ACADEMIC TALENT DEVELOPMENT PROCESS OF STUDENTS WITH GIFTS AND TALENTS IN HONORS COLLEGE: A COMPARATIVE STUDY OF ACHIEVING AND UNDERACHIEVING GROUPS

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I dedicate this work to Jin Whee Chung, my husband, best friend, and a great supporter.

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ABSTRACT

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The purpose of this study is to understand achieving and underachieving honors students' perceptions and experiences of their talent development process. Students currently enrolled in the Honors College at research-intensive public university in the Midwest participated in this study. Gagné's Differentiated Model of Giftedness and Talent (DMGT, Gagné, 2009) was used as a conceptual framework with a sequential explanatory mixed methods research design. In the quantitative phase, the Academic Talent Development Factor Survey was redeveloped to measure honors students' perceptions and experiences of their academic talent development in terms of four components of DMGT: gifts, intrapersonal catalysts, environmental catalysts, and developmental process. A total of 174 honors students were assigned to two groups: achieving (n = 143) and underachieving (n = 31) groups. The redeveloped survey showed an acceptable model fit but should be improved to accomplish reasonable reliability and validity. The National Survey of Student Engagement (NSSE, 2011) was used to determine whether honors students with underachievement are less exposed to good practices for undergraduate education (Chickering & Gamson, 1999) than their peers who maintain high academic performance.

In the quantitative phase, discriminant analysis and chi-square test results did not yield appreciable differences in pre-college characteristics including gender, ethnicity, and SAT/ACT scores between two groups. In terms of four components of DMGT, discriminant analysis results revealed that developmental process, environmental catalysts, intrapersonal catalysts were

statistically significant factors to determine differences between achieving and underachieving honors students in this study. Additionally, discriminant analysis results indicated that achieving and underachieving honors students showed high level of exposure to good practices. The differences between two groups were significant with good practices including (a) faculty interest in teaching and student development, (b) quality of non-classroom interaction with faculty, (c) academic challenge and effort, and (d) challenging classes and high faculty expectations.

In the qualitative phase, in-depth interviews were conducted to investigate similar and different patterns between achieving and underachieving honors students. Interview data from eleven achieving students, four underachieving students, and three honors advisors/staff were analyzed. From the student interviews, four composite textural themes and four composite structural themes were identified. From the interviews with staff/advisors, four composite textural themes and four composite structural themes were identified. Qualitative analysis results supported the findings from the quantitative phase and provided detailed picture of participants' perceptions and experiences. Both achieving and underachieving students confirmed their natural ability but understood the importance of effort, task commitment. Honors students in the achieving group showed clear purpose of being honors students, focused on benefits, and anticipated opportunities in their academic talent development in the honors college Underachieving honors students did not share the same expectations. Honors students in the underachieving group viewed benefits as either unimportant or as additional work. Since few studies exist related specifically to the talent development process of honors students, this study adds to the literature and understanding of underachievement in honors college.

Keywords: talent development, students with gifts and talents, honors program, achievement, underachievement, college, undergraduate students

CHAPTER 1. INTRODUCTION

As colleges and universities are progressively paying attention to recruiting students with gifts and talents, nearly 2,500 honors programs exist in the United States (National Collegiate Honors Council, 2015). These students "bring prestige and recognition to the institution" (Satterfield, 2006, p. 95). Honors programs are designed to improve students' baccalaureate experiences because those students' accomplishments contribute to the development of institutions' academic atmosphere. Despite the proliferation of honors programs, research about honors students' development within these programs is limited, resulting in faculty members and administrators wondering if they are working in understanding and addressing the needs of students with gifts and talents through their programs.

Whereas researchers have put their efforts into identifying factors contributing to academic success, not all gifted students achieve academic success while participating in honors programs (Singell & Waddell, 2010). Additionally, not all students who enrolled in honors programs in their freshmen year do not graduate with the honors degree. According to a survey with 31 honors programs in public universities, the mean completion rate of the honors program within six years was 58 percent (Willingham, 2018). The lowest rate among these programs was 30%. Other studies also reported the completion rate as 19% (Campbell & Fuqua, 2008), 27% (Cosgrove, 2004), and 35% (McKay, 2009). These results show abysmal graduation rates from honors programs. Some researchers compared honors and non-honors students' retention and graduation rates to examine the effectiveness of the honors programs. By identifying a group of high-achieving students by SAT score and high school rank, Slavin, Coladarci, and Pratt (2008) also concluded that participation in the honors programs (n = 185) resulted in a 3.1 times higher

retention rate than non-honors students (n = 1,012). However, these benefits were not found in the fourth year. Shushok (2006) took a "caliper matching" to compose honors and non-honors student groups using similar characteristics. Using this approach, statistical differences were not detected on the variables of GPA, means of SAT, gender, race, and place of residency. Benefits of the honors programs were found in higher GPA and retention rate in the first year. These differences between the two groups levelled out after four years. However, Brown and Culver reported (2018) positive relationships between honors college participation, GPA, and retention rates in the third and fourth years. Findings of factors and effects of honors programs are mixed, and researchers have consistently argued the need for empirical research to explain these issues (Pfluam, Pascarella, & Duby, 1985; Shushok, 2006; Slavin, Coladarci, & Pratt, 2008) in honors literature.

