in the classroom reveals several inconsistencies in the research, including how comparisons may lead students to perform better but evoke negative affect and lower academic self-concept (Dijkstra, Kuyper, van der Werf, Buunk, & van der Zee, 2008). Advanced students were specifically included as a separate group in one study in the review; Golden and Cherry (1982) found that children in general classrooms preferred to compare

themselves to same-sex peers while children in advanced classrooms did not demonstrate a preference.

Social comparison has been linked to competition, related to Festinger's (1954) belief that people have a basic desire to master their environment. Though most literature on competition is with the general population of students (Udvari & Schneider, 2000), some authors have suggested the use of competition for motivating gifted students, as well as improving technical and interpersonal skills (Karnes & Reilly, 1996). However, much of the developmental and educational literature on competition portrays it as having deleterious effects on achievement, relationships, creativity and task enjoyment (see the review by Kohn, 1992).

Clinkenbeard (1989) suggested that there is an important distinction that exists between competition that is other-focused, in which the main concern is to win or to beat someone else, and competition that is task-oriented, in which the goal is to improve skills or better complete tasks. In her study, 67 gifted middle school students read a brief story about a boy working on a project. Half of the participants read a story about a boy whose goal was to beat two other talented classmates, and the other half of the participants read a story about a boy whose goal was to learn more about the topic. After reading the story, the students were asked several questions about boy's reasons for his actions. Clinkenbeard (1989) found that students perceived that the other-focused boy would be more fulfilled by having the best project, and that the task-oriented boy would be more satisfied with learning. The students also supposed that the other-focused boy would be less interested in the topic, he would learn less, and he would choose a less challenging topic in the future.

Subotnik, Kassan, Summers, and Wasser (1993) found that peers in the same environment can interpret competition in vastly different ways. The researchers followed up with

approximately 600 high-ability children who attended Hunter College Elementary, a school for gifted students in New York City from 1948 to 1960. Some participants perceived their experience at Hunter as negative due to competition, while others remembered very little competition; some of the latter group believed that the lack of competition was a good thing, whereas others viewed it as a considerable disadvantage to their development and preparation for the real world.

Internal Influences

Some personal characteristics that contribute positively to educational resilience are intelligence, self-efficacy, and the ability to set attainable goals, all of which are thought to influence motivation (McMillan & Reed, 1994; Rak & Patterson, 1996).

Intelligence. Though Luthar (1991) has suggested that intelligence may be a risk factor for some gifted students, the majority of studies suggest that intelligence is a protective factor for talent development (Condly, 2006; Kitano & Lewis, 2005). Tiet et al. (1998) found in their study of 1285 students that higher IQ increased coping skills in youth with many risk factors, though it did not affect those with few risk factors. Similarly, Sameroff, Seifer, Barocas, Zax, and Greenspan (1987) found that high-risk children were 24 times as likely to have an IQ below 85 as were low-risk children, indicating that intelligence may play a role in talent development and resilience.

Effort and motivation. Academically talented students often exhibit high self-motivation to reach their goals. In fact, some researchers view it as necessary for students to reach outstanding levels of achievement and performance (Schneider, 2000). The literature base about factors that influence motivation is extensive, but I will focus here on three specific elements relevant to this study: attribution theory, self-efficacy, and goal setting behavior.

Attribution theory. Weiner's (1974, 1985) work on attribution theory focused on the causes that people attribute to their successes and/or failures. Teachers and other professionals have used attribution theory to understand students' perceptions of the factors that influence their successes and failures. The theory considers an individual's behavior, the environment, and the need to comprehend the results or products of performance within the context of three common properties: locus, stability, and controllability. Locus denotes the degree to which an outcome was affected by internal or external factors. Stability suggests the degree to which a cause is variable or fixed over time. Controllability describes the degree of influence an individual possesses to initiate change. Though perceived causes may include ability, effort, luck, the task, or one's personality, to name a few, the following discussion will focus on attributions related to ability and effort as this was the focus of the participants in this study.

Ability is a common attribution for successes and failures of gifted students due to the likelihood of these students to consider intelligence to be an important part of their identity (McNabb, 2003). For the most part, attributing successful experiences to ability is not problematic, as it promotes higher self-efficacy in the skill at hand. Schunk (1984) found that children who were given feedback that encouraged ability attribution developed higher self-efficacy and skills in subtraction than children who were given feedback that encouraged effort attribution or a combination of both attributions. However, Mueller and Dweck (1998) cautioned that giving praise with ability attribution could have negative consequences. Through a series of six studies of fifth graders, they found that students praised for ability were more concerned about performance goals relative to learning goals than students praised for effort. After a failure, they displayed less task persistence, less task enjoyment, and worse task performance than the students praised for effort.

Siegle, Rubenstein, Pollard, and Romey (2010) explained the benefit to having an effort attribution in the case of a failure. They wrote in their review of literature:

Attributing failure to effort gives students the control to improve the next time. Failure can be especially motivating for those students who hold a malleable incremental intelligence theory because they believe they can increase their intelligence by working through a problem. They engage in positive self-monitoring and instruction to work through a challenge. They may not see failure as a reflection of their intelligence; rather, they may see it as an opportunity for growth” (p. 94).

Dai, Moon, and Feldhusen (1998) reported that most findings related to gifted and attribution can be explained by the phenomenon of “attribution asymmetry.” That is, rather than gifted students’ having an ability attribution for successes and failures, there is an inclination for them to attribute success to both ability and effort; however, failure is attributed only to effort. Unlike other studies that focus on either ability attribution or effort attribution, they suggested that both are important for the achievement of gifted students. They wrote:

Realistic attributions of success . . . represent self-awareness of high potentialities that constitute a necessary but not sufficient condition for high levels of performance. Furthermore, attributing success or talented performance to effort also has a self-enhancing and motivating effect in that one feels in control of one's own development by exercising personal agency instead of totally submitting one's development to the mercy of naturally endowed aptitude over which one has no control. This is probably why high-ability students tend to attribute their success or “gifted” performance to both high aptitude and hard work. (p. 51)

Gender differences have been found with regard to attribution. Assouline, Colangelo, Ihrig, and Forstadt (2006) explored differences in top attribution choices between boys and girls for success and failure in general academics, language arts, science, and mathematics using a sample of 3280 students in grades 3-11. Proportionately larger percentages of females attributed general school success to long-term effort than did males. Similarly, proportionately larger percentages of males indicated that ability contributed to their general school success than did females. This finding was the same for success in math and science. For success in language arts, both boys and girls responded that long-term effort was more influential to their success than ability. In their study of 149 college honors freshman, Siegle and colleagues (2010) also found that males tended to place stronger attributions on ability for most skills, whereas females indicated that effort contributed to high levels of performance.

Self-efficacy. As attributions can affect self-efficacy, so can self-efficacy affect attributions; both have been shown to influence motivation. Perceptions of self-efficacy are “personal judgments of capability to accomplish specific tasks and deal with different realities” (Pajares, 1995, p. 3). Specifically, Bandura (1977) hypothesized that self-efficacy determines whether action will be initiated, how much effort will be expended, and how long it will be sustained in the face of challenge. Persistence through challenge further enhances self-efficacy. Therefore, those with high self-efficacy not only are more motivated to attempt new tasks, but they also persist longer and work harder in the face of difficulties.

Pajares (1995) suggested that perceptions of self-efficacy are important because they are the bridge between knowledge and action. Indeed, Komarraju and Dial (2014) found in a study of 366 undergraduates that students who have a “studious” identity, or ability orientation, have high self-efficacy in academics and therefore show high motivation. They suggest that self-

efficacy is a mediator for attribution (knowledge) and motivation (action). Several other researchers have documented a significant relationship between self-efficacy and motivation (Harter, 1982; Skaalvik & Skaalvik, 2004), but the nature of the relationship remains unclear (Komarraju & Dial, 2014; Zimmerman, 2000). Self-efficacy has also been shown to enhance commitment to following through with goals (Locke & Latham, 2002).

Goal-setting behavior. According to Locke and Latham (2002), goals shape motivation and achievement through four mechanisms: (a) cognitively and behaviorally directing attention and effort toward goal-relevant activities and away from goal-irrelevant activities; (b) energizing, with high goals leading to greater effort than low goals; (c) increasing persistence, with demanding goals requiring pro-longed effort; and (d) affecting action indirectly by leading to the arousal, discovery, and utilization of task-relevant knowledge and strategies. Though these mechanisms show promise for gifted children, Shore, Cornell, Robinson, and Ward (1991) stated that “there is no empirical literature . . . that tells us that engaging explicitly in goal setting has any particular beneficial effect, in general, or specifically for the gifted” (p. 101). Morisano and Shore (2010) cited a continuing gap in the literature regarding empirical evidence of benefits, though they noted there have been a few studies done with gifted adults that suggest a possible reason for academic failure includes a failure to integrate goals or take action on goals. Additionally, counseling struggling students in setting and working towards goals has been shown to improve achievement. In a randomized, controlled intervention of 85 struggling college students, students who completed the goal-setting intervention displayed significant improvements in academic performance compared with the control group after four months (Morisano, Hirsh, Peterson, Pihl, & Shore, 2010).

Despite this lack of research specifically concerning gifted students, Morisano and Shore (2010) suggested:

The process of setting goals should help gifted children to become even more efficient at certain cognitive processes than they already are and provide them with even greater neural power to meet and go beyond the challenges of their academic environments. (p. 256)

Multipotentiality. It is not uncommon for gifted students to show tendencies toward multipotentiality, which is the ability and desire to pursue different activities and goals. As Rysiew, Shore, and Carson (1994) stated:

It is especially evident in leisure and career decision-making. One may benefit from the effects of multipotentiality, have a wide variety of “good” choices, and lead a varied and full life. One may also suffer from the “overchoice” and find decision-making difficult, as it is not possible to do all that one would like to do and is capable of doing. (p. 42)

Other considerations. Though the aforementioned factors are thought to influence academic success, some resilient behaviors have yet to be explained. Suldo and Shaunessy-Dedrick (2013) found that although students in academically rigorous programs experience more internal stress than students in general education programs, their increased stress level did not have negative academic or social-emotional effects. This is in contrast to research of at-risk populations. In fact, the average psychological functioning of these students was similar or high than their peers in general education, and their “academic functioning” with regard to grades and school behavior was “exceptionally high” (p. 836).

Protective Factors in Action—Reversal of Underachievement

Emerick (1992) did a study with ten formerly gifted underachievers about what they factors they perceived had the largest influence on the reversal of their underachievement. All of the aforementioned factors were also noted in this study; in addition to being useful in practice, this study is relevant to this literature review because it includes participants' points of view.

Participants said that their deep interests for activities outside of school transferred the school environment by building self-worth, sustaining love of learning, and to identify learning experiences that were meaningful to them. They also attributed classes that allowed for challenge, individualized exploration, real-world skill development, and contribution to classroom discussions. These classes also tended to focus more on the learning process rather than the final assessment.

Parents showed support both directly and indirectly for their children's interests outside of school and recognized that those activities could be beneficial to their school performance. Parents also remained calm and supportive when their children were not performing well in school and ultimately placed the responsibility for poor performance on the student. Participants reported that caring, supportive teachers who allowed for their input in the learning process while still having high expectations were instrumental in reversing their underachievement. Despite these factors, students felt that they would not have an influence if they had not experienced a change in self. They experienced small successes that built confidence and came to gain satisfaction from doing well.

Risk Factors and Underachievement

I have identified a number of factors in the literature that may put some high-ability students at risk for underachievement. Though these risk factors did not apply to most of the

students in this study, they are still important to discuss because of the large proportion of high-ability students in the general population that are affected.

Certain groups of gifted students are traditionally considered to be at risk for academic underachievement, particularly those from economically disadvantaged and minority backgrounds, as evidenced in part by the fact that these students are usually underrepresented in gifted programs (Borland & Wright, 1994; Ford, 2010; Johnsen et al., 2006; Worrell, Szarko, & Gabelko, 2001). Though research has demonstrated a variety of probable reasons for such underrepresentation, including schools' lack of resources, biased identification methods, and external environmental and social factors (Ford et al., 2008; Murakami et al., 2012; Ogbu, 1994; VanTassel-Baska et al., 2004; VanTassel-Baska & Stambaugh, 2007), efforts to increase participation have met with limited success (VanTassel-Baska et al., 2004; Worrell et al., 2001).

Underrepresented Groups

For decades, researchers have contended that gifted learners can be found in all populations of students (Passow, 1989; Patton, Prillaman, & VanTassel-Baska, 1990; Renzulli, 1973; Torrance, 1970). And yet, a consistently disproportionate number of students from economically disadvantaged and minority backgrounds have been, and are currently, included in gifted programs (Borland & Wright, 1994; Ford, 2010; Ford et al., 2008; Johnsen et al., 2006; VanTassel-Baska & Stambaugh, 2007; Worrell et al., 2001). Research has demonstrated a variety of probable reasons for such underrepresentation, including schools' lack of resources, biased identification methods, and external environmental and social factors (VanTassel-Baska & Stambaugh, 2007).

Economically disadvantaged students. Wyner and colleagues (2007) noted a significant achievement gap between high-ability economically disadvantaged students and their more

affluent peers as early as first grade; this gap widens throughout the elementary school years and is even more dramatic in high school. Alarming, a disproportionately low number of students from low socioeconomic status (SES) backgrounds graduate from college when compared to their more affluent peers (Wyner et al., 2007). Inconsistent funding and policy support for gifted education and services around the country compound this unfortunate reality (NAGC, 2011). In fact, the state in which this study occurred mandates the identification of gifted children but does not mandate services or provide any direct funding for gifted education. Even if students are identified, many do not receive services that offer appropriate challenge for their potential. Such an experience is especially common in states that do not have a mandate to identify gifted students, or that have a mandate to identify but not to offer services for gifted students (NAGC & CSDPG, 2013).

When conventional identification methods (e.g., IQ tests, grades) are used to identify gifted students, those students who come from low-income families may be overlooked because they tend to perform at lower levels. VanTassel-Baska, Feng, Quek, and Struck (2004) suggested in their review that teachers might not see students from low-income families as gifted and therefore may not recommend them for testing or evaluation. Frasier et al. (1995) found that a large percentage of teachers feared that the quality of gifted programs would be compromised if students from low SES were included and therefore did not identify these students.

Even when identification processes are expanded to allow for criteria other than test scores in an effort to identify a more diverse group of gifted students, biases may remain. VanTassel-Baska and colleagues (2004) found that when more socioeconomically disadvantaged students were identified for a gifted program during Project Star, teachers perceived both students' strengths and students' weaknesses, but cited weaknesses more frequently than

strengths. They perceived that Project Star students did not possess high verbal skills, lacked organizational skills, struggled with critical thinking, and had problems with time management. Some teachers also perceived problem solving to be a weakness, while others perceived it to be a strength. Perceived strengths were creativity and spatial ability.

Minority groups. Another often-underrepresented group in gifted education is minority students. In a review of literature on Black underachievement, Ford and colleagues (2008) designated both inadequate school performance and low college attendance rates as issues facing Black students. Factors demonstrated to contribute to underachievement include inadequate curricula, low-quality teachers, lack of family participation, and negative peer pressure.

Ogbu (1994) found that some Black adults and youth have the perception that if students excel in school and pursue higher education, they are “acting White.” As a result, many Black students underachieve to avoid censure from their peers, and sometimes their families (Ogbu, 2004). Another study found that when a predominantly Hispanic school outperformed a predominantly White school within the same geographical area it was placed under investigation for the suspicion of cheating on state tests (Murakami et al., 2012). Analogously, it is not uncommon for members of certain minority groups to underachieve to keep the acceptance of their peer group. When faced with the opportunity to do well in school, some minority students must choose between the approval of their peer group or academic success in isolation (Ogbu, 1994). Even in the absence of negative peer pressure, concern for balancing schoolwork and peer interactions may be an issue for some students (Lee, Olszewski-Kubilius, & Peternel, 2009).

Overall risk factors. The unfortunate reality is that many minority students living in urban districts also come from low-SES backgrounds; their risk factors are twofold (Olszewski-Kubilius & Thomson, 2010). Though the risk factors discussed above are not unique to students

in economically disadvantaged urban areas with high percentages of minority students, this point is emphasized because while identification is frequently problematic in these school districts, it is also very common for no gifted programming to exist at all. Similarly, urban schools tend to lack rigorous curriculum, updated technology, and experienced teachers that are necessary to challenge students of high potential (Olszewski-Kubilius & Thomson, 2010). However, teachers inexperienced with gifted children is a problem that can be found in any school; Farkas and Duffett (2008) found in a national study that 73% of teachers agreed, “Too often, the brightest students are bored and under-challenged in school—we’re not giving them a sufficient chance to thrive” (p. 78).

Extracurricular Enrichment Programming

Many school districts face financial challenges when trying to provide for gifted students; therefore, many academically talented students must seek enrichment outside of the typical school day to develop their talents. In many instances, these experiences occur within the context of afterschool, weekend, or summer programs.

Some outcomes that provide justification for OST programs include increased skills aptitude or knowledge of academic content areas (Little et al., 2010; Miller & Gentry, 2010; Olszewski-Kubilius, 2006; Olszewski-Kubilius, Lee, Ngoi, & Ngoi, 2004), increased interest in learning (Johnsen et al., 2006), exposure to like-minded peers (Miller & Gentry, 2010; Olszewski-Kubilius & Scott, 1992), increased confidence about success in college (Olszewski-Kubilius & Scott, 1992), and improved career competence (Johnsen et al., 2006; Little et al., 2010) and self concept (Dai et al., 2013).

Though all such supplementary gifted programs have a similar goal to aid the development of gifted students, whether academically, socially/emotionally, or professionally,

outcome data that exist are usually results of within-program evaluations rather than investigations of longer-term influence on the students served by the programs. There has been a communal call for evaluation of these programs to provide support for the potential benefits and to strengthen services for gifted students (Callahan & Kyburg, 2005; Olszewski-Kubilius, 2007).

Summer Programs for Academically Talented Students

As the context of the present study was situated specifically within a summer program designed for talented students and the summer program was also explored as a potential influence on talent development, I include literature on summer programs for talented students. From this point forward, I will shift from literature on OST programs in general to summer programs. Studies show that high potential students benefit academically and social/emotionally from enrichment programs.

Borland and Wright (1994) recognized that not only did gifted students from underrepresented groups need to be identified through a holistic process but that they also needed interventions once identified. In its first year, Project Synergy identified 14 kindergarten students from traditionally underrepresented groups for enrichment interventions by de-emphasizing test scores and instead using observations, teacher nominations, and portfolio analyses. Twelve attended summer enrichment sessions, ten were enrolled for enrichment classes during the school year, and a total of seven students completed all enrichment activities (one student moved, one was put into foster care, and one simply stopped attending). Of those seven students, five were accepted into a school for the gifted the following year, and one student was accepted the year after that. Though negative environmental factors weighed heavily on these students and their parents, they continued to have positive teacher evaluations and gains on standardized tests, which the authors view as influenced, in part, by enrichment interventions.

Project EXCITE is a program in partnership with Northwestern University with the goal of closing the achievement gap between minority and majority students, specifically in math and science (Olszewski-Kubilius et al., 2004). The project has several components, including parental education and involvement, peer support, academic enrichment for eight weeks on Saturdays, and individualized support for students who need it. Program evaluation data showed an 80% retention rate over three years, and attendance for Saturday sessions was above the minimum requirement set by program administrators. Teacher evaluations suggested students demonstrated high interest in math and science, generally high performance in math and science, and high homework completion during the program. Over 80% of students received A's or B's in math and 70% received A's or B's in science.

Lee and colleagues (2009) did a follow up with students who attended Project EXCITE for six years. Overall, participants reported positive perceptions of Project EXCITE; they described the program as fun and challenging and reported enjoying the enrichment activities. Parents perceived that the program increased their children's interest, confidence, and motivation for schoolwork.