Researchers have discussed about why students with so much potential fail and have suggested that complicated factors contribute to this issue (Grobman, 2006; Hébert & McBee, 2007). Many students with gifts and talents experience various challenges in their transition to post-secondary education careers. Although many students acknowledge the benefits of honors programs, they may experience a lack of social-emotional support (Christopher, 2005), inappropriate academic programs (Cosgrove, 2004), pressure to retain scholarships (Robinson, 1997), and a decreased interest in academic learning and in maintaining their GPAs (Satterfield, 2006). Although honors programs have proliferated in recent years, research about the underachievement among students with gifts and talents, and their experiences is still limited (Balduf, 2009). Scager et al. (2011) described the problem by saying:

> Honors students are assumed to have the potential to excel in their future professional lives. It is, however, unclear whether and to what extent these honors

> students do indeed have this potential in comparison to non-honors students. In contrast with the huge body of research on giftedness in primary and secondary education, empirical research on talent in higher education is surprisingly scarce (Achterberg, 2005; Clark, 2000; Long & Lange, 2002; Rinn & Plucker, 2004). This is remarkable given the growth of programs specifically designed for groups of students who are assumed to be academically talented. (p. 20)

Honors curricula in higher education consist of frequent student-faculty interaction, effective instructional strategies, challenging pace, and diverse ways of thinking (Cobane, 2017; Moon, 2012). These components are aligned with Chickering and Gamson's (1987, 1991) seven principles of "good practices" that include: (a) encouraging student-faculty contact, (b) reciprocity and cooperation among students, (c) active learning, (d) prompt feedback, (e) time on task, (f) communication of high expectations, and g) respect for diverse talents and ways of knowing (1987, p. 3). These principles have served as a framework of the National Survey of Student Engagement (NSSE, 2011). The NSSE "annually collects information at hundreds of four-year colleges and universities about first-year and senior students' participation in programs and activities that institutions provide for their learning and personal development" ("About NSSE", 2018). Regarding the honors education, researchers reported inconsistent findings Moon (2012) did not find a statistical difference regarding the exposure to good practices between honors and non-honors students. However, other studies found honors students have more experiences with good practices for undergraduate students (Ory & Braskamp, 1988; Seifert, Pascarella, Colangelo, & Assouline, 2007; Shushok, 2003). Although no published articles about achieving and underachieving groups exists, the NSSE is appropriate to investigate influences of honors college participation on student learning.

Honors programs are considered as extensions of the gifted programs (Hébert & McBee, 2007; Howley, Howley, Helfrich, Harrison, Gillam, & Safran, 2012). Furthermore, students enrolled in honors programs are often referred to as "gifted students" (Rinn & Plucker, 2004). Colangelo (2018) addressed that gifted education and honors education shared fundamental commonalities in "the values, selection procedures, and goals" in his online essay (p. 4). Honors programs and gifted programs began by recognizing the value of human potential, using standardized scores to identify students, and aiming to provide differentiated and intensive education. However, both gifted education and honors education have been battling the label of elitism, which has led to a paradigm change from focusing on giftedness (ability) to talent (competencies). Additionally, researchers are focusing on potential abilities and the processes necessary to grow them, rather than on quantifying natural ability with tools like the IQ test.

In this study, I attempted to investigate a talent development process from intellectual gifts to cultivated talents with achieving and underachieving honors college students at one university in the Midwestern United States to gain a deeper understanding of their talent development using DMGT (Gagné, 1985, 2009). This process proposed a logical view to conceptualize human potential and the education system to nurture it. Also, talent development may occur at the confluence of various intrapersonal and environmental factors from their home, school, and social life. Moreover, findings of this study reflected honors students' and their advisors' experiences within the honors college and university context. Thus, this study's results provide an in-depth description of the honors students' talent development processes and factors around them, which are essential components in designing appropriate programs and meaningful experiences in university honors programs.

Statement of Problem

In recent years, researchers have presented extended perspectives of giftedness that brought about important changes in the field of gifted education. Researchers began to describe giftedness as a malleable component that manifests itself in a wide variety of areas, and requires systematic development (Subotnik, Olszewski-Kubilius, & Worrell, 2011; Van Bemmel, 2015; Van Tassel-Baska, 2005). In higher education, the terminology 'gifted' is used interchangeably and synonymously with the 'academically talented' without a clear definition (Christopher, 2003; Huggett, 2003; Rinn & Plucker, 2004). Gagné (2009) differentiated between the two terms gifted and talented as follows:

> GIFTEDNESS designates the possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain, to a degree that places definitions of these two terms.
>
> TALENT designates the outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity to a degree that places an individual at least among the top 10% of age peers who are or have been active in that field. (p. 1)

This distinction allows researchers and educators to visualize the developmental process as reaching from giftedness to talent and to understand how contributing factors facilitate and hinder the process. Talent development has been widely discussed in various domains in K-12 gifted education. Although college entrance is not the only path for gifted students after K-12, there still has been relatively little effort to conduct research on gifted students' talent development in higher education.

Honors programs and Honors Colleges aim to provide advanced and differentiated academic and extracurricular activities to meet the needs of students with gifts and talents (Chancey, 2013). However, underachievement of honors students is underestimated (Mueller, 2016; Robinson, 2015). Most honors programs and Honors Colleges provide corrective courses and time to reverse an honors students' level of underachievement. The university in this study also has provided resources (i.e., Academic Tutors, Academic Success, and Counseling Center) to the general student body, which should allow its member to achieve at acceptable levels. Nevertheless, it is questionable whether underachieving honors students can find useful resources to meet their unique needs.

To enhance honors education in colleges and universities, Achterberg (2001) proposed implementing theory-driven research and integrating the research findings with practical implications. Nearly 20 years later, researchers still emphasize this need to gain a deeper understanding of students with gifts and talents and to apply systematic approaches in order to improve honors education (Young III, et al. 2016). Similarly, researchers in gifted education have identified inconsistent interpretations of research findings between researchers and practitioners (Van Tassel-Baska, 2006). Therefore, triangulation among the three aspects of theory, research, and practice is needed in both honors and gifted education.

Significance of the Study

Honors education, which refers to gifted education in post-secondary levels (Rinn, 2004), has expanded and shown potential to make a positive difference in students' learning experiences and in their academic atmosphere. Renzulli (1998) pointed out that researchers and educators should focus on the development of gifted behavior, not just find and certify giftedness as a trait. In a 1984 edition of *Forum for Honors*, Estess, Roemer, and Schuman asserted the needs of

reflective and reflexive research in honors education. Almost thirty-years later, Moon (2012) argued that the question still remains whether "honors programs provide a more effective educational experience" (p. 8) and emphasized the need for research about the students' experiences with honors education.

This study has significant theoretical and practical implications. With regard to theoretical significance, it has the potential (1) to contribute to the extant literature on achieving and underachieving university students with intellectual gifts and their talent development process and (2) to provide empirical support of Gagné's (1985) DMGT theoretical model. With regard to practical significance, this study has the potential (1) to help administrators and educators in Honors College and general programs develop appropriate programs for students with intellectual gifts to meet their needs and (2) to shed light on the phenomena that contributes to those students' talent development or underachievement.

Honors programs and honors colleges have grown and expanded in the past decades (Carnicom, 2011). Among 2,500 nonprofit undergraduate institutions in the U.S., 1,503 (59%) of these offer honors curricula (Scott, Smith, & Cognard-Black, 2017). Rinn and Plucker (2004) also said "As students with numerous talents and interests begin to consider important educational, career, and personal decisions, their ability to excel in multiple domains can lead to indecision, lack of commitment, and related problems" (p. 57). However, many researchers noted a lack of literature available on university students with gifts and talents and their underachievement (Balduf, 2009; Fong & Krause, 2014; Ford, 2010; Mclaughlin, 2015; Russell, 2012). This study provides support concerning the importance of college years in cultivating potential of students with gifts and talents in postsecondary institutions.

This study also supports Gagné's (2009) Differentiated Model of Giftedness and Talent (see Figure 2). Gagné (2008) used the DMGT as a model to explain why underachievement happens. If the catalysts or developmental process do not work effectively, gifts can remain undeveloped. Comparing experiences of talent development with achieving and underachieving students who enrolled in the honors college may contribute to developing new perspectives regarding the complicated process of talent development of honors students and underachievement. In addition, investigating influences of the "good practices" on those students provides useful information to educators and administrators in gifted, honors, and higher education.

Research Questions

This study addresses the talent development process of achieving and underachieving students who enrolled in the honors college through the lens of Gagné's (2009) DMGT model. The following five questions guide this study.

1. To redevelop an instrument of the academic talent development factors, two questions guiding the validation process are:
    a) Can a reliable measure of the honors students' perceptions and experiences of four components of the DMGT be developed for this study?
    b) Do the items in the instrument adequately reflect the content dimensions of academic talent?
2. Is there a difference in pre-college characteristics of achieving and underachieving honors students?