Miller and Gentry (2010) studied 33 kindergarten through fifth grade students enrolled in Project HOPE (Having Opportunities Promotes Excellence), an initiative to involve more students from low-income backgrounds in a Super Saturday program at Purdue University. Students received a total of 18 hours of instruction in above-grade-level content in an area of interest. Participants that completed the qualitative part of the study revealed they had positive experiences and learned above-level content through interactive learning and very few participants had negative comments. Six of those students also mentioned receiving social support at the program. Quantitative data revealed that Project HOPE participants did not differ

significantly from other students in program interest, challenge, choice, and enjoyment. Authors cited a limitation of this study as not having an ethnically diverse final sample.

Clasen (2006) did a follow-up study with students from Project STREAM (Support, Training, and Resources for Educating Able Minorities) 13 years after their participation. Of the 158 students in the original sample, 68% had graduated high school thirteen years later. Schools noted that 11 of the students who had not graduated had left school to work in family businesses. Of the high school graduates, 60% were enrolled or had completed undergraduate degrees, and eight were pursuing Master's, Ph.D., or law degrees.

Results from surveys and interviews revealed that 88% of responding participants thought the overall program was "important" or "very important" as an influence on their career decisions and 85% thought the summer program was "very important" to their success in school. They ranked the top three program components as becoming familiar with a college campus (93%), summer programs (89%), and working with students of diverse backgrounds (88%). The qualitative analysis revealed that participants thought the stability and consistency, sense of community, challenging curriculum, and university campus experiences that the program provided were most critical to their success. Clasen (2006) suggested that academic success should be measured in a variety of ways. The study called attention to the need to identify students early and highlighted participants' perceived value of the summer program, which was high.

Dai and colleagues (2013) studied potential influences of the big-fish-little-pond-effect (BFLPE), which predicts that equally able students may experience lower academic self-concepts when participating in programs with peers of high ability, and higher academic self-concepts when the average ability levels of peers are low (Marsh et al., 2008). When the BFLPE

is applied to gifted settings, however, outcomes are mixed (Dai & Rinn, 2008). This study included a sample of 291 adolescents attending an academic summer program. Researchers found that attendance at an academic summer program with like peers promoted a slight increase in self-concept at the end of the program. Additionally, results showed only the effect of gender on verbal self-concept was significant at $p < .05$ level, suggesting that females were more likely to experience a decline in their verbal self-concept after partaking in the summer program. Age, class, students' initial self-esteem, and social comparison tendency did not influence self-concept.

Mentoring

Though most research on special populations has focused on at-risk populations (Britner, Balcazar, Blechman, Blinn-Pike, & Larose, 2006), mentoring is more recently being used as a preventative measure rather than an intervention and is focused on building competencies in students (Britner & Krammer-Rickaby, 2009). For gifted students in particular, mentorships can provide academic and social and emotional support (see the review by Callahan & Kyburg, 2005) and provide the necessary challenge for gifted students to continue their skill development (Clasen & Clasen, 1997). Additionally, a mentor may play a critical academic role by serving as a model of achievement and offering valuable guidance, as well as potentially providing a positive influence on students' views of their scholastic careers and occupational options (Clasen & Clasen; Olszewski-Kubilius, 2003). Overall, mentoring has been demonstrated to improve academic attitudes and self-concept, to reduce the likelihood of substance abuse and other antisocial behaviors, to improve relationships with parents and teachers, and to support career education and development (Clasen & Clasen, 1997; Darling, 2005; Larose & Tarabulsky, 2005;

Rhodes, 2002). As a result, some extracurricular programs have incorporated a mentoring component to maximize support for students (e.g., Little et al., 2010).

In this chapter, I reviewed the literature examining fundamental aspects of the present study. The concepts presented provide the various contexts upon which this study has been built—specifically, factors contributing to academic success as well as underachievement, outcomes of academic summer program, and the students themselves.

CHAPTER 3: RESEARCH METHODS

In this study I explored students' perceptions of (a) the key factors that contributed to their talent development as they pursued their academic goals and (b) their responses to challenges before, during, and after their participation in a summer mentorship program for talented adolescents. I also examined whether and what degree students felt that the program influenced their experiences and decisions during the school year following the program. The following research questions guided this study:

1. What factors do student participants enrolled in a summer program report as contributing to their talent development?
 - a. How and in what way do students' reports of these factors change during and after their participation?
 - b. How might these reports vary by students' demographic information?
2. What influences do students perceive the summer program had on their (a) responses to challenge and (b) academic goals?
3. How do academically successful students feel they differ from similar peers who do not seek extracurricular talent development?

To address the purpose and satisfy the research questions, I designed this study around a qualitative methodology. Specifically, qualitative inquiry helps answer “questions that stress *how* social experience is created and given meaning” (Denzin & Lincoln, 2000, p. 8). My main focus was to illuminate the lived experiences of motivated gifted students and how they make sense of those experiences. Therefore, the most appropriate means to study this phenomenon was to talk to and hear from the students directly (Breckenridge, Jones, Elliott, & Nicol, 2012). Since I thought results of such a study would be most powerful in their own words, I approached this

study from a constructivist grounded theory stance. This exploratory study is warranted as a first step toward theory building due to the little research that exists on this topic.

My study focused on the experiences of 54 students, ages 15 to 17, enrolled in a 3-week residential summer program for talented adolescents in July of 2013. I chose this population because they have demonstrated academic success and motivation to pursue extracurricular talent development opportunities. I collected and analyzed data from interviews, emails, and program documents. This study is inductive in nature as it involved the emergent discovery of these patterns, themes, and categories in the data without referencing any previously existing frameworks. In the last stage of the study, I then compared found theories that resulted from the inductive content analysis against two models of talent development found within the research literature to see to what degree my data conforms to, or departs from, existent theory.

The analysis resulted in a model that included a hierarchy of codes and categories with exemplars that represent the core theme or essence of each category. This model was used to organize the presentation and explication of data in the following chapters.

Participants and Program Profile

Participants were recruited within the context of a 3-week inquiry-based residential summer program housed at a large public research university in the Northeast. The summer program allows rising high school juniors and seniors who demonstrate academic talent and motivation to participate in research and other creative inquiry projects in areas of interest and potential career direction. These projects take place under the guidance of mentors, who in most cases are members of the university faculty. The program seeks to increase participants' academic potential and awareness of personal strengths and to allow them to interact with motivated students and faculty from diverse backgrounds. Benefits of the program, as listed in

the application materials, include practicing as a professional, experiencing real-world research, developing creative and collaborative abilities, enhancing awareness of talent and career opportunities, and interacting with peers of similar abilities and interests.

As part of the program, participants worked at one mentorship site in a focused content area for 6-8 hours per day, 5 days per week, for 3 weeks. Outside of their sites, they attended special topics presentations designed to inform them about college admissions, honors programs, college major selection, and career planning. Participants also had opportunities to partake in various extramural and social activities in the evenings and on weekends.

Due to widely different practices for identifying gifted students across the country, applicants were not required to be identified for gifted and talented services at their individual schools. However, the application process was still highly competitive. A basic expectation, shared in the application materials, was that the student was ranked in the top 25% of his or her high-school class and had a grade point average (GPA) of 3.0 or higher on an unweighted 4.0 scale. These criteria were examined along with transcripts, essays, teacher recommendations, and (optional) standardized test scores. Therefore, applicants who demonstrated high levels of interest and motivation in a relevant area may have been accepted even if their grades did not quite reach the general expectations.

Program data over the past 5 years indicate approximately 50% of students attend the program on scholarship based on financial need as determined by parental income. Program tuition is approximately \$3,500, and students may apply for need-based financial aid by having parents/guardians complete a separate application. Program data from the past 5 years also show approximately 30% of students are African-American/Black or Latina/o or Hispanic. These

statistics improved the likelihood of representing the perceptions of students from diverse backgrounds.

The total sample includes members of the 2013 program cohort, which consisted of 75 students, with 55 females and 20 males. Students were between 15 and 17 years of age. All participants in the program received information about the study with their acceptance packets. Appropriate procedures were taken to ensure participant safety, and Institutional Review Board (IRB) approval was granted. Because most participants were adolescents under the age of 18, consent forms were mailed to parents and returned with signatures of consent from parents and assent from those students who chose to participate. All participants were entered into a random drawing for 20 \$10 iTunes, Wal-Mart, or Amazon.com gift cards. Participants' names were entered additional times into the drawing for each of the major study portions that they completed (i.e., one time for participation, one time for completing pre and on-site forms, one time for completing on-site interview, one time for completing each follow-up email, and one time for completing follow-up interview).

Of the total participant group of 75 students in the 2013 cohort, 55 agreed to participate in the study, but one within the assenting group did not complete any portion of the study. This final group of 54 participants included 40 females and 14 males, of whom approximately 32% self-identified as African-American/Black or Latina/o or Hispanic and approximately 54% attended the program on partial or full scholarship based on financial need (see Table 1 for breakdown of ethnicity and financial aid status by gender). Though these participants represent only a portion of all students enrolled in the program, they are representative of typical program demographics. Demographics for individual participants are included in Table A-1 of Appendix A.

Table 1

Participants' Self-Report Ethnicity and Financial Aid Status

Ethnicity	Gender		Total	
	Male	Female	<i>n</i>	~%
African-American/Black	2	7	9	16
Asian/Pacific Islander	3	13	16	30
Latino/a or Hispanic	1	8	9	16
White, Non-Hispanic	6	8	14	26
Multiple (non-White)	1	1	2	4
Other	0	2	2	4
No Response	1	1	2	4
Total	14	40	54	100

Financial Aid Status	Gender		Total	
	Male	Female	<i>n</i>	~%
Paid Full Tuition	9	16	25	46
Received Partial or Full Aid	5	24	29	54
Total	14	40	54	100

Data Collection

To answer the research questions, I collected data at various points during and after the summer program. Data sources included participant interviews, journal entries, and emails to the researcher. I removed participants' names and replaced them with pseudonyms for all data sources.

Interviews

To gain an in-depth understanding of the participants' lived experiences relative to their talent development, I used interviews at two points of data collection, once within the first two weeks of the summer program and once several months after the program. Of the 54 students participating in the study, 36 students agreed to be interviewed. Ten students did not complete an interview for various reasons: two participants were not asked for an interview because it was their second summer participating in the program and would likely have had different experiences than new participants, two participants' site content was atypical of the program as a

whole, two participants did not complete the full program due to extenuating circumstances, and four students chose not to schedule an interview after they were asked. In total, I interviewed 26 students; as in the total group, a variety of socioeconomic and ethnic backgrounds were represented.

I used a semi-structured interview protocols for both interviews. Interview questions were generated with a basis in the talent development literature (see Appendix B for the full protocols). For the interview during the program, participants were asked questions regarding their perceptions of factors influencing their academic success to date, similarities and differences to peers, and goals for their participation in the summer program. Interviews were conducted during students' lunchtime, after site, or at times designated for free time or extracurricular activities to prevent interrupting their learning.

Additionally, I contacted all 26 students who had completed the initial interview 5 months after the conclusion of the program, sending reminder emails biweekly for the next month. Nine students agreed to participate in the follow-up interviews. This time, I asked participants about how they have responded to challenges since returning to school, various influences on their success, and how their participation in the summer program has influenced college and career decisions. For participants living within 50 miles, interviews took place at a location and time of the participant's choice; for participants living farther than 100 miles, interviews took place via telephone or Skype. Though this group had a good distribution by gender and ethnicity, participants who attended the program on scholarship were overrepresented when compared with the total program population.

All interviews were digitally recorded and then transcribed verbatim by a professional transcriptionist. Interviews averaged 10 minutes and ranged from 5 minutes to 25 minutes. The

reason some of these interviews were brief was due to a degree of unresponsiveness from the students. Specifically, because I wanted to gather authentic reports of their experiences, I chose not to probe so hard as to solicit interesting but perhaps more contrived responses. That said, many of the short interviews provided interesting and useful information with which to conduct my analysis.

Journal Entries

As part of the program administrator's evaluation process, students completed responses to journal prompts weekly during the program. In total, 43 participants completed the prompt at the first week, 32 the second week, and 48 the third week. Twenty-two participants completed prompts for all three weeks. Because these prompts asked about participants' skill development, important persons relative to their learning, and career goals, these responses provided a rich source of data to answer the research questions (see Appendix C for prompts). Each week, participants were given the journal prompts and asked to complete them within 24 hours. Participants were given a choice of whether to complete the prompts via email or on paper. Any handwritten responses were transcribed verbatim. Email responses and transcribed responses for students agreeing to participate in the research study were compiled into one Excel database.

Emails

In addition to follow-up interviews, I contacted participants via email to get a more complete picture of their talent development after the conclusion of the summer program. I emailed participants a set of open-ended questions 2 months after the program and then again 5 months after the program (see Appendix D for prompts). Two reminder emails, spaced a week apart, were sent after each initial email if responses were not received within the week. Questions were similar to the follow-up interview and focused on participants' responses to

challenging situations, accomplishments in school, and how their participation in the summer program has influenced college and career decisions after they returned to their schools. Email responses were compiled into an Excel file. A total of 10 students responded to the first email and 13 students responded to the second email. Of those responses, 6 students responded to both emails.

Response Rates

Two participants contributed responses for all data sources (three journal responses, two interviews, and two emails). Another two participants completed all but one response. Given that the intention of the study was not to trace individual participants' development over time, but to get a collective sense of the group's meaning-making at several points during and after the program, I do not consider missing data to be problematic. I was able to represent multiple perspectives from students of varying demographic backgrounds with the data that I collected. For a complete table of respondents and their respective completed data sources, refer to Table A-2 in Appendix A.

Analysis

To analyze my data, I chose a constructivist grounded theory approach because it recognizes the mutual creation of knowledge by the participants and the researcher, aims toward interpretive understanding of participants' meanings, and keeps the participants' words intact during the process of analysis (Charmaz, 2006; Mills, Bonner & Francis, 2006). To this end, each participant served as a unit of analysis. Because it was my purpose to allow students' perceptions to emerge rather than to apply existent theory to their responses, it was not appropriate to apply a more structured methodological approach. Additionally, constructivist grounded theory accepts the inevitability of multiple social realities and therefore places an

emphasis on capturing multiple participant perspectives instead of reconciling one main concern (Charmaz, 2003, 2006). Several sources contend that student voice is an important part of program assessment and curriculum development (Brooker & Macdonald, 1999; Buchanan & Woerner, 2002; Mitra, 2004; Suskie, 2009), but it is seldom included in research methodology with gifted students (e.g., Peine, 2003). A search of the talent development literature revealed many studies that included educators' perspectives, but only one the included students' perceptions—college students, at that (see Bonner, 2001). Therefore, this novel analysis is a meaningful addition to the gifted education literature.

Throughout this process, I used a qualitative research software program, *NVivo for Mac*, to organize and analyze the data. Before beginning coding, I uploaded all interview transcripts, journal responses, and emails into *NVivo*. Next, I did a thorough and systematic initial reading of all data to begin to capture emergent themes. I began the process of coding by analyzing interview text line-by-line to begin conceptualizing ideas (Charmaz, 2006). I chose this method of analysis because as a professional who has experience working with talented adolescents in such a context, I did not want to make inferences unsupported by the data due to familiarity of the topic. I sorted and separated these line codes into meaningful groupings to synthesize the data and extracted an overall essence or underlying meaning. I used these essences to generate initial codes. I coded five interviews in this manner to generate initial codes. Next, I applied these initial codes to the remainder of the data, making appropriate changes as necessary (e.g., renaming codes, refining codes, collapsing or adding codes). The emerging codes were continuously examined for overlaps and redundancy. Finally, I organized codes around meaningful concepts such as “*External Catalysts*” called *axial* codes. The analysis resulted in a model encompassing these axial codes, focused codes, and exemplars.

Some limitations of the constructivist grounded theory approach are that the allowance for multiple meanings also permits for many avenues of inquiry. To build a theory is a subjective process, which relies heavily on a researcher's aptitude for the method. Additionally, the iterative nature of the analysis may confound the discovery and verification of codes and themes (Charmaz, 2006). I acknowledge these limitations and will show that this approach is appropriate for my research question and data in the following chapters.

Memos

Throughout the analysis, I recorded any thoughts or ideas that emerged as I worked with the data both in a Word document and using the memo function in *NVivo*. These documents contained reflections on the connections among the data, my personal reactions to the data, and meanings I was contemplating. I revisited these documents consistently throughout the research process and consider them an analytic memo, defined by Saldaña (2009) as, "Your private and personal written musings before, during, and about the entire enterprise" (p. 32). This activity is "a question-raising, puzzle-piercing, connection-making, strategy-building, problem-solving, answer-generating, rising-above-the-data heuristic" (p. 32). These memos also served as a record of the analytical process.

Trustworthiness

To increase the trustworthiness, credibility, and authenticity of the study, I maintained audit trails (Carcary, 2009; Hsieh & Shannon, 2005) through the aforementioned analytical memos containing records of my drafts of interpretation, my reflections upon the undertaken research, and thorough documentation of any ideas, notes, or insights I had during the research process (Creswell & Miller, 2000; Saldaña, 2009). I analyzed data for one participant at a time as suggested by Saldaña (2009) when there are multiple participants in a study. After each data set

(e.g., Interview 1; Email 1) was analyzed, I revisited and checked all codes for redundancies, similarities, clarity of wording, and any initial patterns of relationships between the codes. I also kept a record of the evolution of codes. This documentation will aid external reviewers in assessing the credibility of my findings (Patton, 2002).

Second coders also checked different iterations of the codebooks and provided informative feedback. I worked with a reliability coder (a graduate student with experience in qualitative research and with adolescents) after my initial coding process to help evaluate the validity of my interpretations of the data. This coder used *NVivo* to code 25-35% of data sources for each collection point (e.g., Interview 1; Email 1). Initial agreement percentages ranged from 79%-100%; we discussed each other's findings until we reached 100% agreement for all data sets. After that process, a professor experienced in qualitative methodology and a professor experienced in gifted education reviewed my codes for further agreement, making notes about codes in a shared Word file. This review resulted in further discussion about codes and the final organization of codes that will be explained in Chapter 4. This process enhanced the consistency of all findings, comprising codes, categories, and exemplars.

Lincoln and Guba (1987) recommended that a researcher should present thick and rich descriptions to establish rigor in a qualitative study; this is a strategy for creating transferability. I provided descriptions of the findings using verbatim quotes from the participants in the study in Chapter 4 so the reader may use his/her own discretion in determining how my findings might be conveyed or generalized. I also described the sample as comprehensively as allowable to communicate the population to whom the findings of this study would be most applicable.

CHAPTER 4: FINDINGS

The purpose of this study was to find out what factors academically talented students perceive contribute to their talent development and how participation in an inquiry-based summer program may further influence how students view those factors. I conducted a qualitative analysis using a grounded theory approach employing data sources that included participant interviews, journal prompt responses, and email responses both during the summer program and after its conclusion. Findings are organized by research question and further grouped within each section by thematic patterns that emerged during data analysis. I organized and discussed these findings as they relate to the research questions, and further organized them by subcategories that correspond directly to elements of the research questions themselves.

Findings by Research Question

Research Question 1: What factors do student participants enrolled a summer program report as contributing to their talent development?

The following findings stem from student responses to questions about factors contributing to their talent development as well as points addressing this issue within their responses to other prompts. The most prevalent responses regarding these factors included significant persons, elements of school, and self-motivation. Within their responses, participants revealed various functions of each of these important influences, including the self, all of which I describe below. Though I did not anticipate it, some participants also described negative factors or factors that they felt were missing from their development. I will also include these factors, because the participants perceived them to be important even if they were absent.