3. To what extent do underachieving honors students differ from achieving honors students in terms of their perceptions of intellectual gifts, intrapersonal and environmental catalysts, and developmental process?
4. To what extent do underachieving honors students differ from achieving honors students in their experiences with "good practices in undergraduate education" during their participation in the honors college?
5. What are the perspectives and beliefs of achieving and underachieving honors students regarding the four components (i.e., gifts, intrapersonal catalysts, interpersonal catalysts, and developmental process) of the DMGT as factors in their talent development? In addition, what are the perspectives and beliefs of staff and advisors about the factors on the academic talent development of honors students?

Definition of Terms

Honors College: an autonomous academic entity that grew out of a department honors programs, offered by a Midwestern public university. The curriculum requirements include coursework, research, and co-curricular activities. Incoming students must satisfy one of the following requirements to be eligible: combined SAT scores are 1800 above, ACT composite score is 26 or above, or graduated in the top 10 percent of their high school class. Current or transferred students must have a cumulative 3.50 GPA or greater at their current college. Achieving students with gifts and talents: honors students who have maintained at least a 3.5 cumulative GPA on a 4.0 scale for at least two consecutive semesters.

Underachieving students with gifts and talents: honors students who are on honors probation or students who began in the honors program but did not complete all their honors program requirements. The reasons students may have failed to keep their honors status or to

complete their honors program requirements include failing to maintain the mandatory GPA minimum 3.5 to remain in the Honors College (involuntary withdraw), or voluntarily deciding to no longer participate in the Honors College. Generally, underachievement is defined as the discordance between a student's expected achievement (measured by tools such as classroom-based tests) and their intellectual abilities as indicated by aptitude tests (Reis & McCoach, 2000). In this case, the underachievement is the gap between their GPA and their honors program eligibility.

Giftedness (gifts): It "designates the possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain, to a degree that places definitions of these two terms" (Gagné, 2009, p. 1)

Talent: It "designates the outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity to a degree that places an individual at least among the top 10% of age peers who are or have been active in that field" (Gagné, 2009, p. 1).

Talent development: It is the "central metaphor for gifted education" (Van Tassel-Baska, 1998, p. 60). Talent development highlights the process that "corresponds to the progressive transformation of gifts and talents" (Gagné, 2012, p. 57). This process includes dynamic interactions with individuals' involvement in activities, time and energy investment, and performance progress that can be promoted and hindered by intrapersonal catalysts and environmental catalysts (Gagné, 2009).

Good practices in undergraduate education: This term refers to effective practices that promote level of learning among students. In this study, I applied three operational definitions of good practices by Seifert, Pascarella, Colangelo, and Assouline (2007) as follows:

1. Good teaching and high-quality interactions with faculty
    1) Faculty interest in teaching and student development
    2) Prompt feedback
    3) Quality of non-classroom interactions with faculty
    4) Overall exposure to clear and organized instruction
2. Academic challenge and high expectations
    1) Academic challenge and effort
    2) Frequency of higher-order exams and assignments
    3) Challenging classes and high faculty expectations
    4) Integration of ideas, information, and experiences
3. Diversity experiences
    1) Diversity experiences
    2) Meaningful discussions with diverse peers

CHAPTER 2. REVIEW OF THE LITERATURE

The body of research directly related to achieving and underachieving students enrolled in the honors college and their talent development is very slim. Frost (2011) argued that "I am amazed at how little attention honors typically garners in the larger ongoing conversations about the quality of education today's college students receive, both high and low" (p. 69). Thus, to build the case for this study, this chapter summarizes the studies on talent development, the purposes of honors programs and colleges, and underachievement of students with gifts and talents in higher education.

To begin by clarifying the terms in the literature, not all students who are identified as gifted are admitted to honors programs, and not all honors students are identified as gifted by their education history. However, honors students are students who show evidence of their potential for academic success. As discussed in the previous chapter, gifted education and honors education shared the same grounds: to serve students who have high potential for academic excellence. Colangelo (2018) summarized three commonalities between gifted and honors education. First, the purpose of gifted and honors education is to meet the students' learning desires and needs. Second, students in gifted and honors programs are usually identified by standardized test scores, grade point average (GPA), recommendations from teachers, and personal statements of academic interests and goals. Third, gifted and honors students are not from homogeneous backgrounds and have unique individual characteristics. Some students cannot demonstrate their potential in traditional or standardized settings. Given these similarities, I connect the literature on both gifted and honors student to the honors college students in this

study, and I draw on a theoretical model that comes from the literature on academic talent development to examine their talent development.

Conceptual Model: Talent Development

Whereas early researchers in gifted education focused on identifying gifted children based on IQ or intelligence test scores, the notion of giftedness has been extended to embrace creativity (Renzulli, 1978; Torrance, 1967), task commitment (Renzulli, 1978), componential intelligence (Sternberg, 1986), and multiple intelligences (Gardner, 1983). This expansion emphasizes developmental view of giftedness, personal and environmental influence, and outstanding performance in specific domain (Subotnik, Olszewski-Kubilius, & Worrell, 2011). From this view, innate ability is important in early stage of gifted children, but it should be developed and eventually demonstrated in achievement (Cross & Coleman, 2014). This emergent view began with talent development studies in 1980s (Bloom, 1985; Csikszentmihalyi et al., 1997; Gagné, 1985) and, recently, received much attention. The emphasis on a process of accomplishment increased a scope of research to secondary school levels and adult eminence in varying fields in addition to nurturing environments. In this section, I will discuss details of influential studies and key models of talent development.