External catalysts. Most participants described external catalysts, such as academic and social support, as factors influencing their talent development. Participants felt supported by

many significant persons in their lives, including parents, teachers, peers, and mentors. They described their perceptions that this support allowed them to develop their talents and be successful. These significant persons, in addition to offering general support, served as role models, offered social and emotional support, and pushed students to succeed through their actions and expectations.

General support. Several participants expressed a general feeling of support from significant persons, whether it came from parents or other adults. Aaron said, “So there’s a lot of support from my parents to perform well in school and academics. So there’s that kind of support there to do my best”¹ (Interview 1, July 18, 2013). Rebecca also expressed a sense of support, “I think definitely the support of my parents [influences my academic success]. They’re extremely supportive in everything I do” (Interview 1, July 12, 2013). Eddie did not mention academic support, but emotional support from his parents, “[It helps to] have [them] doing stuff alongside you and giving you emotional support” (Interview 1, July 13, 2013).

Other general statements were about teachers whom participants perceived gave them quality instruction over the course of their academic career. Briana said, “I think another factor would be I’ve always had really good teachers...mostly, like, back in elementary and middle school when you had one teacher? I got pretty good teachers” (Interview 1, July 17, 2013). Lamont also said, “I have had a lot awesome teachers in my lifetime. I’ve been lucky to have that” (Interview 1, July 17, 2013).

Role models. Role models were important to participants, and several important persons filled that role. The majority of participants who mentioned their parents as factors in their talent development spoke of them as role models, emphasizing that their parents served as positive

¹ Note that all quotes use students’ words verbatim, including spelling errors in students’ written responses. To avoid interruptions to the readability of the text, I do not use [sic] to denote all such incidences of student spelling and usage.

examples in academics, careers, and life in general. A few participants noted that watching their parents motivated them to work hard and aspire to be like them. Salma said, “looking at my parents’ work ethic really helps me” (Interview 1, July 17, 2013). Alexa saw her mom working hard and through this experience felt that she had learned the ability to juggle many commitments successfully:

She manages to care for my sisters and me and continue to work her own full time job as well as many other volunteer jobs. She gets work done when it needs to be and knows to do the more important things first rather than put them off. (Email 1, October 28, 2013)

Similar to Salma, Aaron not only perceived his parents as role models, but also explained that because of their choices he felt like he owed it to them to also work hard:

I feel like my parents work really hard, and they put me in a good school, so I kind of like owe it to them to perform my best in school and do my best work. So it’s like I’m repaying them for all the stuff that they’ve done for me, kind of helping me out. And they work hard even now, so watching them work and then you want to be able to do your part. (Interview 1, July 18, 2013)

Rashida also wished to repay her father; she wrote,

A person I view as a role model is my father. My father does everything for me, his life is successful even through everything he has gone through to get me where I want to be and this has helped me form myself and I hope to be like him some day in a way that I will always be there for him when he needs it. (Email 1, October 11, 2013)

Taken together, many of the students appeared to feel like they owed something to their parents for the investment in their success, hence wanting to “do their part” to achieve in and out of school.

It is interesting to note that two participants perceived their fathers to be role models even though they were not always present. As such, the very activities that the participants viewed as worthy of emulating were out of their sight. Eddie said,

The person that I currently view as a key role model is my dad. Although he is not home very often, he works very hard in order to support my family. Also, his perseverance motivates me. Oftentimes, he works extremely long hours and often flies across time zones many times. Whenever I start to feel lazy or unmotivated, I think of his work ethic, and that often works to get me to do something. (Interview 1, July 13, 2013)

Lynn echoed a similar situation about her dad when she wrote,

Someone in my life that I currently view as a mentor or a role model would be my dad. He works at the church so much that he is barely home. This person motivates me to be a better person; makes me realize that life is not too hard to handle and that I can do anything that I want to do. (Email 2, January 23, 2013)

Here, students specified using their parents' behavior as an inspiration for some of their own motivation to achieve. This point is also interesting because positive influence of parents can occur even without frequent or regular contact with the child.

For other students, peers also served as role models for how to balance the many commitments of life. Michaela wrote, "I view one of my best friends as a role model because she shows focus and drive, as well as an ability to have fun" (Email 1, November 10, 2013). Kenzie too wished to emulate her friend not only with regard to academic intelligence, but emotional intelligence as well. She wrote,

In my life, I see my friend . . . as a role model. She is exceptionally kind to everyone, and takes time out of her day selflessly to help others. Not to mention, she is always cheerful, and smart as well. (Email 2, December 21, 2013)

Peers served as role models to the participants not only to encourage excellence in the present, but also in the future. Aliyah wrote, “Right now I view my girlfriend . . . as a role model. She has faced a fair amount of adversity in high school, as I have, but has worked as hard as possible and is achieving her dreams in college” (Email 2, January 24, 2014). In addition to serving as role models, peers were references for social comparison with regard to academics, which I discuss further in later sections.

Mentors in the summer program that was the central context for the study also served as role models for participants’ potential future careers and life in general. Salma’s mentor served as a career role model; she wrote, “[My mentor’s] apparent passion for science motivates me to engross myself in the lab and my own scientific questions” (Journal 1, July 10, 2013). Andres took a larger life lesson from his mentor. He said,

My mentor has helped me this week by making me realize that you can make a difference in a community by making a commitment. She wanted to make a difference so she stuck with it and it has affected the community in a positive way. She has also made me realize that it's good to help other people. Sometimes you might have to sacrifice your time but it's worth it at the end. (Journal 1, July 10, 2013)

In addition to the program mentors, some of the students viewed their teachers both in the program and at their home school as role models. Like the aforementioned role of the mentors, teachers at students’ high schools also served to give insights into life and career. Shannon reported,

There [are] a couple teachers at my school that I see as role models. [They are] just really good people that are determined in what they're doing and they enjoy what they're doing, which I think is important for what you do later on in life, is that you have to enjoy it.

(Interview 2, January 13, 2014)

These quotes are indicative of larger participant perceptions that mentors and teachers performed a larger role in their lives than simply being distributors of academic information. By encouraging the participants to give back to the community and advocating vocational enjoyment, they seek to influence the students' development as a whole.

Actions encouraging talent development. Many participants reported that significant persons gave them various forms of active, tangible support that aided in their talent development, including encouragement around specific challenges, help with academics, and providing opportunities for learning and challenge. These experiences all served to give participants inspiration that motivated them to take action toward their goals.

The majority of responses demonstrating this point involved adults and peers helping with homework and preparing for college and careers. This support began at a young age and continued through the college preparation process. Parents provided additional opportunities for learning and challenge from a young age, including paying for private school and doing enrichment activities at home. According to participants, these opportunities allowed for early skill development, particularly in reading. Shannon said, "My parents would often have me read all the time and do little kitchen science experiments" (Interview 1, July 12, 2013), and Jessie said,

I don't really think children are naturally just born to really want to learn and study. That's definitely an acquired thing for me. When I was little, my parents would read to me every

night and then that got me into reading and then it just kind of went from there, I think.

(Interview 1, July 12, 2013)

Victoria too recognized that her parents gave her an opportunity to be around serious students by paying for private school. She said, “Parents care enough to pay a lot of money to send [their kids] to school, so they’ll take school very seriously, so that kind of leads me to take it seriously, too” (Interview 1, July 18, 2013).

In addition to creating early opportunities for their children, many participants indicated that their parents played the role of confidante in times of challenge. When they had trouble in school or difficult problems, these participants trusted their parents enough to share their weaknesses and receive support. Briana said,

[My parents] really helped me, . . . still continue to help me, with anything, any problem I have or help me work towards a solution to the problem on my own, and that’s one of the biggest factors [of my academic success]. (Interview 1, July 17, 2013)

Similarly, Jessie wrote, “[My dad] guided me in the self-learning process, helping me make a plan and track benchmarks in the material. He also helped me fill in gaps or understand certain concepts that I had trouble learning on my own,” (Email 1, October 12, 2013).

In addition to giving support when their children were having difficulties, some parents gave advice. Kaley contributed, “[They] kind of tell me what not to do or what bad things could happen if I don’t follow the right direction. Or if I steer off” (Interview 1, July 12, 2013). Eddie said of his father, “He helps me plan out my life, figure out ways to solve any problems that I have been encountering, and warn me about the mistakes that he has made over the course of his lifetime” (Email 2, December 21, 2013).

Participants mentioned that they also formed close, trusting relationships with teachers that influenced their talent development. Martin shared how two teachers got him interested in different subjects, “My philosophy teacher really, really got me into philosophy. He was fantastic. He was a PhD student and we are still in touch today,” and “My physics teacher really respected me and took me seriously, even though my school doesn't offer an Honors physics class. We’ve developed a good relationship and [my teacher] really actually inspired me to love physics” (Interview 1, July 10, 2013).

Perceptions of specific academic support emerged frequently with regard to teachers’ influence; several participants noted specific, active efforts that their teachers made to influence their talent development. This included extra effort beyond time in class. Nina wrote, “[My] U.S. History teacher who is also my advisor . . . has helped me with different class projects and homework assignments” (Email 2, January 8, 2014), and Bobby said, “I spend a lot of time after school working with teachers to catch up on things” (Interview 1, July 10, 2013).

Participants expressed positive views of teachers’ willingness to offer their help. Shannon said, “I think the teachers want you to do well, so they help you with what you need help with, and they just help you do what you need to do to succeed” (Interview 1, July 12, 2013). Kenny agreed, “Well, definitely how involved my teachers have been, like their accessibility, their involvement in the teaching and everything, [has influenced my talent development]” (Interview 1, July 17, 2013). He later added,

I . . . obviously would do much better in the [classes] where [teachers] certainly care more about the students and everything. I've had some very good teachers so far, so I've been pretty happy. I don't think I've had really any teachers who haven't really cared or

anything like that, so I've had a pretty good experience so far. (Interview 1, July 17, 2013)

Clearly, participants valued that their teachers and parents cared about them enough to spend extra time with them in times of challenge to increase their understanding. They also appreciated day-to-day efforts that bolstered talent development.

Parents also continued to provide support beyond daily tasks. For example, many of the participants said their parents frequently helped with homework and took an active interest in their future college decisions. Kenny said,

My dad has helped me look at a lot of colleges. He bought books and everything. He's given me a couple of SAT practice books and everything to get started there. We've gone on college tours starting last summer, looking up programs like this and everything.

(Interview 1, July 17, 2013)

Charlotte also valued her father's assistance with her college preparation:

[My dad] has helped me do my college applications and scholarship applications as well and it has been a rollercoaster, but he's helped me with it every step of the way and I am truly blessed to have a father like him.

She later added,

[My dad] encourages me a lot especially now that I am a senior. He believes in me that I will graduate and get into the college of my choosing. He tells me that he believes that I can do anything I want if I just put my mind to it and that he's proud to be my father and I in turn am glad to be his daughter. (Email 1, October 29, 2013)

Lamont had the additional support of his grandfather in the college application process and making career-related decisions:

[He has] been helping me get all my college stuff taken care of. He's been basically telling me the best way to go about getting my applications finished, helping me pick out majors and getting everything settled because I'm not entirely positive what I want to do after high school anymore. (Interview 2, January 29, 2014)

The college application process can be overwhelming, and participants expressed gratitude that they had assistance from loved ones to be able to navigate it successfully.

When talking about positive influences on their talent development, some participants also chose to talk about influences they wish they had, but did not. Though these participants were achieving at high levels, they still described their view of these issues as detrimental holes in their talent development. When asked if he had any influential adults in his life, Ramone said that he did not. Ramone and Lamont also said that they lacked positive peer influences in their lives.

Pushing and expectations. One code that I coded *in vivo* was *Pushing*, which referred to situations in which another person was actively, sometimes aggressively, exerting influence on the participant toward a particular goal. Fifteen students used this terminology when talking about how their parents, teachers, and peers have influenced their talent development. Participants treated *push* as either positive or negative depending on who was doing the pushing, and how the participants perceived the helpfulness of the pushing. Participants also believed they were driven to do well because parents and teachers were holding high expectations for them, but not necessarily actively exerting influence. Again, expectations held by parents were sometimes viewed as frustrating, but expectations held by teachers were welcomed. This may be because participants viewed parents' goals as too lofty and without adequate support, while teachers had expertise in education and could help them toward goals they set themselves.

That said, there were a number of instances in which the participants represented their parents' pushing as helpful, and this positive framing usually corresponded with tangible supports for improvement. For example, Briana viewed her parents' pushing her toward a goal as helpful:

I think the biggest factor would be my parents, because they really push me towards finishing that goal, that end project, and they really helped me. [My mom] also pushes me to do things I normally would not get around to doing for the sake of bettering myself and adding to my resume. (Interview 1, July 17, 2013)

Lamont too mentioned that he might not have taken advantage of academic opportunities if not for his mother pushing him to do better in school. He said, "My mother's always pushing me to do better in school, so she's the one who talked me into taking Honors courses in the first place, after 9th grade" (Interview 1, July 17, 2013).

Libby also agreed that her parents' pushing her to do well in school has helped, but recognized that it may not be the same for all students:

They've pushed me really hard so that I can do really well in school. I think for some people, having your parents always on your back about your grades can be difficult. I think for me, it's, pushes me ahead and even though sometimes it's annoying and sometimes I tell my parents to get off my back get a little bit, I still think it's one of the most important factors. (Interview 1, July 13, 2013)

These participants viewed their parents' pushing as helpful because their parents were offering assistance toward a particular goal. For each of the above examples, the participants probably ascertained that the goal was reachable based on parental encouragement. Additionally, and

highlighted later, it also seems that the participants and parents were aligned in terms of the importance or value of the goal.

Alternatively, several participants viewed their parents' goals for them as being derived from their parents' own educational experience. Moreover, this was true regardless of whether the parents' experiences were positive or negative. Martin said, "Neither of [my parents] had any drive in school. They both lived in the ghetto. I guess that's the biggest reason why they want me to do well, to be happy and successful" (Interview 1, July 10, 2013). On the other side, Victoria's parents set expectations because they did go far in school, "My parents have always been really big on education. They both completed graduate school [so] it's always been kind of expected that I would do that too" (Interview 1, July 18, 2013). I did not determine that participants felt either negative or positive toward these expectations; these examples seemed to be neutral statements meant to convey descriptions rather than evaluations of parental support.

While these descriptions were neutral, others were more negative. For example, some participants felt like they had a lack of support to reach their parents' expectations and this often led to bad feelings. Melissa talked about frustration with her parents about their expectations for her grades. Melissa said, "Probably my parents [are an influence], because they're so strict on my grades. If I come home with less than a B-, I won't hear the end of it" (Interview 1, July 10, 2013). For others, frustration with parental expectations seemed to be focused on their parents' plans for their future—whether that future aligned with the participant's goals or not.

Kaley's frustration with her parents' expectations stemmed from her perception of their lack of understanding; she felt that the support they provided was not useful because they did not go to college:

They expect a lot from me. And they don't really know about the college process, because neither of them went to college, and no one in my generation has gone to college yet either, so They don't even know what half these schools I'm applying to are and I just kind of go with the flow and just do everything myself and they're, like, "This should be so easy" and I'm, like, "It's not! You don't even know what I'm doing!"

(Interview 2, January 24, 2014)

Another way participants experienced this push as negative was when their parents' expectations were misaligned with their own goals. Some parents conveyed specific expectations for their child's career, such as in Victoria's case, even though it did not match her interests in science. She said, "My dad is really focused on me having a future in an area of business, like accounting" (Interview 1, July 18, 2013). This may create internal turmoil for her as she tries to pursue a career in science as she wishes because it is in conflict with her father's expectations.

Sometimes these expectations that participants viewed as unreasonable came from the success of siblings. Libby, Rashida, and Ellie expressed frustration with expectations from their parents that they perceived to be linked to their siblings' accomplishments rather than their own individual needs and goals. Their responses indicate that they felt a constraint on, or lack of voice in making future plans. Libby said, "My sister just graduated from Columbia . . . and so, I think, . . . my parents and her, they want me to have this same experience as she did" (Interview 1, July 13, 2013). Rashida had more than one sister to follow, "My sisters do, and did successful in school and so [my parents] just want me to be like them, I guess" (Interview 1, July 10, 2013). Though Ellie did not talk about her parents' expressing that she had to be like her sister, she hinted that this was the case when she said, "I had an older sister, three years older than me, and she was like 'the' artist. I wanted to do better in something, so I guess that was the reason why [I

felt I have to do well]” (Interview 1, July 12, 2013). Parental expectations that did not allow personal choice may be deemed problematic as these girls may not have felt free to pursue their own goals in college.

In contrast to the aforementioned parental expectations, high expectations held by teachers were described in more positive terms, at least in part because teachers seemed more able to take participants’ interests and abilities into account as they provided support along the way. However, though Martin appreciated being pushed by a teacher in a difficult class, his response indicates that not just any teacher can be a successful “pusher.” He said,

So, [my teacher] really pushed me, even though it was a regular physics class. It was very difficult. I actually had to work hard. I tried to tell him that this really wouldn’t work out without a good teacher, you know. (Interview 1, July 10, 2013)

Briana appreciated that her teachers held high expectations for her, “[My teachers] were strict enough, but they were good teachers in that way” (Interview 1, July 17, 2013). Salma talked about how her teachers expected her to meet a certain level of challenge. She said,

I guess, the level or the amount of work I’m given, the amount of challenge that’s been given to me, [influences] the amount of success that I get. It can be grades or it can be . . . if you have a teacher that always questions you, is always kind of skeptical about what you are saying, makes you think about it more, and always asks you the “why” questions, and doesn’t ask you to memorize anything [it] also helps you. (Interview 1, July 17, 2013)

Shannon also felt that her teachers were instrumental in her taking on more challenging work. She said,

[My teachers] encourage me to push myself, which is good, and they know, like, who I am, and my comfort zone and [what] my ability is and so they try and push me to come out of my comfort zone to go after higher goals so that I can reach those, because they know I'm capable of doing that. (Interview 2, January 13, 2014)

When participants displayed a need for challenge, their teachers recognized it and pushed them harder while offering support. They were likely appreciative for their teachers' push because it was matched with appropriate levels of support.

Unfortunately, not all participants felt like teachers had high expectations for them, nor did they perceive pushing from teachers. Hana wished for a different experience at school because she felt as if neither her teachers nor her peers were supportive of her academic development, "I don't really like my school at all and I am thinking like moving somewhere away . . . some good school. Kids don't care. Not really. Teachers don't care" (Interview 1, July 10, 2013). Martin expressed similar feelings about his school:

My school doesn't really support good grades. There's no real benefit in doing [well] besides, "Wow, look. I got a 4.0 instead of a 3.97. Yay, me." That's sort of a big joke. The advisory doesn't take [grades] seriously, so neither do we. The way our GPA scale works heavily favors people who take easier classes. The teachers don't take it seriously; neither do the students. (Interview 1, July 10, 2013)

These responses indicate that when participants perceived that their teachers did not care about them or have high expectations for their work, the utility of what teachers could offer was minimized, and could lead students to perceive their school experiences negatively.

Social comparison and influence. Social comparison to peers influenced participants to do well in school and to validate their abilities. Participants also brought up the topic of

competition, which was viewed as positive if it drove them to do well, such as when they perceived they belonged to the group (i.e., “we”). However, competition was viewed as negative when it created feelings of inadequacy or jealousy, such as when they perceived they were different (i.e., “they”).

Many participants felt that being in the same classes as peers of similar ability or just being around them influenced participants to do better in school. The following exemplars also show a theme of the participants feeling like they are a part of the group. For example, Salma felt that being around peers she viewed as intelligent validated her own intelligence and that she belonged with them, “The students that I’m surrounded by [influence me]. If I’m surrounded by people that are also very smart and intelligent, then, I guess I feel like I’m also academically kind of qualified” (Interview 1, July 17, 2013).