Bloom: Three Stages in Talent Development of Young People

Bloom's study began with a question about the traditional view of giftedness. Bloom and colleagues conducted a retrospective study to investigate talent development and its environmental factors with 120 people who had accomplished world-class success in such varied domains as music, art, sport, mathematics, and science; they also interviewed their parents. The findings of this study indicated that the participants shared similar patterns in learning processes

and roles of environmental factors. Bloom (1985) described these patterns as three distinctive phases in his book, *Developing Talent in Young People*, as the early years, middle years, and late years. In the early years, a child is identified as high ability or having the skills to learn, and the talent development is facilitated through play and fun. In the middle years, the emphasis in learning moves from fun to specialization of talent through systematic learning, usually with a master teacher or coach who promotes long-term talent development. In the late years, learning became more internalized. Individuals' devotion of their time and effort to talent development is maximized as they accomplish their own goals.

For these 120 individuals, the full talent development, with all three phases, occurred over a 15-20-year period. Only ten percent of the participants began the early years of talent development by age 12, and most worked through these phases over 20 years, indicating that talent cannot be decided by a young age. In addition to the distinctive stages, Bloom (1985) also identified the different roles of teachers throughout these talent development phases. In the early phase, teachers taught fundamental skills and fostered an appreciation for their chosen field. In the middle years, specialized teachers encouraged and challenged students to focus on developing technical skills and competencies in the domain. In the late phase, advanced teachers worked with students intensively to reach the highest level of learning.

Parents' roles and their investment of time and money are also a significant factor in talent development. In the early phase, parents play leadership roles, as they introduced their child to opportunities to play and have fun in various domains. They attempt to get involved in teaching and practice with their child. This direct involvement tends to decrease over the years as their child ages and develops his or her own learning skills. Students with gifts and talents begin to be motivated intrinsically and extrinsically to achieve by their teachers or coaches. However,

some of these talented young people began to consistently undermine their talent development and showed decreased achievement. One or more patterns associated with underachievement were loss of interest, avoidance, excessive procrastination, distraction of attention, and withdrawal during the talent development. Bloom (1985) did not explain this underachievement process, which could have provided a clue to identify the alternate processes that leads to underachievement among students with gifts and talents. Although the qualitative research design of Bloom's study had limited generalizability, the rich narratives of talented individuals in various domains enabled an in-depth understanding of talent development process across a wide range of talents. In the conclusion of the book, Bloom (1985) said, “All of this is to point to the enormous human potential available in each society and the likelihood that only a very small amount of this human potential is ever fully developed” (p. 549).

Renzulli: Three-Ring Conception of Giftedness

Whereas Bloom (1985) proposed distinctive concepts of natural gifts and talent, Renzulli (1978) proposed a multifaceted framework of giftedness, the Three-Ring Conception of Giftedness, in which he identified giftedness as a behavior occurring at the intersection of above-average ability, creativity, and task commitment. Above-average ability consists of the general and specific ability to demonstrate performance in that top 15% to 20% in any area. Creativity references the capacity to develop original thought or solutions. Task commitment requires task-specific motivation that maintains task engagement, often for extended periods of time. He proposed that creativity and task commitment can be developed. When these non-cognitive factors are emphasized, giftedness is considered as behaviors rather than only as above-average ability. He stated:

> Individuals capable of developing gifted behavior are those possessing or capable of developing his composite set of traits and applying them to any potentially valuable area of human performance. Persons who manifest or are capable of developing an interaction among the three clusters require a wide variety of educational opportunities and services that are not ordinarily provided through regular instructional programs. (Renzulli & Reis, 1997, p. 8)

Renzulli (1982) emphasized interactions and combinations among three clusters form creative-productive giftedness, which he differentiated from schoolhouse giftedness, or the ability to quickly acquire knowledge and demonstrate high scores on graded work or standardized tests. Creative-productive giftedness is evident in individuals who actively produce knowledge and apply integrated thinking skills. He explained "that it has been the creative and productive people of the world, the producers rather than consumers of knowledge, the reconstructions of thought in all areas of human endeavor, that have become recognized as 'truly gifted' individuals" (Renzulli, 1985, p. 5).