The majority of other comments regarding social comparison indicated that being part of a group of similarly able students positively influenced academic success. Aliyah said,

When I first entered high school, I wasn’t in a lot of Honors and Advanced Placement classes and, then, I didn’t do as well, but as soon as I got back into Honors and AP classes, my scores skyrocketed, so I think it is just people that I am around, really.
(Interview 1, July 10, 2013)

While the environment was the same for Rebecca, she felt like her peers actively drove her to succeed in advanced classes. She reflected,

I think this past year, sophomore year, . . . definitely was the start of my peers pushing me, because the previous years I’ve never really been challenged and this was the first year where Honors comes into play for my school. (Interview 1, July 12, 2013)

For Charlotte, being around students who are similar to her kept her accountable for academics. She said,

Most of my friends I hang out with are the smart kids, so, we are all on top of each other and making sure that we're all doing what we're supposed to do and definitely in that college and education realm. (Interview 1, July 18, 2013)

For these participants, social comparison, and what even may be considered “peer pressure,” drove them to keep up with other students and perform well in school. They needed put in effort and stay on task to achieve, and recognized that being around similarly-able students influenced their motivation.

Competition. Participants seemed to view competition, as created by the school environment and with other students in school, as a major influence on talent development. I differentiate between *social comparison* and *competition* by how the participant referenced himself/herself to others. In this section, participants talk about themselves as “other” or “different,” and not as belonging to the group, as they did in the *social comparison* section. Some described competition as a positive motivator, but most mentioned it in a negative way. When it was mentioned negatively, it was because the competition placed them in opposition to peers; it did not help them to feel connected or create a sense of belonging. To avoid feelings of inadequacy, participants worked harder to succeed. Therefore, whether they viewed competition as negative or positive, participants ultimately thought it helped them to achieve their goals.

Indeed, it was the school environment and not necessarily peers that created competition that participants viewed as a positive influence on their talent development. Aliyah said, “I went to a private school in elementary school and they made that environment kind of competitive, . . . it kind of made it almost fun to do well” (Interview 1, July 10, 2013). Hana also viewed her

recent transition and new school environment positively. She wrote, “I recently changed my school when I movedThis change was really big because I came from a least competitive² school to a very competitive school” (Email 2, January 2, 2014).

Such competition was mirrored while at the summer program, as Salma reflected:

[My peer’s] drive to take online classes on her own and to study physics has inspired me to self learn. One of my friend’s here has already taken calculus, apush [AP U.S. History], and ap chem (as a sophomore), and that has inspired me to work and study harder. Her conclusions from research are deep and intensive. She has definitely broadened my vocabulary and I plan to play bananagrams and study my SAT vocab more. Some of the people here are very competitive and ambitious. (Journal 1, July 10, 2013)

For these participants, competition created a culture of achievement that drove them to want to do well in school, just as other students were doing.

Most participants were less positive about the competition they faced, and some were downright negative. For the quotes that could not be interpreted as positive or negative at face value, I returned to the original recordings to determine the connotation of the statements, which I determined were negative. In general, when participants perceived that they were different from peers they viewed as intelligent, it made them uncomfortable.

Libby seemed to recognize both sides of competition when she reflected,

When I was in middle school and elementary school, I was always considered one of the smartest kids in my grade and then, when I came to high school, there was a lot of people who wanted the same success that I did and those people, they do push you a lot, because they influence you on what grades you get and what SAT scores you get Even

² See previous footnote regarding verbatim quotes.

though that can be really annoying, it also, it makes you want to work harder, and I think . . . seeing what other people do, you kind of want to do what other people do too, so, what the kids that are doing in your same age, that's what pushes you ahead. (Interview 1, July 13, 2013)

Thus, ultimately, the competition, though she found it to be annoying, made her want to do as the other students were doing and be part of the group. She mentioned that she felt like she fit in until high school, when she had to try harder to belong with the advanced group.

Although she spoke negatively about competition when she said, "I don't like it when I feel inferior to my peers. I like feeling superior," Kenzie also noted that she and her peers were not always in competition. She said, "I mean, we're not really always comparing grades. If you're just, 'Oh, I got an A', it's like, 'Yay, yay, nice job' kind of thing" (Interview 1, July 12, 2013). Her statement revealed that she and her peers were not always in competition, but perhaps that was because they felt as if they were all evenly matched, rather than some being superior.

Even though it drove them to succeed, competition caused stress in some of the participants because it made them less confident in their abilities. Sunny faced pressure because of her school environment: "I come from where everyone has to go to a good college and where everyone has to be smart and successful," and because of her best friend: "She's number 7 in the class, so, I'm like not trying to be better than her, but it would be nice to at least come close to her" (Interview 1, July 12, 2013). Kaley mentioned negative feelings about herself because of competition. To avoid those feelings, she strove to do better. She said,

The kids who are in higher classes, I feel like they are smarter than me. I kind of get sad, because I'm like, "I want to be as smart as you." Plus, I want to be in the Top 10, so, and I'm number 11. (Interview 1, July 18, 2013)

The fact that these participants were focused on their numerical ranking indicates that they hold a finite perception of success, and are experiencing feelings of inadequacy because they are not meeting it. Though they said this was making them try harder, in the future it may actually impede their talent development because they seem to be more focused on their class rank than their learning.

Two males spoke negatively about competition. Martin expressed resentment of other students when talking about competition in his school. He said:

They think they're the smartest, they're in the hardest classes or whatever else, and they sort of don't deal with other people. They cheat off each other, lie, and things like that. [They] get really serious when [I do well], "Oh, wow. How'd you get a 98 on the physics midterm? Everybody failed that. I bet you, you know, got it from somebody else [cheated]." (Interview 1, July 10, 2013)

Of another student, he said,

He's going to get into a better college than I do because he has a little bit higher GPA, a little bit higher SAT score, because he has the formula down better than I do and takes it more seriously. (Interview 1, July 10, 2013)

Bobby went so far as to celebrate that he will have experiences that another student will not because of his participation in the summer program:

Next year when we are both taking the same class, I will have more experience with [a computer program] that he will not, so he will . . . have to learn the program we're working with a lot faster, as I will already know some of it. He will be further behind than I will. (Interview 1, July 20, 2013)

The experiences of Martin and Bobby offer some insight into how negative social experiences may ultimately encourage deleterious meaning-making about competition and cause problems with peers and in school. Additionally, although the sample is limited, these experiences may also be signaling to some particular peer issues regarding high-achieving males as they negotiate their adolescent identities.

Internal catalysts. In addition to the aforementioned people and influences, students described their own influence on their motivation, and ultimately, talent development. They articulated that they set goals and took steps to follow through with them, and they expressed a love for challenge and a value for education that also linked to their levels of achievement.

Ellie mentioned not being influenced by anyone else to do well. She said, “My mom has never really pushed me or my siblings to do well in school because I think I just knew that, in order to do well in life, I needed to do well in school” (Interview 1, July 12, 2013). Aliyah also alluded to her own motivations when she wrote, “I believed that my desire to attend college and trail blaze a path of my own has helped me progress” (Email 2, January 24, 2014).

Love of learning. Participants talked about a love of learning and how that influenced their talent development, which developed from an early age in many cases. Briana said,

I also learned to read at an early age . . . I just loved reading after that and learning to read earlier . . . it just really helps, because you don’t have to do it . . . and when you actually learn to read, they’re [parents] kind of making you do that, but you’re reading on your own choice. (Interview 1, July 17, 2013)

Many other participants mentioned a love of learning or enjoyment of school, whether they believed they had always been that way, as Jessie said, “I think I’ve always been one of those people that like to learn and somewhat enjoy school at least” (Interview 1, July 18, 2013),

or developed a positive attitude over time, as Aliyah said, “It’s fun. I kind of have a positive attitude towards the academic part of school” (Interview 1, July 10, 2013). This love of learning led participants to seek situations in school where they could do more for the sake of learning.

For example, Aaron said, “I know if I perform well in school I’ll learn more things, and learning things is always good, even if it’s not going to help you in your career. Learning anything is always probably better than learning nothing” (Interview 1, July 18, 2013). Sunny said, “I look for other learning opportunities” (Interview 1, July 12, 2013), and Kaley said, “[I do the work] because I want to understand it, the idea or the problem” (Interview 1, July 18, 2013).

Martin recounted a particular experience in which he wanted to do work to learn, not for a grade:

There was no grade [for my class]. I didn’t have to do the homework. There was no real reason to, logically, other than enjoying and trying to learn something. I stayed up late writing those papers. [My teacher] gave us papers to do, and my final paper was on duality or dualism, the philosophy of it and I made a great argument against materialism and he teared it to pieces. He really destroyed it. Just, logically, just gave me ‘This is wrong. This is wrong. This is wrong.’ And I enjoyed it, because I really learned a lot.

(Interview 1, July 10, 2013)

This situation arose under the guidance of a philosophy teacher whom Martin considered to be an active influence on his academic success, as was mentioned in the section above. This vignette may suggest that how a student perceives their relationship with a teacher may influence their drive to learn, even though Martin attributes positive feelings of this experience to his love of learning.

Seeking challenge. In addition to their love of learning, several participants talked about either liking academic challenge, or being motivated to seek or create such challenge for themselves. Sometimes this related to school classes, as when Eddie said, “One year, I found that [my classes] didn’t give the challenge I wanted, so I opted for the more rigorous courses” (Interview 1, July 13, 2013). Other times, it related to an area of interest. Janine wrote, “I think that doing research is really interesting and challenging and I’m always up for a challenge” (Journal 1, July 10, 2013).

Aliyah talked about seeking challenge outside of academics, but the skills she learned in the process helped her to seek out other opportunities for talent development. She reflected:

Before, I used to be a lot more shy than I am now and so I have kind of forced myself to break out of that because, obviously, there are a lot more opportunities once you let yourself get out of that. I used to be a very, very, very shy person and I kind of just started joining, like, the cheerleading team and soccer just to push myself to be around other kids and eventually I became more comfortable around people and then, I actually—just for the heck of it, really—ran for class president and then won, so now I really have to be outgoing. (Interview 1, July 10, 2013)

In addition to being challenged by parents and teachers, as mentioned within the context of external catalysts, participants demonstrated the ability to seek challenge on their own.

Goals. Ultimately, most of the comments referring to internal catalysts related to participants’ ability to think about long-term goals. Participants had a sense of where they wanted to be in the future, both in general and very specific. Sachi said, “Well I guess I’m just dedicated and I, I believe that doing well in school will help me later on in life, so I don’t want to just slack off” (Interview 1, July 10, 2013).

The participants showed a clear ability to plan ahead and begin to take steps toward long-term goals while still in high school. Shannon talked about her plans:

Right now, what I want to do is become a scientific researcher for biology, so I'm working on that now and I'm taking another biology course at my school and I also want to take a biology course at Yale this coming semester in the fall, so I'm hoping that will put me ahead when I go to college. (Interview 2, January 13, 2014)

Kaley also sought extra opportunities while in high school, even creating her own line of study when she found a gap in her high school curriculum. She said,

Well, an Animal Behavior class . . . isn't offered at my school. We only have basic sciences, and so, when I figured out that I wanted to do, or I wanted to major in Animal Science, I kind of just took it upon myself to ask my guidance counselor if we could do an independent study. (Interview 2, January 24, 2014)

She also continued to think ahead to things she would need to do in college to reach her goals, even though she has not gotten there yet. She predicted,

When I go to college, I'm going to have to do a lot of internships, and I want to do a lot of study abroad. I want to go to Australia and pet a koala, and just work with a lot of wild animals and see what I really like and what I don't like. (Interview 2, January 24, 2014)

Kenzie expressed that she engaged in long-term planning for her entire life, which made her want to do well in school. She said,

I guess I just, sort of, want to do better by myself. So I guess it's mostly myself who wants to push myself to get better grades because when you get better grades, easier to get into a good college. Good college, easier to get a better job. Better job, more money

in the future. Better house, better car, etc., better retirement, etc. (Interview 1, July 12, 2013)

However, not everyone was positive about planning for the future. Martin took a more pessimistic approach to goal setting and getting to college. He said,

The biggest contributing factor to doing well in school would be colleges, because I know I need to suck it up and do well in school to get into a good college because although they claim it's a holistic approach, they separate the piles based on: "Did you get above their GPA threshold? Did you get above their SAT threshold?" Then they'll read your essay and the recommendations after that. I think I fit those requirements so far. I hope I have, but regardless, that's the end of that. (Interview 1, July 10, 2013)

Clearly, participants' desire to succeed in the future inspired them to set long-term goals and begin working toward them, even though they were still in high school. Not only did they want to do well in school, but they also wanted to learn as much as they could to meet their goals. Even when Martin was negative, he still had a goal to get to college, though he may not have agreed with the process and what he needed to do to conform to it.

Research Question 1a: How and in what way do students' reports of these factors change during and after their participation?

For the most part, the factors that students perceived to influence their talent development did not change over the course of the study; rather, participants spoke about the summer program as an additional experience that helped them to evaluate and adjust their goals. They also spoke about keeping in contact with peers from the summer program, which can be viewed as an additional influence for some and an expanded influence for others in that they now have peers outside of their schools with whom they can relate. I will discuss the summer program's

influence on academic goals within the context of Research Question 2; other influences will be discussed here.

Changes in external catalysts. Participants mentioned program peers as influences on their talent development at different points during the summer program, as well as after in more instances and elaborated more on the function of this influence. Participants also realized the added supports they received from their program mentors. From both peers and mentors, these supports were social and emotional as well as academic and career-oriented.

Addition of social and emotional support and change of influence of similar peers.

During and after the program, participants talked about how their peers in the program gave them social and emotional support; these accounts occurred in more detail and at increased rates in later reports (i.e., follow-up emails and second interviews) as compared to at the beginning of the program. This social and emotional support ultimately sustained participants' academic motivation because they felt supported and encouraged.

Participants spoke about their excitement and appreciation for being able to interact with people who were like them with regard to ability and interests. Though some participants mentioned having such peers at home, for many, this was the first time they were around similarly motivated students. Therefore, I suggest that this addition of similar peers can be viewed as an added influence on their talent development. Victoria expressed this realization when she said, "Through my peers, I have learned that there are other people similarly passionate about science research, because the science program at my school is very weak, so other students at my school are not very interested in research" (Journal 1, July 10, 2013). Hana, who had talked about the apathetic students in her school at length, wrote, "I think it was the best decision

of my life to apply to [the program] because by attending it, I was able to relate with similar people from different schools” (Email 2, January 3, 2014).

Being around like peers served to inspire participants’ confidence in their own abilities. After the program, Kaley wrote,

[The program] has greatly influenced my college and career plans by helping me realizing that there is a whole other world out there filled with students who actually care and it taught me not to sell myself short. I can accomplish anything I want and making friends can be really easy. (Kaley, Email 1, October 17, 2013)

Michaela also noticed a change in her confidence as a result of being with like-minded peers. She said, “Throwing me together with people I regard as brilliant in their own respects makes me a little more confident” (Email 1, November 10, 2013).

Overall, participants’ realization that there were other adolescents out there like them was positive; it raised their confidence and gave them an opportunity to interact with others with whom they could relate.

A few participants indicated that they were socially isolated within their home schools. For these students, the social aspect of the summer program was especially helpful. Being around similar peers forced Steven out of his social comfort zone, which he indicated might allow him access to more opportunities to interact with others. He wrote,

I’ve had a . . . great experience with my peers in the program; they’ve been helpful simply by keeping me social and entertained. Normally, and especially with work as interesting as what I’m assisting in, I would essentially retreat into my own mind, not really socializing outside of maybe one or two friends. The other high school students here are really friendly and have forced me out of that pattern of behavior. I’m alone in

my mentorship site but even that hasn't stopped me from making all the friends I have. I've gotten to know my roommate a lot; he, the friends he's introduced me to, as well as other people to whom I introduced myself early on keep talking to me, laughing about our experiences, and just keeping my company. (Journal 1, July 10, 2013)

When participants felt supported by their peers and that they were part of a group, they perceived challenges of the academic work at the program to be more bearable and even made them more productive. Steven summed up this theme well when he said, "My peers continue to help me by keeping me more sociable than I've ever been. Since things are going great at the site, I can only guess that this is conducive to my productivity" (Journal 2, July 17, 2013). Tandi agreed that peers were helpful when work at the program became difficult:

It has made the entire experience better because when site was tiring or the material became very dense, I could count on my peers to be there. They were there for me to vent my frustrations with as well as to distract and amuse me. (Journal 2, July 17, 2013)

In short, peers, "helped cope with the learning of material, as well as the emotional stress that comes from life" (Eddie, Journal 1, July 10, 2013).

Though many of the participants sought academic support from their peers, others looked for emotional support. Andres expressed his preference for the social and emotional support of his peers over help with his work. He said,

[My peers] have helped me by supporting me. They have always been by my side, making sure that I'm ready to go to the site in the morning; they ask me how's my day. They are not helping me with material things, but they are helping me with having a good day by showing they care and to me that's better than material things. (Journal 1, July 10, 2013)

While they did not relate feeling comfortable or supported by peers with their academic performance, several other participants mentioned comfort and participating in relaxing activities with their peers. During the first week of the program, Selena recognized, “They are the most accepting people I have met and encourage individuality” (Journal 1, July 10, 2013). Michaela agreed, “I felt more comfortable opening up more than I usually do” (Journal 3, July 26, 2013). Talking and “hanging out” were activities that were valued. Salma explained, “I am able to have deep conversations about ethics, physics, american culture, and GMOs with my roommate” (Journal 1, July 10, 2013).

Not everyone felt they gained additional support from their program peers. Two participants had negative comments about their peers during the program. Kenzie said some of the peers at the program were “crude and explicit” (Journal 1, July 10, 2013), and Salma wrote, “Although some of the people that are here are questionable. (i am not really sure that they deserved it [to be accepted])” (Journal 1, July 10, 2013).

Whether they needed academic or social and emotional support, most participants found it in their peers. They were appreciative of this support and felt that it made them more comfortable, more confident, and more productive.

After the program, participants perceived that they had an additional external support in their program peers that they did not have at home. They reported continuing to get encouragement from their program peers when applying to colleges and addressing challenges in school. Kaley said:

I am keeping with a lot of my friends from [the program]. We have a facebook group chat and always keep each other updated on whats happening in our personal lives. I’m glad I have their support, they support me with applying to colleges and give me advice.

(Email 1, October 17, 2013)

Sunny also recognized the added support of program peers later on when she said, “They provide moral support as well as humor” (Email 2, February 16, 2014).

Some participants did not feel supported by peers after the program. Janine said her peers did not influence her at all after the program because “I did not relate to many people” (Email 2, February 16, 2014). Others said they did not talk to peers from the program after its conclusion, though they felt no ill will towards them. Kenzie wrote, “It’s alright. I find it difficult to be “deep” and supportive over the internet” (Email 1, October 25, 2013). Lamont said, “I don’t know [why I don’t keep in touch]. I just kind of lost contact with them. It’s hard with school and just life, and I just haven’t really been keeping up with anyone” (Interview 2, January 29, 2014). Several others mentioned sporadic contact and were positive about it. Distance may have been a factor in whether or not students continued to feel supported, as two of the three students who mentioned not keeping in contact were from states other than the one in which the program took place.

Increase in academic help and advice. Participants explained that their peers helped them with the challenge of homework, presentations, and difficult material that they had not encountered before. They also received valuable advice from mentors, who were able to enlighten them to future possibilities that their parents, teachers, and peers could not.

After the program, peers offered advice for keeping on track and applying to colleges for participants who did not have support from similarly motivated peers in their schools. Lynn talked about the “here and now” as related to future goals when she wrote, “[My peers from the program] just help me keep focus in school because we all have to [sic] same dream of achieving all that we’ve wanted” (Email 2, January 23, 2014). Two other participants spoke about their

program peers' advice for decisions regarding the future: Rashida said, "They push me in the right direction when I don't know what turn I should take" (Email 1, October 11, 2013) and Hana said, "They have given me . . . guidance about which colleges to apply to" (Email 2, January 3, 2014).