Research evidence supports this need to include non-cognitive components in defining giftedness. In the Munich longitudinal study of the cognitive and non-cognitive components of giftedness (1985-1989), Perleth, Sierwald, and Heller (1993) proposed the idea of domain-specific giftedness. Their findings included the differences between intellectual giftedness and creative giftedness. For example, students with intellectual gifts achieved higher levels on school tests than their compared groups, while creative students showed higher levels of performance in arts and literary areas. Through stepwise multiple regression, Gubbins (1982) observed the importance of task commitment, time commitment, and student interest in increasing creative-

productive giftedness. Additionally, findings suggested that above-average ability is an important but not a guarantee factor of high levels of creative-productivity.

Consequently, Renzulli proposed the Enrichment Triad Model (Renzulli, 1976) and Schoolwide Enrichment Model (SEM; Renzulli & Reis, 1985, 1997) based on the Three-Ring Conception of Giftedness to cultivate creative productivity of students through three stages of enrichment experiences. Although Bloom's (1985) talent development phases provide empirical support to this model, enrichment types are differentiated according to stages. Type I enrichment is designed with playful exploratory activities in a particular topic based on students' interest. Type II enrichment consists of group trainings that allow students to learn concepts and practice skills to succeed in that domain. Type III includes individual and small-group activities to solve emerging real-life problems that develop autonomy to demonstrate productivity. The SEM focuses on creation of educational system to achieve and maximize students' potential through enrichment opportunities and resources (Renzulli & Reis, 2013).

Renzulli's studies have validated the existence of interactions among intellectual ability and non-cognitive components (e.g., task commitment) in increasing creative-productive giftedness. His contributions enabled the field to go beyond mere intellectual or academic ability to psychological characteristics and their roles in gifted children's productivity. In addition, his studies contributed on broadening identification procedures that provide more opportunities to students with gifts and talents in underrepresented groups.

Tannenbaum: Five Elements of Talent Development

Whereas Bloom (1985) addressed important roles of parents and teachers according to the developmental stages, Tannenbaum (1983) identified key factors that promote or hinder talent development. He argued that many young students fail to develop their gifts into talents.

He conceptualizes the connections between potential and achievement as “the links between promise and fulfillment” (Tannenbaum, 1983, p. 95). He also emphasized the interactions between individual and environmental factors in developing talents. He defined giftedness as the "potential for becoming critically acclaimed performers or exemplary producers of ideas in spheres of activity that enhance the moral, physical, emotional, social, intellectual or aesthetic life of humanity" (Tannenbaum, 2003, p. 45). Five internal and external components in the talent development process from childhood gifts into adult talent are identified: general ability, special domain-specific ability, psychosocial abilities, environmental factors, and chance factors. The associations of those five variables of the constructs of giftedness is presented through a sea star model (see Figure 1).

Each unique accomplishment requires its own specific degree of intellectual ability. This is referred to as general ability, or ‘g’ factor. For example, a higher level of intellectual ability, like abstract reasoning skills, is needed for academics, while a lower level of this ability is necessary for a domain such as visual arts. Tannenbaum also explained that individuals who emerge as gifted should show outstanding abilities in specific domains. These special domain-specific abilities often blossom in early childhood or later.

The third element is psychosocial ability, which also refers to non-intellective factors. These elements that might indicate giftedness include motivation, self-concept, and creativity. Tannenbaum emphasized environmental influences as the fourth element. This includes not only parents, teachers and peers, but also economic and political influences. The final element is chance, i.e., “unpredictable events in a person’s life that are critical both to the realization of promise and to the demonstration of talents” (1983, p. 87-88). He viewed this chance factor as a causal factor which can affect other environmental catalysts. Gagné (1985) also recognized

influence of chance factor and located it in DMGT with intrapersonal and environmental catalysts. However, he revised the concept of chance factor as a "qualifier of any causal influence, along with direction (positive/negative) and intensity" (2012, p. 5), not a causal factor. Supplee (1990) used Tannenbaum's start model to explain that underachievement occurs when one of the arms does not function. She described underachievers as having some outstanding special aptitude, but lacking supportive parents, motivation, appropriate support in class, or another factor. However, it is still difficult to explain why some gifted students do not accomplish the expected achievement using Tannenbaum's model, because giftedness interacts with many complex personal and environmental variables, as well as chance.