Participants really valued that their mentors gave them advice on more than just their day-to-day activities in the labs and were available to give them insight into college, careers, and life in general, which they may not have previously received from teachers or parents (influence on college and careers will be further explored within the context of Research Question 2). As Briana said, "[My mentor] showed me that you don't always have to make the decision that will change your life because new things will always come your way" (Journal 1, July 10, 2013).

Janine wrote about how her mentor taught her about the field and life skills:

[My mentor] has taught me a lot about the [science field], he has also showed me that there is more to science than just the facts, that the failures teach us more than our successes, that failing multiple times will happen (but keep trying and it'll work eventually), that lightening the mood always helps, and that the simplest solutions are the greatest. (Journal 1, July 10, 2013)

Addition of challenge. Many participants talked about how their mentors challenged them, an experience that they were not used to in their high schools. Much like they spoke about pushing and expectations from parents and teachers, they valued how mentors understood their abilities and gave them support toward reaching their goals. Salma said, "When [my mentor] comes into the lab, he asks us questions about how ordinary things work and challenges us to make observations . . . and is purposefully vague to us to make us think" (Journal 1, July 10,

2013). Maggie said, “[My mentor] pushed me in the right direction to think on a deeper level to solve difficult math problems” (Journal 1, July 10, 2013).

In addition to added challenge, participants also valued that their mentors trusted them and took them seriously, something they had not necessarily experienced at home. Steven said, “My mentor has helped me this week by trusting me to work in the lab alone. This let me learn things hands on rather than only by watching” (Journal 2, July 17, 2013). Martin said of his mentor,

On the one hand, I was just annoyed that he assumed we were geniuses like he was. On the other hand, I haven’t really ever been taken seriously. . . . but like, he really thought we could do this. He expected us to do this. No one ever really did that. (Interview 1, July 10, 2013)

Kenny, who had the same mentor as Martin, agreed:

My mentor has helped me by stretching my mind and constantly challenging me. He does not hold back or dumb down the information and problems. Instead, he sets me on the right direction until I can figure things out for myself. (Journal 1, July 10, 2013)

Participants appreciated that their mentors recognized their ability and potential. They also valued that their mentors created opportunities for challenge for them.

Changes in internal catalysts. Participants continued to show self-motivation throughout the program. They talked about goals and steps they were taking toward their goals after the program had ended, and how the program influenced their decision-making. I will discuss results pertaining specifically to the influence of the summer program within the context of Research Question 2.

Research Question 1b: How might these reports vary by students’ demographic

information?

Distinct patterns and commonalities emerged from an examination of the data across participant subgroups. For most categories, patterns of difference were not consistent among participants from varying genders, ethnicities, or socioeconomic statuses for most of the categories. In fact, I suggest that a variety of demographic backgrounds are represented in each category with the exception of negative responses; participants with negative responses shared some demographic commonalities.

Participants mentioning lack of support from peers or adults were mostly male (n=3 out of 4). Since only 14 males participated in this study, I think this is something that should be explored in future research. Also, two of those males are African-Americans who attended the program on scholarship, which may be another commonality worth exploring. Similarly, all four participants who mentioned experiencing negative pressure from family regarding their academic success and future plans were female. Since negative pressure from family can cause internal turmoil and influence later decisions deleteriously, it may be interesting to explore whether females report experiencing negative pressure from family within other contexts.

Two of three participants who said they were not receiving additional support from peers in the program after its conclusion lived in states other than the one in which the program took place. This suggests that the lack of support may not be due to an absence of caring or intent, but may instead be constrained by distance.

Though a commonality would have been interesting, the three participants who expressed negative school experiences differed with regard to demographics. Hana was a female attending on full scholarship, Bobby was a male attending on partial scholarship, and Martin was a male who paid full tuition.

Summary of Findings Answering Research Question 1, 1a, and 1b

Participants recognized a variety of factors that contributed to their talent development, including external and internal catalysts. They valued academic, career-related, and social and emotional support that they received from teachers, peers, mentors, and most of all, parents. Participants specifically noted the value of interaction with intellectual peers. As a result of this support, participants felt pushed to succeed in academics and to seek challenge; they most appreciated when instrumental help accompanied the push. Due to their expertise, teachers and mentors most often supplied this “how-to” help. Participants also acknowledged the role of their love for learning, need for challenge, and self-motivation in their talent development. They demonstrated a keen ability to set goals, both short- and long-term, as well as to take steps to reach their goals while still in high school. As a result of their participation in the summer program, participants gained additional support from peers and mentors that persisted after the program had ended. Overall, I did not find major differences across demographic groups.

Research Question 2: What influences do students perceive the summer program had on their (a) responses to challenge and (b) academic goals?

Students perceived that the summer program influenced their skill development and knowledge, which ultimately influenced their preparation for college and decision-making regarding college, major selection, and careers. Though students indicated that they were challenge-oriented prior to coming to the program, several mentioned how the summer program helped them build competencies to handle challenge and complete their goals more effectively.

Responses to challenge. Many participants noted that, while at the program, they were enjoying a level of challenge that they did not often encounter in high school. As a result, they developed new independent learning and interpersonal skills (which I discuss in detail below)

and expanded their perspectives, as evidenced by Kenzie when she said that attending the program influenced her viewpoint on handling multiple commitments: “I guess I try to see things from a larger point of view I guess, a larger perspective” (Interview 2, January 31, 2014).

Overall, participants recognized that their responses to challenge would, and did, help them in the future.

Independent learning. As a result of facing challenge, students communicated that they discovered new ways to approach learning and problem solving independently. During the first week, Kenny expressed how much he valued the opportunity to work on a challenging problem and what he gained from the experience:

My mentor gave me an extremely difficult math/physics problem. No matter how much I worked on it, I could not solve it. When I went in the next day, he gave me a few hints, then sent me back to work on it again. This was a great experience because I’m not used to being unable to solve a problem that I’ve worked on for so long. It also helped me think of different ways because of how difficult and challenging it was. (Journal 1, July 10, 2013)

Lynn also appreciated the opportunity for autonomous learning, “The [mentors] that I had really gave me the time to do things on my own and plan it out the way that I would want it all to be planned. There was no hand-holding, which was something I really loved. I really had the time to just sit down and think about all the things I wanted to do and that made me really happy” (Email 2, January 23, 2014).

These participants indicated that their mentors recognized their capabilities for independent learning and gave them tasks that were achievable but would require advanced

thought and increased effort. Because they had not encountered this type of learning experience in school, students implied that it was particularly influential.

Dealing with setbacks: Perseverance and asking for help. Participants recognized that new challenges often generate obstacles, but that these obstacles could be treated as learning experiences. When they faced setbacks during the program, they had to employ new skills, which many felt they would also be able to use in the future. Tandi wrote,

I learned how to deal with setbacks. In lab, we had a few issues with the experiments we were trying to run. It was extremely frustrating because there were many times when we had to stop our work and complete calculations multiple times. The patience required to step back and reevaluate has given me insight on how to keep calm when frustrated and keep trying. In the future, I will be able to use this to ensure that I don't step away when I get frustrated, but try to problem solve. (Journal 2, July 17, 2013)

Once they returned home, participants reported employing similar perseverance when taking difficult classes or earning less than optimal grades. When Aliyah almost got kicked out of the National Honor Society due to poor grades, she wrote, "I reacted by persevering and working hard for the rest of the semester" (Email 2, January 24, 2014). Similarly, Lamont reported that, in response to being in a challenging course in which he was likely to receive a C as a grade, he also reacted by adjusting the level of effort he gave to this class. He said, "I put a few more study hours in, and I worked for a couple of Fridays, and I'm pretty sure it worked. I went from a failing grade to, I'm pretty sure, I passed. It's a close call" (Interview 2, January 29, 2014). These examples show that students chose to persevere rather than giving up in the face of challenge; they may have been more likely to do this as a result of experiencing challenge at the program.

In addition to persevering through problems, participants had to learn how to use resources, and particularly how to access human capital. Alexa felt that, to get information she needed for her challenging project at site, she had to be “bold” and ask questions of members of the university lab (Journal 3, July 26, 2013). A new experience for Aliyah was when she had to learn to ask her mentor for help when she felt that her project was too difficult:

An experience I had this week that could help me in the future was communicating my difficulties with my project to my mentor and coming to an equal understanding. This will help me in the future because it helped me come to terms with the fact that I needed help and could not finish it all on my own. (Journal 2, July 17, 2013)

This skill of admitting a need for and asking for help continued as the participants returned home. Several reported that they continued to ask teachers and peers for help. Lamont specifically talked about recreating a situation he had experienced while at the program. He said,

When I was at [the program] I was working with my partner We worked together on a lot of homework, and that really helped me out when I was there because I was having trouble understanding some of the concepts that we [were] learning. So I applied that to my school life. I’m back and I’m kind of working with a friend of mine for pre-calculus, and she’s been helping out greatly. So it’s like working cooperatively on assignments and studying. (Interview 2, January 29, 2014)

Jessie, who transferred to a new school after attending the program, wrote about asking a teacher for help. Although she is still unhappy with her grades, her teacher has helped her with coping. She wrote,

I have been struggling in my AP Chemistry class at my new school in Shanghai. The teacher is known to be quite challenging, and many students rely heavily on a steep curve

to keep their grades up. I had a C+ in the class when the pressure of getting good grades for college and internship applications truly dawned on me. I began cracking under the pressure. After class one day, I had a long talk with the teacher about my performance, which deviated greatly from the grades I was used to receiving. He kept explaining to me that the grades should not matter, and I kept explaining to him that the grade might not matter to me but they do matter to universities. I was especially concerned since chemistry is germane to the field I want to go into, medicine. My teacher is still unwilling to give me opportunity to bring my grade up, but he has helped me in alleviating the societal pressures of having high grades. (Email 2, January 2, 2014)

As Aliyah noted, asking for help can sometimes be difficult for advanced students because they can feel vulnerable when they think they are not “smart enough” to complete a difficult task. In addition to being able to approach tasks independently, it is also important to be able to put learning ahead of appearing smart and to recognize when to ask for help. These quotes, in addition to showing how participants developed a new skill, suggest the importance of trusting student-teacher relationships.

Beyond teachers, participants also talked about how their peers served as a source of help. For example, Eddie expressed the importance of social support when trying to make progress on a difficult project. “I believe that some of the factors that may have contributed to this progress [on a robotics project] is support from friends. Friends, because it makes working on normally mundane tasks so much more enjoyable and sometimes, productive” (Email 2, December 21, 2013).

As in real life, not all situations had a happy ending. Even when challenges did not result in the expected outcome, participants were able to talk positively about what they learned from

the experience. Because of a failed experiment, Ivan said he learned, “Not everything always works out” (Journal 2, July 17, 2013). Ramone mused, “I’ve learned that if something seems too easy, you’re probably doing it wrong” (Journal 3, July 26, 2013). Indeed, the ability to maintain a positive attitude after failures, as well as to recognize when tasks should be challenging are both important life skills to develop.

Interpersonal skills. In addition to feeling that the challenge of the program built their academic skills, participants also recognized that they advanced their interpersonal skills while at the program in ways that could help them with challenging situations in the future. Because these skills were not necessarily discipline-specific, they could be used in several settings.

Participants indicated that they thought it was useful learning how to interact with others in a collegiate setting. Jessie said, “Well, I really hope to make a lot of connections with people. I feel that’s really important . . . interacting with lots of people, like grad students [and] professors” (Interview 1, July 12, 2013), and later added that she was taking steps toward that goal. She wrote, “I practiced interacting with different types of people in the professional world. Professors, undergraduate students, and PhD students conversed and taught me about their work daily” (Journal 2, July 17, 2013). Similarly, Janine wrote about her new view of the utility of cooperation:

Being cooperative and making sacrifices for the overall benefit will help me in future group project and compromises when two people may be very different. I think, in general, many people have to think that there is either right or wrong, but not that both could be right. (Journal 1, July 10, 2013)

Participants expressed that trying new things with new people would be beneficial, as when Andres expressed feelings of success in his new environment:

An experience [that will help me] would be to step out of my comfort zone more often.

Trying new things and talk to people I might not know. So far every time I've stepped out of my comfort zone no matter what it was it was worth it. (Journal 1, July 10, 2013)

These interpersonal skills will be beneficial beyond the scope of the program as the students continue to approach new situations, both in school and in life. The participants themselves also saw these connections, indicating that they may be more likely to use the skills and be more successful.

Meeting with success influenced participants' confidence positively for approaching new social situations. For example, Melissa wrote, "The experience that I've had this week that i can use in the future is to be able to meet new people confidently. Before i was very shy and kept to myself. Now i feel like i can make new friends, with no problem" (Journal 1, July 10, 2013).

Gabby also grasped her capabilities when she wrote about an enlightening social experience:

An experience I've had . . . that I think I might use in school is making the flag for the Olympics [a social activity organized by program staff]. No one really knew what to do, so I had to do a little directing to get people on a roll. This was good for me because I tend to be introverted and let other people take the lead. And it wasn't so bad. Leadership skills will definitely help me in the future." (Journal 1, July 10, 2013)

Seeing oneself in a new light as a confident individual or as a leader has implications in that positive self-image can transfer into many challenging situations, and may encourage these participants to explore new situations and develop new capabilities in the future.

Influences on academic goals. Many students indicated that they came to the summer program because they had certain academic goals in mind, whether it was exploring an area of interest further, learning something new, or learning new discipline-specific skills that they could

not learn in high school. Participants felt that their experiences in the summer program made them more able (a) to take steps toward their academic goals and (b) to make important decisions involving their future college and career goals.

Steps toward academic goals. The summer program served to help participants build necessary skills that would be useful in applying to college, applying discipline-specific skills to real world scenarios, and forming a knowledge base needed in their future career. This programmatic function was especially evident for participants who had a specific goal in mind prior to attending, like Eddie. He wrote, “I feel that [the program] open[ed] up many pathways to different programs that will allow me to apply even more of the knowledge that I learn in school, and gain more real world experience” (Email 2, December 21, 2013). This view was prevalent, and I will explore nuances of how the program influences the goals of various students.

Help in high school. Participants noted that their experiences in the summer would help them within the immediate context of school and, ultimately, produce better academic outcomes. For some, it was the knowledge and specific skills that they learned. For Keira, the content knowledge was important: “Most of what I learned . . . was about knocking down proteins in centromeres and seeing what effect it had. This will help me in my high school courses because I didn’t know any of this before” (Journal 2, July 17, 2013). Rainie agreed that she learned essential skills that could be employed in a specific high school class. She said, “My mentor [taught] me about standard deviation, error bars, and t-tests, all of which I will need to know next year since I am taking AP Statistics” (Journal 2, July 17, 2013).

Participants also learned programs and techniques that were transferable in many situations. For example, Jessie talked about learning a computer program that will help her across subjects in high school:

This week, I learned a few basic functions of Microsoft Excel. At my current high school, not many teachers require the use of Excel, yet it seems Excel is the prevalent processor in the professional world. I think this will definitely help me with future school projects.

(Journal 2, July 17, 2013)

Charlotte predicted she would be able to use knowledge and skills that she formerly thought were challenging. She said,

We had homework [at the program] and had to learn about Ohm's Law and resistors and what not, and I've seen these things before, 'cause I have a lot of friends who are upper-classmen, so they took physics and Honors physics and I saw that, and I'm, "Wow! I'm going to have to do that soon and that looks really difficult," and now that I've done it, it's "Wow, I get it. I know what I'm doing," and it's so helpful. (Interview 1, July 18, 2013)

In one case, learning techniques at the program increased the participant's confidence in her ability to handle other academic work. Rainie made a realization of her capabilities and how they would allow her to pursue future opportunities in high school. She reflected,

An experience I've had is learning how to perfuse rats. This will help me in the future because I've learned that I have a really strong stomach, and I don't actually have a problem with cutting up rats (or other animals), so I'm less hesitant than before to take classes at my school like anatomy, which requires a few dissections, including a human eyeball. (Journal 2, July 17, 2013)

In all three cases, participants spoke about how they developed specific skills that they would use when they returned back to their high schools. However, their quotes also reveal increased self-

efficacy for the subject area, which in turn may lead to pursuing more challenging learning experiences.

Applying to college. Six participants explicitly indicated that the summer program assisted them in applying for college. Their experiences influenced their competencies and motivation, such as when Lynn voiced higher self-efficacy in writing from doing assignments at the program. She wrote, “[The program] has helped me with what I want to say in my college essay. It has made me realize that I shouldn’t be so rigid and stiff. I can express my feelings in the way I would like” (Journal 2, July 17, 2013). After the program, Briana expressed that she felt more motivated to pursue extra activities with the goal of applying to college. She wrote, “My participation has helped me with my plans by motivating me to be more involved and to do more for my portfolio [for college]” (Email 2, December 26, 2013).

Beyond the motivation and style for college essays, the summer experience also provided specific material for college essays and resumes; this benefit can be viewed as related to attaining educational goals. After the program, Sunny said the experience “gave me lots to write about for colleges and essays. Really, really, really, really helpful” (Interview 2, February 2, 2014). Janine agreed, “I have been applying to college, [the program] helped me by inspiring some essays which I wrote about what I learned at [the program]” (Email 2, February 16, 2014). For Rashida, the program itself was simply a resume builder. She said, “The [program] can influence me in my college plans in a sense I can put it on my college resume” (Email 2, October 11, 2013).

Thus, with regard to the college application process, attending the program increased self-efficacy and motivation, and it provided the students with material for college essays and portfolios.

Knowledge and skills of the field. Participants talked about learning new knowledge and skills that they expected would help them in accomplishing future goals as a result of their hands-on experiences at the program. Though in some instances the participants mentioned that their experiences were preparing them specifically for college, they were ultimately speaking about college as a step to their future career. For example, Lamont said:

I want to major in computer engineering. Or computer science. I'm not sure yet. But the skills I'm learning in this camp are all computer-based. So, by participating in this camp, I feel that I am learning more toward my major. (Interview 1, July 17, 2013)

He also wrote, “. . . I learned how to solder circuit boards. This skill will become useful to me late on when i am working on computers in college” (Journal 2, July 17, 2013).

Several other participants talked about professional implications of their work at the summer program. Briana talked about using a specific program:

So we're learning the Adobe product, After Effects, and I think that's really cool, and my mentor has been saying that they do use it in the professional field and I've always been wanting to learn programs that they use professionally. (Interview 1, July 17, 2013)

Keira chose to focus on how she will use discipline-specific skills in her future career. She wrote,

For most of this first week, I was in a laboratory performing multiple experiments with my mentors. One thing that I did that would really help me in the future is learning how to use pipettes. I plan on becoming a nurse in the future, and I will probably have to make precise measurements for medications. Without the skill of pipetting, it would be very difficult for me to do this. (Journal 1, July 10, 2013)

For some, their participation not only gave them skills, but also led them to exciting discoveries related to their choice of profession. Eddie wrote,

Learning how to design electronic circuit boards, as well as learning the science behind them. Knowing how to apply what used to be vague terms, like voltage and current, into real life has really opened my eyes to the meticulous calculations that go into the design of everything, from laptops to our refrigerators. I think, in my future, that I will be able to reapply this knowledge through my work in engineering. (Journal 1, July 10, 2013)

It is noteworthy that these students showed a clear ability, while still in high school, to think about their lives far into the future, whether in college or in their career. They showed a logical progression of thinking while discussing their goals and how participation in the summer program would help them. They also used this information to make decisions about their future goals.

Making decisions about future goals. As the program progressed, students articulated ways that their experiences at the summer program were affecting their future goals, specifically regarding college and career choices. They discussed how they were thinking about their future decisions as a result of their experiences in the program. Some expressed excitement for affirming their desire to continue with their goals, while others changed their mind completely after experiencing aspects of their future career. Most wanted to adjust their goals to take into account enjoyable and less enjoyable aspects of their participation. For all participants, this experience seemed to be an introduction to a possible career path.

Considering the academic future. Several participants commented on how they anticipated the program experience would guide their future academic decisions. Some students,

like Eddie and Ramone, were looking to inform a decision about college when they applied to the summer program. When asked his impetus for attending the summer program, Eddie said,

Well, like college majors, you kind of need to know what you're going for, because it will dictate a lot about what you do for the rest of your life. I wanted to explore a different field of engineering, because engineering is ultimately where I'm aiming for, as of now, so and there are like a lot of different types and tastes of engineering, like electrical engineering, mechanical, aerospace. There's like hundreds and I just wanted to try something else, because right now, I'm mostly capitalizing on mechanical engineering at my school. I've read a lot of stories of people go to college thinking they're going to do one thing, but then they switch to another. Because I'm a really indecisive person. I really want to know what I want to do before I go to college so I don't end up switching back and forth [between majors]. (Interview 1, July 13, 2013)

Other participants knew the area they wanted to pursue for a career, but used the program to decide which path to take within that field. Kenzie had figured out that she wanted a career in molecular and cell biology, but did not know specifically what she wanted to do. When asked what she hope to gain from the summer experience, she said,

I am sort of unsure whether to go into a more people-oriented profession or a more research-oriented field and I think that, if I really like being in the lab and doing my own thing and pipetting and what-not, then I should maybe try to look for [and] think of professions or careers in more research-y places, or [if I don't] like maybe more people and medical-ish fields. (Interview 1, July 12, 2013)

These students were still considering various options for their future careers, and the summer program provided them an opportunity to narrow these options down. They recognized that this

was a safe space to try out options for their college major and future career, and to gain quality information from which to make decisions.

Connected to the program's role in supporting participants' career decisions, site experiences prompted some students to reassess their options for college majors. Libby wrote in the first week, "Actually my site has made me reconsider my major. Learning about different circuits and currents as well as voltage and Op amps has made me become very interested in the field of Electrical Engineering" (Journal 1, July 10, 2013). She later said,

Well, first of all, I thought [my site] was going to be more of a mechanical engineering lab and then it turned to be an electrical engineering lab, and that was something I had never really thought of or thought that I would want my career to be in. [This] has helped me, shown me, a lot, that mechanical and electrical engineering are very similar. Not only have I learned so much this summer, but it's . . . shown me exactly that this is what I want to do. (Interview 1, July 13, 2013)

Participants who confirmed their career paths through their participation in the summer program were excited and passionate about their future and their decision. During the first week, Kenny wrote,

If I had to decide on a career path today, it would definitely be related to my mentorship site. After seeing the kind of work that the grad students do, and the research we are involved in, I am becoming hooked on this career path. (Journal 1, July 10, 2013)

Michaela communicated comparable enthusiasm about her breakthrough when she wrote,

In my lab, I've seen so many cool things that I want to eventually know all about. I want to understand them much more than a 3-week program could let me, so I think I would go into engineering. It's a bit difficult to explain, but I'm so excited by the devices and even

reading the AUV scientific papers, I thought, “someday, I want to be this smart. I want to be able to do this.” (Journal 1, July 10, 2013)

Whether students changed their mind about or confirmed their career path due to their site experiences, they indicated that their participation was a valuable influence on their decision.

After the program, participants were thankful for the help the program gave them in making these important decisions. Alexa wrote,

The program has opened me to new possibilities and experiences that I am so grateful to have had. It gave me a chance to spend weeks on research that fascinates me in a field in which I may choose to study later on. These experiences will most definitely guide my future choices. (Email 2, January 2, 2014)

Although participation in the summer program was perceived as valuable due to the real-world experiences that the students experienced, it is important to note that this type of experience is rare for high school students, even for those of advanced ability. Most students must wait until college to make career-related choices, when they may be under increased pressure to make a decision.

Not for me! Other students found that they were not interested in pursuing certain disciplines for a career. Aliyah wrote about her physics site after the first week of the program, “If I had to decide on my career path today, it would not relate to my mentorship site. The content we cover in the site is not as exciting as I had anticipated” (Journal 1, July 10, 2013). Maggie conveyed a similar lack of interest when she wrote about her mathematics site, “My career path will not be related to my mentorship site because I prefer to work in an area that is more hands on” (Journal 1, July 10, 2013).

Keira, who was working in a biology lab, said,

I don't think my career path would really relate to the area of my mentorship site. My site is at a cell biology building. The people who work there seem to be really precise with their work, and very focused. It would be very difficult for me to stay in a laboratory for the same amount of time as them. (Journal 1, July 10, 2013)

Some participants noted that even though they were interested in their site area, they did not want to make it a career. Andres wrote,

[My career] would not relate to the area of my mentorship. I love to help people and build relationships, but I do not want it to be my career. I don't need [youth program development] to be my career for me to help people. I help people everyday in different ways. I want to be an engineer. That has almost nothing to do with my mentorship. (Journal 1, July 10, 2013)

Even if participants decided that they did not want to pursue their site area as a career, they did not always dislike it, but instead expressed some interest. Salma wrote, "I have learned that chemistry involves a lot of math, and I am not a fan of doing too much math, but I am really interested in nanotechnology" (Journal 1, July 10, 2013).

This, but not that. Most participants expressed a slight adjustment to their goals as a result of participating in the program. In fact, this category had the largest instances of examples. Many participants indicated that their mentorship site was closely related to what they wanted to pursue for a career, but not quite for them; some wanted to combine various interests, use the area of their site as a college minor or use the skills they learned as a stepping-stone to their other desired career. Many also noted their distaste for research, but desire to pursue another career within the same field. For example, Rabia talked about aspects of her site she wanted to pursue:

Yes, I have always wanted to have a career in the environment and working on a project that could potentially help the environment by utilizing solar energy showed me how keen I am to have a career related to helping the environment. I do not necessarily want to be a chemist, but I want to do something that relates to the environment, most likely an environmental engineer. (Journal 1, July 10, 2013)

Some participants experienced multipotentiality, the presence of many interests (Terman & Oden, 1947). Through their participation in the summer program, some participants were able to find a creative solution to having many interests. Gabby wanted to combine what she learned at the program with another of her interests. She wrote,

Psychology is interesting. I might get involved in neuropsychology, which deals with the brain and its relationship to psychology. However, I have other interests as well, and art is one of them. I might go into therapy using art. Basically, if I had to decide on my career path today, it might not directly involve autism [research], but it might involve science and art in some way, shape, or form. (Journal 1, July 10, 2013)

Keisha also wanted to have some involvement with her site area, but only as a backup plan. She wrote:

Yes, but I wouldn't make it my like first choice but its something i would very much like to have as a minor in college. Digital Media is fun and with enough experience you can go a long way with it. (Journal 1, July 10, 2013)

Aliyah, who was not originally a fan of her site in physics, said after the program, "The [program] has influenced me to aspire to make research a major component of my career goals. I want to attend medical school to become a biochemical researcher and help pharmacists develop new drugs" (Email 2, January 24, 2014). In contrast, many participants expressed their distaste

for research after experiencing it firsthand, but had an interest in pursuing another career within a field connected with their site. After the program, Jessie wrote,

[The program] has helped me realize what research is actually like. (I'm not a huge fan . . .). It has confirmed my chosen path to be a practicing doctor, which will require a fair amount of research in the laboratory but won't be my primary life focus. (Email 2, January 2, 2014)

While these participants did not pinpoint exactly what they wanted to do for a career, it is interesting that they were able to isolate aspects that they liked, as well as creatively adjust their goals to fit into their new outlook. This speaks further to both the utility of the program and the advanced vision of the students.

Summary of Findings Answering Research Question 2

Students perceived that the summer program influenced their skill development and knowledge, which ultimately influenced their preparation for college and decision-making regarding college, major selection, and careers. Many participants reported exposure to a level of challenge that they did not often encounter. As a result, they developed confidence for independent learning and improved interpersonal skills. They also acquired strategies for dealing with setbacks, including employing perseverance and recognizing when to ask for help.

In addition to responding effectively to challenge, participants felt that their experiences in the summer program made them more able to take steps toward their academic goals and to make important decisions involving their future college and career goals. They perceived that the program allowed them to build skills that would be useful in applying to college, employing discipline-specific skills in real world scenarios, and forming a knowledge base needed in their future career. Additionally, they discussed how they were thinking about their future college and

career decisions, whether they affirmed their desire to continue with their career goals or make adjustments to their goals. These points further illustrate both the program's benefits and the students' advanced foresight.

Research Question 3: How do academically successful students feel they differ from similar peers who do not seek extracurricular talent development?

When asked about similar peers who did not seek extracurricular talent development, participants most often implied similar peers were also intelligent, but did not put in the effort necessary to be successful. When I asked participants how they felt they were similar to and different from such peers, I did not define the word *similar*, but rather left it up to the interviewees to decide its meaning and explain. Therefore, I will also include a description of how these students perceived the word *similar*. As they “othered” their peers, their reflections also illuminated how participants perceived their own identities. Within these conceptualizations, intelligence emerged as a characteristic the students perceived to be integral to influencing their ambition and effort. Moreover, by treating intelligence as a given within themselves and their peers, participants were able to use motivational differences as a way to understand differential success from their peers.

Perceptions of intelligence and identity. While Eddie was “pretty hard-pressed to find someone” (Interview 1, July 13, 2013) at his school who was similar to him and did not participate in extracurricular academic activities. Most participants revealed, through talking about similar peers, how their advanced ability was inherent to their identity. Their answers revealed that they described similarity around intelligence, and defined what that intelligence looked like in several ways. They defined it as not only advanced ability, but also as active engagement and interest in learning. They gave examples of how intelligence is manifested.

For example, when Briana discussed a similarly intelligent peer, she said, “Well, if they’re similar to me, they probably like learning” (Interview 1, July 17, 2013). This is an example of how high ability may in part be defined by interest and love of learning. Briana was not alone in linking intelligence with an orientation towards inquiry, as Rebecca said, “[My peer] is very similar to me in a way for at least academic-wise was that he loves, he really loves school” (Interview 1, July 12, 2013). This interest or engagement in the world often extended beyond academics. For example, Martin thought that intelligence created a bond between himself and another classmate with regard to interests outside of school. He said, “We are both politically engaged. We have pretty strong opinions. . . . Those opinions align in most things, especially like politics, religion, whatever else” (Interview 1, July 10, 2013).

Participants extended their definition of intelligence to include pursuit of challenge as they revealed how they and their peers met and pursued difficult academic tasks, as Aliyah said, “We are both obviously intelligent . . . so even if we can’t figure something out, we work through it, even if we don’t get it right away, and we try to challenge ourselves as much as possible” (Interview 1, July 10, 2013). Many said they even enjoyed approaching demanding problems, as Kenny said, “This [similar peer] certainly likes the more challenging problems and we have a lot of fun figuring those out” (Interview 1, July 17, 2013). Participants also often mentioned how they and their peers capitalized on this intelligence through motivation and their pursuit of goals, both in the present, like Jessie: “We both are ambitious, I’d say. Like . . . we really want to do well [in school]” (Interview 1, July 12, 2013), and in their future, like Charlotte: “Well, we’re the same, because we both work hard and we both have that go-getter spirit...I would think, like ambitious and wants to have a good career” (Interview 1, July 18, 2013). Indeed, this motivation transferred into increased effort for academic pursuits.

Perceptions of effort and balance. I find that the main difference that participants drew between themselves and similarly able peers was that the participants perceived themselves to exert higher levels of effort and motivation. They felt that although their peers were similarly intelligent, they were less successful because they did not have the motivation to expend effort and follow through in the face of challenge. They also mentioned negotiating a balance between working hard in school and getting involved in interests outside of school.

Time after time, participants revealed that they did not perceive their peers to possess levels of motivation matching their own. Considering that they regarded level of effort as a key component influencing their academic success, as detailed in Research Question 1, I find it is not surprising that participants often viewed themselves as more successful than their peers. However, these perceptions of motivation as the key driver of success were not monolithic; some participants also or instead offered perceptions that peers avoided challenge and failed to set goals due to their uncertainty about the future, as I explore below.

The most common responses from participants regarding distinctions between them and their similar peers involved the level of effort they applied to schoolwork and extracurricular activities. For example, Bobby said, “[My peer] goes home and plays video games, and he’ll play all night and he’ll come into school exhausted and not pay attention, and he’ll watch movies on his computer during school” (Interview 1, July 10, 2013). Charlotte felt that some of her friends could pursue extra challenge, but chose to be indolent instead. She explained, “Well, my friends are particularly lazy. Once they’re done with their work, they like to go to sleep. They like to just be by themselves and read a book or watch TV or do whatever” (Interview 1, July 18, 2013). These responses indicate that participants felt that, in addition to their natural ability, the

amount of effort they devoted to their schoolwork and to extra opportunities strongly influenced their and their peers' overall academic success.

It seems that, for the most part, participants viewed their peers' lack of effort and prioritization as a personal choice. By making underperformance a "choice," these participants also revealed a belief that the individual could address the underperformance and that failure to succeed was a personal weakness. Kenzie was disappointed by what she perceived to be a lack of effort her high-potential classmate showed. She stated:

She started doing even worse and worse, because she just didn't want to try anymore, and I just thought that was kind of disappointing because she has the potential to be really smart, but she just doesn't really choose to try to do her best and stuff. (Interview 1, July 12, 2013)

Aaron also thought his classmate demonstrated a lack of effort and low prioritization for important schoolwork. He said:

I don't want to, like, insult him, but I don't think he puts his priorities nearly as well as some other people that I know because . . . on the weekends even if [we] have some like big project or something, he'll usually go hang out, unwind or something, while other people are still just working throughout the weekend. (Interview 1, July 18, 2013)

Though these comments clearly indicated that participants notice differences between themselves and their peers in terms of effort, their comments also hint that they may have felt superior to them. In choosing to devote effort to their schoolwork, they appeared to feel like they were doing the "right" thing and their peers were choosing to underperform.

Alternatively, even when their peers were doing well in school despite putting in minimal effort, participants still framed their peers as somehow less than themselves, and suggested that

these peers were challenge-avoidant and satisfied with doing the bare minimum. A classmate who did not pursue extracurricular opportunities disappointed Rebecca. She explained,

He doesn't want to take as many opportunities as he can, so if he did the opportunities such as [this program], I would have no doubt in my mind that he would get in I mean, he's an amazing person, but I don't think he pushes himself enough. (Interview 1, July 12, 2013)

Participants talked about a tendency of some peers to avoid challenge in school as well. In thinking about a classmate's choice of classes, Eddie said, "He doesn't push for more academically rigorous programs. Like, if there's an AP class, he opts for one step lower" (Interview 1, July 13, 2013). Similarly, Libby had a friend who she said held a similar value for education but who opted for less challenge. Libby felt like she was being mean by calling attention to the other student's choice to take less rigorous classes compared to the classes she was taking. Her comments indicated that she perceived that she was more able to sustain challenge:

[My friend] doesn't strive for high AP classes and even though she says that she's taking [college] classes next year, they're not Oh, wait, this sounds mean . . . but it's not anything to the level that I'm doing, so I feel that in that sense . . . school is very important to both of us. It's just that I think the difficulty sometimes [makes] people crash a little bit. (Interview 1, July 13, 2013)

Others recognized that avoidance of challenge permeated their peers' choices both in school and out of school. Ramone said, "He's just fallen off . . . because he just doesn't like to do extra things and he doesn't like to sign [up] for harder classes" (Interview 1, July 18, 2013).

Victoria talked about a friend who would do homework but who certainly would choose endeavors other than attending a summer program. She articulated their differences:

. . . [L]ike they'll do the homework, but then, they won't do anything beyond that. They don't read for fun. They don't, I don't know, just generally, they wouldn't attend a summer camp like this. They would just relax all summer long, so I'm different from them in that I have more initiative and drive. (Interview 1, July 17, 2013)

Taken together, participants' responses about their peers' avoidance of challenge indicate how important participants felt it was to make effort to take opportunities, both in school and out, to reach their full potential. They reflected a perspective that taking the most challenging classes and participating in academic extracurricular activities influenced their academic success in a positive way, and they needed to do more beyond relying on their natural ability. Their comments also hint that they felt a sense of moral superiority when they compared themselves with their peers in that they felt like they are doing the "right" thing and their peers were doing things "wrong."

Some participants attributed their peers' lack of effort to uncertainty about goals for the future, reflecting a contrast with some of their own emphasis on the importance of goal-setting. Aaron explained a peer's situation as follows:

So, he isn't going to any program this summer. I'm not too sure what he's doing or like any kind of research opportunities or internships, but I think most of it has to do with the fact that like he's not too sure yet about what he wants to do when he grows up. So, he thinks going to an internship or a program where it's focused in one subject area is not going to be beneficial to him because he doesn't want to set his path in stone He also knows that it takes a lot of time, and there's a lot of commitment involved to go into

a research program or an internship, and if he's not sure . . . about going into some field and the internship is about a specific area, then he's not really motivated to go pursue a research program like this. (Interview 1, July 18, 2013)

His comments raise an interesting point because most of the students in the program reflected using the program experience as a way to find out if a certain discipline was what they wanted to in the future. Though they were unsure, they decided to take a chance and try an intensive learning experience, while this student used uncertainty as a reason not to explore.

Salma thought the same of some of her classmates. She said, "I guess they don't see the opportunities and they don't see why they should take advantage of those . . . opportunities or how that'll help them in the future. They're skeptical about them" (Interview 1, July 17, 2013). These participants expressed the value they placed on goals and how to reach them through their explanation of their peers' lack of vision.

Despite the aforementioned instances of lowered motivation, some participants also recognized that some of their peers were motivated but were struggling to maintain balance. For example, participants described peers who were too focused on getting perfect grades to pursue additional academic activities. Eddie said, "like a person who studies, studies, studies . . ." (Interview 1, July 13, 2013). This type of student was looked down upon due to their lack of balance in his life. Briana recognized the importance of involvement in extracurricular activities in addition to getting good grades. She said,

We're different because I do a lot of extracurricular activities and I think that's what's gonna be the difference on a college application, because they do, they do care about the 4.0 GPA, the really high GPA, but they want to see a well-rounded student, so that's kind of the difference, like, someone who does extracurricular activities and someone who

doesn't, . . . the person who does is going to have a better chance of getting into the college that they want to. (Interview 1, July 17, 2013)

This quote also suggests that doing extracurricular activities stems, or should stem, from intellectual curiosity. Martin seemed to make this point when said he knew a peer who valued his academic pursuits as a means to an end rather than for what they might teach him. He said, "He does things because they are bullet-points on paper [his resume], not because he wants to do them, or thinks they are meaningful" (Interview 1, July 10, 2013).

Participants' evaluations of their peers suggest that participants valued extracurricular activities as long as there was an adequate balance between academics and extracurriculars that further benefited their talent development. Too much studying or doing activities for the sake of a resume were viewed negatively, as was doing extracurricular activities while ignoring the importance of academics. Still other participants recognized that they had peers of similar intellect who were *too involved* in extracurricular activities and, as a result, their academic pursuits suffered. Charlotte said, "[My peers are] very active in their community. It's just they don't want to [do extra things], because they're so active, it's kind of like they can only handle one thing" (Interview 1, July 18, 2013). Likewise, Ellie said, "I feel like, because they're so involved that they don't really, aren't involved with their academics, so [they are] more focused on sports and clubs" (Interview 1, July 12, 2013). It is interesting that participants made a point of mentioning the importance of balance while they also place a high premium on effort. This theme seemed particularly evocative when they thought that learning occurring in extracurricular activities was not personally meaningful or was taking away from academics.