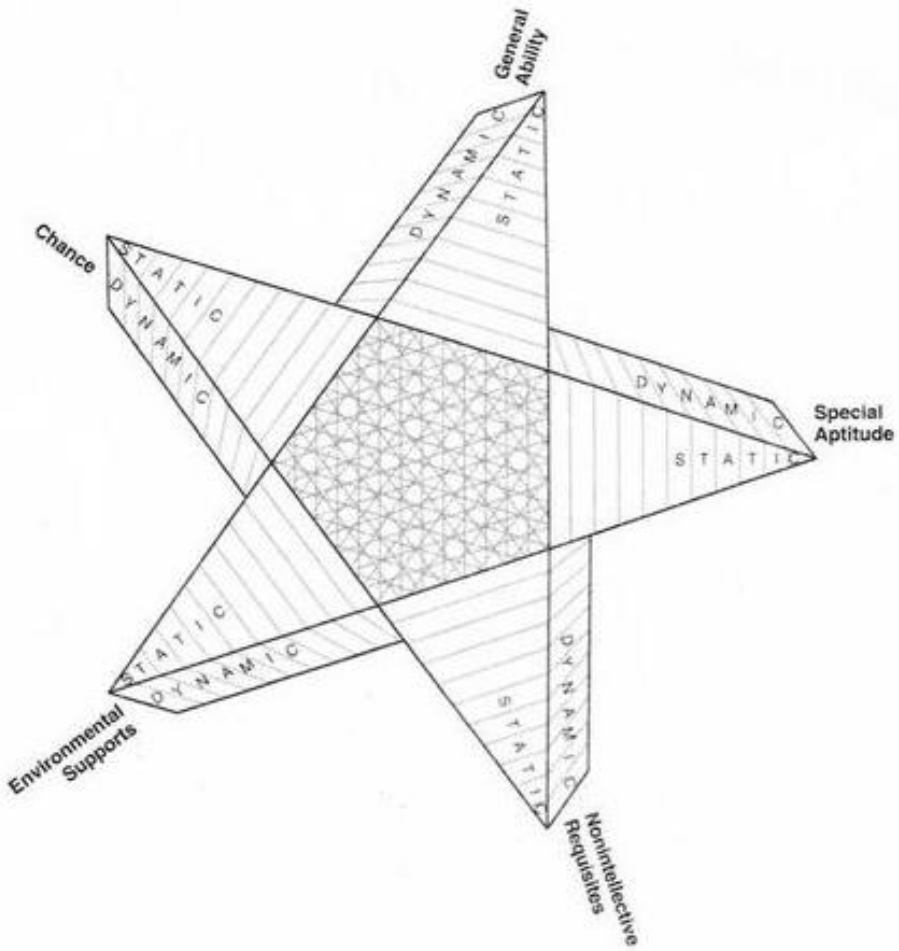

Figure 1. The five factors that 'mesh' into excellence. Tannenbaum's psychosocial model of giftedness (Tannenbaum, 1983). Used with permission of the publisher.

Gagné: Developmental Model

Gagné's (2009) DMGT depicts the link between gifts and talents or potential and performance. There are four components that affect the talent development processes (see Figure 2). He argued the term "giftedness" should not be used interchangably with the term "talent" and proposed a distinction between them. He believes giftedness refers to natural abilities (aptitudes) and talents are those natural abilities that are systematically and deliberately developed.

He divided factors contributing to the talent development process from gifts to talents into two groups, intrapersonal and environmental catalysts. Intrapersonal catalysts consist of two categories: physical and mental traits and goal-management traits. Physical traits are appearance, gender, ethnic traits, and disabilities. Mental traits refer to personality traits that "encompass a large diversity of positive or negative acquired styles of behavior" (2009, p. 4) Goal-management traits are awareness, motivation, and volition. Environmental catalysts refer to individuals who provide positive or negative influence on students, such as siblings, peers, organization group members, mentors, parents, teachers/faculty members, and administrators. With the assistance of intrapersonal and environmental catalysts, individuals can successfully cultivate talents from their natural abilities in specific domains. The development process describes how individuals put effort and energy into developing talents. Arrows between two caltaysts and developmental process indicate the influence of the two catalysts on this process.

To link these complex factors, DMGT has been widely used as a talent development framework in diverse domains. Ho and Chong (2010) investigated factors contributing to musical talent development using data from in-depth interviews with one musician and her parents. To support these interviews, these researchers used data from phone interviews with two teachers, and secondary publications related this musician's talent development, such as concert

programs and newspaper articles. They found that motivation, parents' effort, and cultural values played central roles, as these interweaving factors nurtured her natural abilities. This supported Gagne's description of talent development as a "complex choreography" (2000, p. 67).

Garrett and Rubie-Davis (2014) interviewed 38 talented students and four faculty members at a selective university. Data from focus group interviews described how talented students were defined and identified, and what opportunities and challenges promoted or hindered their talent development. They found that talent was defined by a high level of aptitude in a specific domain. Additionally, common themes described talented students as learning quickly and effectively, being motivated, using problem solving strategies, and demonstrating creativity and leadership. Interactions with faculty and support by university significantly affected students' talent development both positively and negatively. These results confirmed that "in most situations all components play an important role in the talent development process" (Gagne, 2008, p. 6).

Gagné's DMGT (2009) and Bloom's stages (1983) shared the concept of talent as systemically developed competencies, with an emphasis on environmental influences. Whereas intrapersonal factors such as personality are less highlighted than environmental factors in Bloom's stages, Gagne's DMGT valued the two factors equally. Gagné (2009) and Renzulli (1978) commonly highlighted the roles of non-cognitive factors and interactions among the elements. Gagne and Tannenbaum emphasized that talent is anchored to a specific domain. Because DMGT encompasses these recurring themes in talent development, it is selected as the conceptual framework for this study. Furthermore, DMGT may provide a resource to explain why underachievement occurs, as Gagné (2004) described how intellectual gifts are not

converted to academic competencies if neither the catalysts nor components of the developmental process work properly.