External barriers and goals. In some cases participants did not so much blame their peers for lack of success, but instead acknowledged other pressures and barriers that prevented

them from pursuing opportunities. Several recognized strained finances as a factor, which may have been the result of living in a single-parent home. These participants suggested that their desire and motivation to seek extracurricular opportunities may not be the only reasons that they are able to experience opportunities that will aid their talent development and propel them toward their goals.

In addition to financial constraints, two participants expressed that they thought environmental influences contributed to why their peers do not seek enrichment, though did not exactly specify what those influences were. Libby said, “I don’t think [my peer] would go out and do something like [this program]. I think . . . it would have been really rare for anybody in my school” (Interview 1, July 17, 2013). Kaley agreed, “There’s only one other person in my class who has done a summer program” (Interview 1, July 18, 2013). Perhaps their peers may not have known about extracurricular academic activities or did not want to defy social norms in their schools by participating in such activities.

Summary of Findings Answering Research Question 3

Through talking about their similarly intelligent peers, participants revealed how they define natural ability and motivation as part of their identities and instrumental to their academic success. The role of their own intelligence and effort was manifested through students’ discussion of what they perceived to be shortcomings in their peers—specifically, challenge avoidance and lack of effort. Their responses indicated not only that they believed themselves to be more capable of sustaining challenge than their peers, but that they were superior to them, as well. A few students expressed empathy toward less fortunate students who may have been prevented from opportunities by factors outside their control, but the majority expressed disappointment and disapproval in their peers’ choices.

Though the participants implied that effort was important to achieving goals, I also find a theme of expending *too much* effort and in the wrong places, such as only on extracurricular activities or on activities for the sake of a resume, without acknowledging the opportunities for learning. For these students, who are exceptionally goal-focused, the choices of their peers to direct effort towards academic endeavors without an ultimate purpose seemed unauthentic and was therefore viewed negatively. This could indicate that although academics are important to the participants, they recognize the need for a balance between doing everything they need to do to reach their goals which pursuing their area of greatest interest along the way.

Summary of Findings of All Research Questions

Through interviews and written musings, participants revealed their thoughts about factors influencing their own talent development, how participation in the summer program may have influenced them both situationally and long-term, and how they feel they compare to like peers. Overall, participants' responses did not vary greatly across gender, ethnic, or socioeconomic groups.

Participants felt their academic success was influenced by various functions of several significant people, as well by as their own traits. Parents, peers, teachers, and mentors all served as role models, sources of advice, cultivators of challenge, and grantors of help and support. Participants' own various traits, interests, and motivation propelled them to achieve. Their evaluations of similar peers who do not seek enrichment were telling of how they viewed themselves in comparison with others; these reports were consistent with their reports of the role of self as it influences talent development. This also showed how they viewed their intelligence as an important part of their identity.

A major theme that emerged was goal setting. Participants showed great ability to set goals, both short term and long term. Further, they demonstrated thoughtfulness in the steps they were taking or needed to take to reach those goals, including employing assistance from the aforementioned significant persons. They related these goals to the summer program by recognizing its influence in guiding their future educational and career decisions and teaching them skills that are usable by professionals in their chosen fields. After the program, participants recognized the program's influence on their response to challenge in school.

CHAPTER 5: DISCUSSION AND IMPLICATIONS

This final chapter presents a summary and discussion of the study's findings across all research questions. I will discuss both theoretical and practical implications for gifted education. I will then discuss the study's limitations and suggestions for future research. Overall, I suggest three major findings:

1. Students recognized internal and external influences on talent development.
2. Students' self-perceptions around ability, motivation, and effort were revealed in how they compared themselves with peers.
3. Students' view of the value of protective factors was linked to their perceptions of the factors' utility toward reaching goals as well as perceptions of corresponding underlying support.

Findings Across Research Questions

Finding 1: Students recognized internal and external influences on talent development.

Through their responses across all parts of the study, participants revealed that they recognized a variety of internal and external influences on their talent development and pursuit of academic success. The patterns and the variations among their responses showed not only common protective factors, but also some of the functions such protective factors served in students' lives. Internal factors included challenge seeking, goal setting, and effort, all of which were linked to students' motivation to strive for academic success. The participants articulated that they had the support of several significant persons, including parents, teachers, mentors, and peers, and that these people influenced them both through social and emotional support and actively by encouraging skills and offering academic help. Participants further related both the

internal and external factors to their ability to set and take steps toward the attainment of goals in the future.

Significant persons. While parents seemed to be the most important external influence for participants, other adults, including teachers and mentors, also emerged as important along with parents – or in some rare cases instead of parents. This supports the notion that other adults or mentors provide students guidance even in the absence of familial support (Reis & McCoach, 2000). Indeed, participants expressed valuing close relationships with teachers who held high expectations for them and challenged them, which aligns with previous research findings that the actions of teachers and students' respect for teachers had the greatest positive influence on underachievement reversal (Baker, Bridger, & Evans, 1998; Emerick, 1992).

Many participants spoke about how important friends were to them during the summer program and after, reflecting the findings of other studies around peer interaction and support. As suggested by other research, study participants really valued the opportunity to be around other students like themselves and they found relief from some of the stress of challenging work in their interactions with friends (Matthews & Kitchen, 2007; Shaunessy & Suldo, 2010). There are substantial implications of such support from peer interactions, given evidence suggesting positive effects of peer support on social and emotional health (Phillips & Lindsay, 2006) and negative effects of lack of peer support on achievement (Lens & Rand, 2000).

The main way participants reported a change in factors influencing their talent development in connection with their program participation was the addition of mentors and the subsequent opportunities and support that were created from their involvement. Though the mentors served many of the same functions as parents, teachers, and peers, they were an additional resource from which students could benefit. Participants explained that they enjoyed

how their mentor provided opportunities for them to engage in challenging work, which is an important aspect for achievement (Lens & Rand, 2000; Winebrenner, 2000). They also talked about how their mentors were role models for them and gave them advice about their potential future careers. Thus, through serving as a model of achievement and offering valuable guidance, mentors may have influenced students' academic attitudes and supported their future career development (Clasen & Clasen, 1997; Larose & Tarabulsy, 2005). Even though these participants already performed well academically prior to attending the program, a mentor may still play a critical academic role by serving as a model of achievement and offering valuable guidance (Clasen & Clasen, 1997), as well as potentially providing a positive influence on students' views of their scholastic careers and occupational options (Olszewski-Kubilius, 2003). The addition of a mentor may also improve relationships with parents and teachers (Rhodes, 2002), thereby maximizing protective factors for these students.

Beyond the academic support from mentors and general support from peers in the program, participants also spoke about the benefits of learning to navigate the college experience while still in high school. These reflections included insights about living with roommates and learning how to interact with college professors and graduate students. Early exposure and opportunity for building social capital within the university setting was exciting for the students, and several mentioned how it would give them an advantage in the future because they will be more comfortable in college and be more likely to approach professors with questions and for advice. Amplified feelings of comfort with the college environment and increased sense of belonging have been linked to improved rates of retention and degree attainment for at-risk students (Cerna, Perez, & Saenz, 2009); this study implies that these benefits of early college experience may emerge for a wider range of talented students as well.

Multipotentiality. Participants recognized that they have multiple interests and talents, and that external experiences can support their decision-making related to these. In particular, participants felt that the mentors and the summer program overall helped to resolve some of the issues that can arise from multipotentiality (Terman & Oden, 1947), including “vocational indecision and job vacillation” (Sajjadi et al., 2001, p. 27). The students frequently pondered what they wanted to do in college or for a career, and some changed their minds about their goals as the program went on or after. Most participants talked about how they already had a career in mind but wanted to decide between two different paths within a career area; they wanted to experience their chosen discipline within a variety of contexts before making a decision. Using mentor advice and experiences at the program, participants actively prioritized and focused their interests before beginning to make decisions, which are helpful skills for positive career selection and adjustment (Sajjadi et al., 2001). These findings also indicate the benefits of career planning and counseling for students experiencing any deleterious effects of multipotentiality, such as internal turmoil about choosing a major or vocational vacillation.

Characteristics of self. Though significant others were important to participants, it was evident that they perceived internal factors that influenced their talent development, as well. Students demonstrated very strong sense of self, which manifested as strong aspiration to do what was right in school and a desire to succeed. These traits are thought to be primary influences on academic achievement, particularly when paired with support from significant persons (Hébert, 1996). However, strong moral convictions sometimes resulted in moral superiority and criticism of peers whom they deemed incompetent or whom they thought were underachieving. Their ability to be overly critical can be viewed as a negative consequence of *healthy grandiosity*, defined by Wolson (1995) as a necessary personal characteristic that allows

talented individuals to endure hardships and disappointments on the path to the highest levels of achievement. Though many handle this grandiosity without much trouble, their unwavering vision of self may cause issues with peers, as seen when some participants were critical of underachieving peers (Grobman, 2006).

Participants demonstrated a clear ability to set goals and recognized steps they needed to take to follow through with them. Their delight with their experiences with their mentors in the summer program and their new perspectives on their future careers shows evidence of “pregoal attainment positive affect,” the happiness that arises as an individual pursues a goal and anticipates a positive outcome (Davidson, 1994). The fact that the summer program helped shape participants’ goals is valuable because goals that are too vague or difficult often do not spur motivation to follow through (Koestner, Lekes, Powers, & Chicoine, 2002). Participants’ responses indicate that they will likely be able to follow through with attaining their goals; they showed evidence that their goals are specific, personally inspiring, in line with their values, and sustained by both a plan for implementation and support, all of which enhance goal progress (Gollwitzer, 1999; Koestner et al., 2002).

Sometimes participants expressed very specific interests. In the literature, strong passions and emotional dedication to a topic are referred to as *romance with a topic or discipline*, defined as the growth of one's passions into “a true romance, characterized by powerful emotions and desires” that “provides the motivation for a long-term commitment to a course of action” (Renzulli, Koehler, & Fogarty, 2006, p. 18). Though this was the exception in this study, because most participants chose to focus their comments on general academic success or general interest areas, their descriptions of their interests and how they are developing them demonstrated the potential to grow into attainable academic and professional goals.

Different groups. The finding that most of the themes in student responses did not vary by students' demographic background seems to indicate that all responding students had at least one protective factor influencing their academic talent development, no matter their gender, ethnicity, or socioeconomic status. This finding is different from what is found in much of the underachievement literature, which suggests that students from minority or economically disadvantaged backgrounds underachieve at higher rates due to higher incidences of unintentional school bias and unequal educational opportunities (Ford & Thomas, 1997; Reis & McCoach, 2000). Yet, some studies note no relationship between underachievement and demographic differences or highlight a different group of underachievers. Reis et al. (1995) found no relationship between underachievement and poverty in their study, suggesting that there may be factors at play other than economic disadvantage, such as cultural and gender differences, which were apparent in their study. However, Colangelo, Kerr, Christensen, and Maxey (1993) found the majority of underachievers in their study to be Caucasian males, further suggesting that rates of underachievement among different groups of gifted students are variable. As noted in several places, the development of each student is different and perhaps should not be viewed in terms of demographic groups, but instead by the individual. Though they acknowledged some common external and internal catalysts, nuances emerged in the utterances. Additionally, students had to demonstrate motivation to gain admission to the program, so that may have affected any patterns of underachievement or other challenges that may have emerged with other groups of students.

Protective factors working together. It is essential when talking about the findings as a whole to recognize that most participants cited several protective factors as influences on their talent development, suggesting that the interaction among these factors may be critical. Gordon

and Song (1994) agreed, identifying several factors that contribute to achievement, including “presence of significant others, support for development and learning, sense of community, models and heroes, opportunity, challenge, various manifestations of developed ability, networking, personality as reflected in specific response tendencies, and specific environmental influences” (p. 32). They stressed that none of these factors should be viewed individually, and since no percentage of the variance in achievement can be accounted for by any one of the variables, their influence should be viewed as collective. Depending on interactions between personal, environmental, and situational characteristics, some factors may be clustered, absent, or manifested differently. This model is a good representation of the variety of protective factors discussed by participants in that the internal and external factors are clearly represented, and represented differently from student to student. This model also hints that significant persons may serve various roles and provide myriad opportunities that contribute to students’ talent development, as participants delineated through their vignettes about their parents, teachers, mentors, and peers. Olszewski-Kubilius and colleagues (2004) showed similar findings for Project EXCITE, a program with the goal of closing the achievement gap between minority and majority students. When they bolstered support structures at home (parents) and school (peer group, teachers), students were more successful. Participants in this study also articulated these themes, particularly the importance of adults setting expectations for them and the opportunity to be around like peers.

Finding 2: Students’ self-perceptions around ability, motivation, and effort were revealed in how they compared themselves with peers.

Students compared themselves with others both implicitly when describing their supports for their talent development and explicitly when asked to compare themselves to similar peers.

Participants focused on a few key points such as their peers' lower level of effort given to academic endeavors and tendency toward avoidance of challenge. In their descriptions of similar peers, participants revealed not only their perceptions of why other students did not seek extracurricular enrichment, but also how they themselves viewed their own ability, motivations, and effort as key pieces of their identity.

Perceptions of ability. Participants in this study preferred to compare themselves to people toward whom they had positive feelings, reflecting similar findings from Meisel and Blumberg (1990). Social comparison seemed to affirm their feelings of intelligence and inspire them to achieve at higher levels. In contrast to researchers who claim that comparisons usually generate negative feelings (e.g., Salovey & Rodin, 1984), this study indicated that it is not just the comparison, but may be how students process the information that matters (Collins, 1996). These participants could have said that when they compared themselves to their peers, they felt inferior and defeated, but they instead mostly perceived the comparison as helpful and as a source of motivation. Students likely felt that comparing themselves to other students was helpful because they perceived themselves to belong to the group in terms of their ability, which can improve motivation and achievement (Goodenow, 1993).

Perceptions of competition were more divisive, and participants' perceptions of competition depended on whether they viewed as matching or threatening their ability. Competition seemed positive when students were confident in their ability and were task-oriented, which allowed them an opportunity to improve technical and interpersonal skills (Karnes & Reilly, 1996). However, when students felt inferior to other students and therefore focused on such things as their class rank rather than improving skills, they perceived competitive situations as negative; negative feeling are also likely happen when competition is

other-focused, such as when participants indicated they wanted to achieve certain grades to beat others (Clinkenbeard, 1989). I did not specifically ask about competition, and yet it emerged as a theme from many of the participants, which indicates the concept of competition is on the minds of gifted students when they think about influences on their talent development (Subotnik et al., 1993).

Perceptions of motivation and effort. Students reported that they felt major differences with regard to motivation and effort existed between themselves and peers who were similar in terms of intelligence. Many talked about how they had peers who were extremely bright but either did not do well in school or seek extracurricular opportunities because they did not care to put in the effort. Because their ability is an ingrained part of their identity, and many recognized that their ability played a large part in their success, these students may tend to attribute academic success mostly to effort (Assouline et al., 2006). This portrayal is indicative of *attribution asymmetry* (Dai et al., 1998), in which gifted students attribute their own academic success to both ability and effort, but only attribute failure to effort. Though gender differences in attribution have been suggested (Siegle et al., 2010), the majority of respondents alluded to a belief that effort contributed to performance more than ability, regardless of gender.

These attributions have implications for gifted students' avoiding challenge, something that several participants mentioned as a problem with similar peers whom they felt had the ability to succeed in school. Perceived failure from misplaced attributions may prevent some students from seeking challenge due to fear of failure or to perform more poorly when faced with challenge (Grant & Dweck, 2003). Although participants could not pinpoint reasons why their peers avoided challenge, attributions may very well be influencing their choices regarding challenge.

The participants also raised an important point that another type of student exists who is so consumed with achieving that he or she may put in too much effort. Some students are not able to get involved in extracurricular activities or explore other interests because they are too focused on getting perfect grades and therefore do not have time or energy. An obsessive focus on grades can create unnecessary stress that changes how students view learning and school. As Romanowski (2004) said, “Though this obsession occurs in degrees and is expressed in different ways, there is little doubt that many students are in an unrelenting race for good grades and achievement, and the consequences affect the way students view school, teachers, learning, and themselves” (p.149). Participants implied that they respected students who had a healthy balance between school and extracurricular activities as well as obligations and passions. Their acknowledgement implies that they recognized that effort can transfer into unhealthy perfectionism in some students. Such perfectionistic tendencies may require intervention by teachers, parents, or counselors to encourage students to “view events or products that fall short of expectations as fixable, rather than mistakes to be discarded” (Siegle & Schuler, 2000, p. 43). This specific finding serves as a reminder that talent development should be balanced and perfectionism should be monitored.

Finding 3: Students’ view of the value of protective factors was linked to their perceptions of the factors’ utility toward reaching goals as well as perceptions of corresponding underlying support.

For the most part, participants viewed the support of significant persons in their lives positively. However, some expressed frustration when they perceived that the help being offered would not be useful to them or that they were not receiving adequate support for reaching their own elevated goals. Students’ feelings of frustration are understandable, as significant others

need to determine when the provision of affective support might be necessary to help learning or for learning to occur (Higgins, 2001). Because individuals tend to benefit more from help from people who are not likely to have a stake in evaluating them (Louis, Posner, & Powell, 1983), it is fitting that help from mentors, whom participants may have viewed as less threatening, was viewed as positive.

However, if the benefits of having a non-evaluative individual are accurate, then participants likely would have viewed teachers' expectations and pushing as negative, as they did their parents' urging, but they did not. This discrepancy suggests that there may be something else at work. I posit that *instrumental help* (Higgins, 2001), or "how to" help, that both teachers and mentors are able to provide within their disciplines is considered helpful for participants in reaching their goals. On one hand, this suggestion is further supported by the fact that participants viewed their parents' pushing as helpful when they felt like it would be useful to them and their parents had experience with the subject, such as offering assistance with homework, taking them on college visits, or giving them advice based on their own past experiences. On the other hand, Kaley viewed her parents' pushing her through the college application process as frustrating because they had not gone to college and therefore could not offer instrumental help.

Additionally, parental expectations for grades, the college application process, and future careers were frustrating for participants when they felt like they did not have a voice in the decision. This frustration was mirrored when expectations did not seem to be about the student herself, but rather about the students' siblings. As internal emotional conflict, and worse, underachievement, can occur when parents and educators push students toward areas that are not intrinsically motivating or out of line with their goals (Reis, 1998), this is troubling. In gaining

additional instrumental help from the summer program experience, as well as from other significant persons in their lives, these participants may be more likely to overcome potential hindrances that prevent them from reaching their goals.

Comparison With Existing Models

Though a main tenet of grounded theory is to approach data without a framework in mind, I still think it is important to compare my findings with two well-known models of talent development to better situate my study within the field. Many of the factors influencing talent development, as cited by participants, are included in Gagné's DMGT (2009), most within the categories of environmental catalysts and intrapersonal catalysts. These findings have implications for further justification of this very complicated model. Gagné (2000) has admitted that his model is complex, but has also defended his theory because other scholars "oversimplify" developmental theories. He has also admitted that many of the interactions between components in his model are underexplored. This study may provide some indicators about not only the interaction between components, but also the degree to which each influences talent development.

The first essential component for Gagné's (2009) model of talent development is natural ability, something that my participants definitely felt was part of their identity. My participants felt that their high academic ability was further influenced by their own personality traits, interests, and motivations (spurred by their effort attribution, self-efficacy, or goal orientation), a finding that reflects the intrapersonal catalyst of the DMGT. They also talked extensively about the functions of significant persons in their lives; they perceived that the academic help, social and emotional support, role modeling, and opportunities provided to them by these significant persons were indispensable to their talent development. Similarly, Gagné (2009) postulated that

environmental catalysts, which can include significant persons, situations, activities, and events, are principal stimuli of talent development; notably, students in the study placed a strong focus on the influence of significant persons, and participation in the summer program itself can be viewed as an environmental catalyst incorporating persons, a new situation, and activities. Gagné (2009) also argued that the element of chance further influences the catalysts. While I do not have any direct evidence of participants saying they “got lucky” and were therefore able to have “the stars align,” I infer that some of the participants are aware of the chance factor because they mention situations of peers who are unable to pursue their talents due to extenuating external factors.

The Three Ring Conception of Giftedness (Renzulli, 1978) illuminates the influence of task commitment and motivation on observable “gifted behaviors.” Such gifted behaviors are thought to reflect an interaction above average ability, which has already been mentioned within the context of the DMGT, and high levels of task commitment and creativity (Renzulli & Reis, 1997). In this study, participants showed a strong ability to set goals and follow through with them, even in the face of challenge. Although data collection methods did not include a strong emphasis on indicators of students’ creativity, I infer that they demonstrated creativity in their problem solving abilities, as well as in how they envisioned their future college and career experiences. Further, the three rings of above average ability, task commitment, and creativity are situated in a houndstooth-patterned background, which represents the interactive influences of personality and environment; these influences may also be considered catalysts for talent development as discussed above.

Renzulli (2002) expanded this theory to explore why certain individuals aim their talents toward increasing social capital. He hypothesized that high-ability students may possess co-

cognitive traits that encourage them to act in socially responsible ways; these traits include optimism, courage, romance with a topic or discipline, sensitivity to human concerns, physical/mental energy, and vision/sense of destiny. I have already discussed how participants reflected on their vision and sense of destiny, but I think that each of these other co-cognitive traits are also represented to varying degrees within the responses. Many participants expressed hope and excitement for the future, as well as for their discipline of interest. Andres and Kenzie, in particular, showed high interest in and felt the rewards of helping people and giving back to the community.

Limitations

Though the grounded theory approach has guidelines for analysis, putting these guidelines into practice will vary for every study due the approach's iterative nature and co-construction of meaning by the researcher and the participants. As a qualitative researcher, my subjectivities and life experiences will influence any research endeavor I undertake. I serve as an instrument, a filter for the data, and an interpreter, therefore perpetuating the complex relationship between the research and the researcher (Wolcott, 1990). Saldaña summed this up when he said, "Each qualitative study is context-specific and your data are unique, as are you and your creative abilities to code them. I don't have the answers to your questions, but you and your data do" (p. 30). My perspectives on the topic of this study stem from my own experiences as a student, a teacher, and assistant for an extracurricular gifted program. These subjectivities should be considered when examining the trustworthiness of the findings I presented, because qualitative data can be interpreted differently by different researchers.

Because I was the instrument for my study, my findings cannot be separated from myself. I acknowledge that my findings may be read by others and interpreted differently than I

presented in this paper. However, as Saldaña (2009) noted, “We are advised to leave our readers with more questions than answers through evocative ambiguity and uncertainty enhancement. We don’t need to reconcile the contradictions; we only need to acknowledge the multiplicity of them” (p. 192). My goal was not to identify experiences that were identical for my participants, but rather to seek common themes and point out the nuances of each participant’s experience.

The analytical memos that I wrote, which include my reflections throughout the research process, documentation of any ideas, notes, or insights I had during the research process, and record of the evolution of codes (Creswell & Miller, 2000; Saldaña, 2009) will help external reviewers assess the credibility of these findings (Hsieh & Shannon, 2005; Patton, 2002). I worked with two reliability coders to ensure understanding of my structure of codes, categories, and exemplars.

Participants were not representative of the larger population of highly motivated, academically talented students or the population of academically talented students more generally; one limitation associated with this is the extent to which the study's interpretations are transferable to this larger population. However, Stake (1978) noted that because very few exact “laws” have been validated in fields such as social work and education, efforts should be directed toward gathering information that has practical and functional uses rather than working toward validating laws. He further suggested that such information may be consistent with the professional reader's experience and that he may make a “naturalistic generalization” (p. 6).

Very few participants mentioned negative aspects of their talent development, suggesting that participants who chose to respond to the study may be more likely to have had positive experiences and to be willing to share them. Additionally, participants may have perceived that

they should only share positive experiences due to their desire to please the researcher or because of the way the questions and prompts were worded.

Additionally, the follow-up component of the analysis is somewhat limited due to low response rates from participants; only one third of all participants responded to follow-up emails and only one third of participants who completed the initial interview also completed the follow-up interview. Though participants offered some insight into how aspects of their talent development changed after participating in an academic summer program, this is a question that should be explored further.

Implications for Practice

While I recognize that students attending a competitive academic summer program are not necessarily likely to display underachieving tendencies and therefore this finding may not be echoed in another setting, the finding that students from different backgrounds did not vary much in their responses is still encouraging. This finding suggests that all similarly motivated students can benefit from similar protective factors. Knowing this, parents, teachers, and other practitioners may be able to encourage protective factors with all groups of students.

Students' approach to challenge reflects their perceptions of the practical support—the instrumental help—that they have for meeting that challenge. The more skills, strategies, and practical supports adolescents have at their disposal at the times that they need them, the more effectively they can approach challenge, identify goals, and take steps towards goals.

Additionally, these may all aid them in the college application process and decision-making regarding their future career. Significant persons including parents, teachers, mentors, and peers can encourage skill and strategy development in settings other than academic summer programs.

This study implies that academic summer programs are an operative way to foster development of such influential skills and strategies. Participants demonstrated that when they experienced real-world occupational events, they were able to learn the language and skills related to the discipline. Interest-based educational experiences, especially those in which students have the opportunity as practicing professionals while employing skills that are transferable to real-world contexts, are essential for students who demonstrate strong interest in a discipline. These situations do not need to occur solely within the context of summer programs, and in some contexts may be recreated within the school environment. One example of an educational model that can satisfy these goals is The Enrichment Triad Model (Renzulli, 1977). The Type III Enrichment element of the model allows students to conduct or participate in individual or small-group investigations of real problems within areas of their interest. Shaped from this model and intended specifically for adolescents, Academies of Inquiry and Talent Development (Renzulli, 2001), allow students to be led through a progression of learning experiences, eventually advancing to learning the skills of and investigating real problems resulting in products or performances for real audiences. No matter the method of delivery, it is important that authentic learning experiences get students “thinking, feeling, and doing what practicing professionals do in the delivery of products and services” (Renzulli, 2001, p. 8).

A few participants mentioned that they felt some of their peers did not attend extracurricular programs due to financial reasons. This outcome speaks to the need for providing financial assistance for such opportunities, and making efforts to be sure that students can find out about them. Olszewski-Kubilius and colleagues (2004) recognized this need in their project “so that students could compete successfully for placement in advanced and accelerated programs” (p. 135).

Suggestions for Future Research

This study illuminates several opportunities for future research. The multiple topics explored in this study—factors influencing talent development, academic summer programs, and student motivation, among others—and their nuances can all give impetus to future research efforts. As noted elsewhere, particular findings from this study provide interesting milieus for future study. Findings from such studies can help aid in the development of appropriate programming to address gifted students' unique educational needs as they pursue their dreams.

The findings of this study echo much of the prior research done on protective factors and factors influencing talent development, but may better illuminate the various nuances of these factors. For example, studies have shown that significant persons are influential, but may not thoroughly explore the various functions that parents serve. This study also includes the important component of student voice, which has been largely absent in recent studies of talent development. However, the interaction of various factors and the degree to which each is important remains complicated. More research including students' own perceptions may further clarify the relationship between factors. Though I did not find meaningful differences among various demographic groups in perceptions of catalysts for talent development, I suggest that this area be explored more systematically and in other contexts than an academic summer program. Other research has found that certain groups are more at risk for underachievement than others, and that their risk and protective factors may be different (Gordon & Song, 1994), but my findings revealed more commonalities than disparities. Additionally, further research should pursue the environmental question around specific experiences and chance, as represented in the DMGT (Gagné, 2009) more directly.

This study included a follow-up component that was initiated within a few months after the conclusion of the summer program. Though participants commented extensively about how the program was influencing them while at the program, not many participants commented extensively about how their experience at the program may have influenced their talent development after they returned home; this was due to short responses and a limited pool of respondents. A more systematic and detailed longitudinal study would provide more insight into the influences of summer programs.

Examining students' goals for college and their career—and how they are taking steps towards these goals—has the potential to uncover much about their perceptions of their abilities and interests. Findings about effort attribution versus ability attribution and the degree to which gifted students consider intelligence to be a part of their identity should also be expanded to address variations in this literature.

Most students focused on experiences related to general academic success rather than pursuing specific advanced study in a discipline. This evidence supports the call for more attention to the developmental progression toward talent development at high levels, as recently suggested by Subotnik, Olszewski-Kubilius, and Worrell (2011).

Final Thoughts

Understanding the characteristics contributing to talent development has significant implications for programming for gifted and talented students, particularly at those at risk for underachievement. As noted in the resilience literature, supportive adults, positive peer influence, goal-setting, and motivation contribute to the likelihood of at-risk students' success (Hébert 1996; Kitano & Lewis, 2005; McMillan & Reed, 1994; Murakami et al., 2012; Neihart, 2006; Reis & McCoach 2000; Wentzel, 1998); based on participants' responses in this study,

these factors are also influential for students who are not at risk. If educational professionals and parents can positively influence such factors through programming and social and emotional support, students may experience amplified success.

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APPENDIX A:
Demographic and Data Completion Tables

Table A-1

Individual Participant Demographic Data

Name	Gender	Fin. Aid	Grade	Ethnicity	Site Area
Aaron	M	N	11	Asian/Pacific Islander	Chemistry
Alexa	F	N	10	White, Non-Hispanic	Pharmacy
Aliyah	F	Y	11	African American/Black	Physics
Ana	F	Y	10	Latino/a/ or Hispanic	Digital Media
Andres	M	Y	11	Latino/a or Hispanic	Education
Bobby	M	Y	10	White, Non-Hispanic	Digital Media
Briana	F	N	10	White, Non-Hispanic	Digital Media
Brittany	F	Y	10	African American/Black	Arts
Charlotte	F	Y	11	African American/Black	Electrical Eng.
Eddie	M	N	11	No Response	Electrical Eng.
Eli	M	N	11	African American/Black; Latino/a or Hispanic	Arts
Ellie	F	Y	11	White, Non-Hispanic	Education
Ezra	M	N	10	White, Non-Hispanic	Biology
Gabby	F	N	10	Asian/Pacific Islander	Psychology
Gwen	F	N	10	Asian/Pacific Islander	Chemistry
Hana	F	Y	11	Asian/Pacific Islander	Materials Sci.
Ike	M	N	10	White, Non-Hispanic	Mathematics
Ivan	M	N	10	White, Non-Hispanic	Materials Sci.
Janine	F	N	11	White, Non-Hispanic	Chemistry
Jessie	F	N	10	Asian/Pacific Islander	Psychology
Julina	F	Y	11	Latino/a or Hispanic	Biology
Kaley	F	Y	11	Asian/Pacific Islander; Latino/a or Hispanic	Archaeology
Katya	F	N	11	Asian/Pacific Islander	Psychology
Keira	F	Y	11	African American/Black	Biology
Keisha	F	Y	10	African American/Black	Digital Media
Kenny	M	N	10	White, Non-Hispanic	Physics
Kenzie	F	N	11	Asian/Pacific Islander	Biology

Lamont	M	Y	11	African American/Black	Electrical Eng.
Lea	F	Y	10	Latino/a or Hispanic	Psychology
Libby	F	N	11	Latino/a or Hispanic	Electrical Eng.
Lynn	F	Y	11	Other	Arts
Maggie	F	Y	10	White, Non-Hispanic	Mathematics
Martin	M	N	11	White, Non-Hispanic	Physics
Melissa	F	Y	10	African American/Black	Digital Media
Michaela	F	Y	10	Latino/a or Hispanic	Mechanical Eng.
Monica	F	Y	11	African American/Black	Mathematics
Nina	F	Y	10	Latino/a or Hispanic	Education
Rabia	F	N	10	Asian/Pacific Islander	Chemistry
Rainie	F	N	10	Asian/Pacific Islander	Psychology
Ramone	M	Y	11	African American/Black	Digital Media
Rashida	F	Y	10	Other	Education
Rebecca	F	N	10	White, Non-Hispanic	Psychology
Sachi	F	N	11	Asian/Pacific Islander	Biology
Salma	F	N	10	Asian/Pacific Islander	Chemistry
Sam	M	N	10	Asian/Pacific Islander	Chemistry
Selena	F	Y	11	Latino/a or Hispanic	Psychology
Shannon	F	Y	10	White, Non-Hispanic	Biology
Steven	M	Y	11	Asian/Pacific Islander	Materials Sci.
Sunny	F	Y	11	Asian/Pacific Islander	Psychology
Susan ^a	F	N	10	White, Non-Hispanic	Materials Sci.
Tabitha	F	Y	11	Asian/Pacific Islander	Education
Tandi	F	Y	11	Asian/Pacific Islander	Chemistry
Teresa	F	Y	11	Latino/a or Hispanic	Arts
Victoria	F	N	10	White, Non-Hispanic	Chemistry
Yan	F	N	11	No Response	Pharmacy

^aThough Susan assented to participate in the study, she did not complete any requested portions of the study.

Table A-2

Data Completion by Each Participant

Name	Journal 1	Journal 2	Journal 3	Email 1	Email 2	Interview 1	Interview 2
Aaron	7/10/13	-	7/26/13	-	-	7/18/13	-
Alexa	-	7/17/13	7/26/13	10/28/13	1/2/13	-	-
Aliyah	7/10/14	7/17/13	7/26/13	-	1/24/14	7/10/13	2/8/14
Ana	-	-	7/26/13	-	-	-	-
Andres	7/10/13	7/17/13	7/26/13	-	-	-	-
Bobby	7/10/13	--	7/26/13	-	-	7/10/13	-
Briana	7/10/13	7/17/13	7/26/13	10/19/13	12/26/14	7/17/13	-
Brittany	7/10/13	7/17/13	7/26/13	-	-	-	-
Charlotte	7/10/13	-	-	10/29/13	1/12/14	7/18/13	-
Eddie	7/10/13	7/17/13	7/26/13	-	12/21/13	7/13/13	-
Eli	-	-	7/26/13	-	-	7/17/13	-
Ellie	7/10/13	-	7/26/13	-	-	7/12/13	-
Ezra	7/10/13	7/17/13	7/26/13	-	-	-	-
Gabby	-	7/17/13	7/26/13	-	-	7/10/13	-
Gwen	-	7/17/13	7/26/13	-	-	-	-
Hana	7/10/13	-	7/26/13	-	1/3/14	7/10/13	2/8/14
Ike	-	-	7/26/13	-	-	-	-
Ivan	7/10/13	7/17/13	7/26/13	-	-	-	-
Janine	7/10/13	-	7/26/13	-	2/16/14	-	-
Jessie	7/10/13	7/17/13	7/26/13	10/12/13	1/2/13	7/12/13	1/11/14
Julina	7/10/13	7/17/13	7/26/13	-	-	-	-
Kaley	7/10/13	7/17/13	7/26/13	10/17/13	-	7/18/13	1/24/14
Katya	-	-	7/26/13	-	-	-	-
Keira	7/10/13	7/17/13	7/26/13	-	-	-	-
Keisha	7/10/13	7/17/13	-	-	-	-	-
Kenny	7/10/14	-	7/26/13	-	-	7/17/13	-
Kenzie	7/10/13	7/17/13	7/26/13	10/25/13	12/21/13	7/12/13	1/31/14

Lamont	7/10/13	7/17/13	-	-	-	7/17/13	1/29/14
Lea	7/10/13	7/17/13	7/26/13	-	-	-	-
Libby	7/10/13	7/17/13	7/26/13	-	-	7/13/13	-
Lynn	7/10/14	7/17/13	7/26/13	-	1/23/14	-	-
Maggie	7/10/13	-	7/26/13	-	-	-	-
Martin	-	-	7/26/13	-	-	7/10/13	-
Melissa	7/10/13	-	7/26/13	-	-	7/10/13	-
Michaela	7/10/13	-	7/26/13	11/10/13	-	-	-
Monica	-	7/17/13	-	-	1/3/14	-	-
Nina	7/10/13	7/17/13	7/26/13	-	1/8/14	-	-
Rabia	7/10/13	7/17/13	7/26/13	-	-	-	-
Rainie	7/10/13	7/17/13	7/26/13	-	-	-	-
Ramone	-	-	7/26/13	-	-	7/18/13	2/22/14
Rashida	7/10/13	7/17/13	-	10/11/13	-	7/10/13	-
Rebecca	7/10/13	7/17/13	7/26/13	-	-	7/12/13	-
Sachi	-	7/17/13	7/26/13	-	-	7/10/13	-
Salma	7/10/13	-	7/26/13	-	-	7/17/13	-
Sam	7/10/13	-	7/26/13	-	-	-	-
Selena	7/10/13	7/17/13	7/26/13	-	-	-	-
Shannon	7/10/13	7/17/13	7/26/13	-	-	7/12/13	1/13/14
Steven	7/10/13	7/17/13	7/26/13	-	-	-	-
Sunny	7/10/13	-	7/26/13	1/13/14	2/16/14	7/12/14	2/2/14
Susan ^a	-	-	-	-	-	-	-
Tabitha	7/10/13	-	7/26/13	-	-	-	-
Tandi	7/10/13	7/17/13	7/26/13	-	-	-	-
Teresa	7/10/13	7/17/13	7/26/13	10/29/13	-	-	-
Victoria	7/10/13	-	7/26/13	-	-	7/18/13	-
Yan	7/10/13	-	-	-	-	-	-

^aThough Susan assented to participate in the study, she did not complete any requested portions of the study.

APPENDIX B:

Semi-Structured Interview Protocols

Interview 1 (during the summer):

1. What factors do you think have influenced your current academic success?
 - a. (If student does not include in response, ask specifically about supportive adults, peers, expectations, etc.)
2. Picture someone from your school who is similar to you and does well in school, but who does not choose to come to programs like this or otherwise take advantage of additional opportunities for learning. How are you the same? How do you differ?
3. Picture someone from your school who is similar to you in some ways, but does NOT do well in school. How are you the same? How do you differ?
4. What do you hope to gain from this summer experience?

Interview 2 (during the school year):

1. You (have/have not) indicated in your email check-ins that you (are/are not) keeping in touch with other people from [the summer program]. (Why do/why don't) you feel you (continue/do not continue) to talk?
2. Tell me more about the challenging school-related situations you mention in your emails.
3. Tell me more about how you are progressing toward your goals.
4. How do you feel that your participation in [the summer program] has influenced how you handle situations in school, if at all?
5. What are your thoughts right now about your college and career plans? OK. You said you want to [restate their goal, like "go to college"/"become a veterinarian"]. Tell me the steps you would need to take to reach that goal. [probe as needed]

APPENDIX C:

Weekly Journal Prompts

1. What is an experience you've had this week that you think you can use in the future?
How will it help you?
2. How has your mentor helped you this week?
3. How have your peers helped you this week?
4. If you had to decide on your career path today, would it relate to the area of your mentorship site? Why or why not?

APPENDIX D:

Email Prompts

1. Describe a challenging school-related situation you have faced since the last time we checked in. What happened, and how did you react?
2. Describe a goal toward which you have made some progress since our last check-in, or describe something you've accomplished that made you feel successful. What efforts do you believe supported your progress or accomplishment?
3. Who is someone in your life that you currently view as a mentor or role model? How does this person help you?
4. Are you keeping in touch with people from [the summer program]? If so, whom?
 - a. What kind of support do they give you, if any?
 - b. Do you wish you had their support? Why/why not?
5. How do you feel that your participation in [the summer program] has influenced your college and career plans?