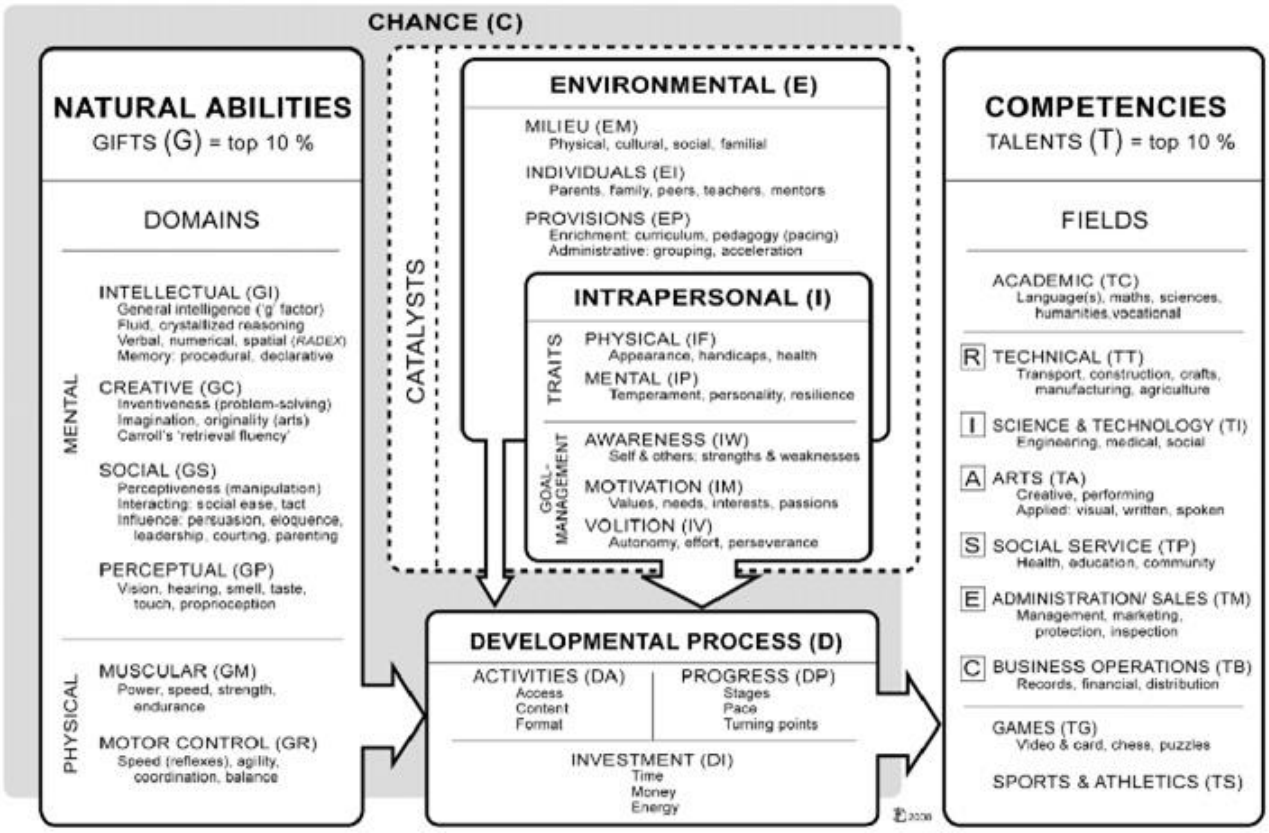

Figure 2. Differentiated Model of Giftedness and Talent (Gagné, 2009, p. 83). Used with permission of the publisher.

Honors Program & College in Higher Education

One way that institutions seek to facilitate this development process for their gifted students is through dedicated programs that are now referred to as honors colleges or programs. In the 1920s, Frank Aydelotte realized undergraduates could be more engaged in learning if colleges and universities applied Oxford University's tutorial system (Rinn, 2003). He emphasized educational institutions' responsibilities to meet the needs of students with gifts and talents:

> Perhaps the most fundamentally wasteful feature of our educational institutions is the lack of a higher standard of intellectual attainment. We are educating more students up to a fair average than any country in the world, but we are wastefully allowing the capacity of the average to prevent us from bringing the best up to the standard they could reach. Our most important task at present is to check this waste. The method of doing it seems clear: To separate those students who are really interested in the intellectual life from those who are not. (Aydelotte, 1921, p. 23)

After Aydelotte presented his presidential vision for Swarthmore College, honors programs rapidly grew among colleges and universities across the nation. As a result, the National Collegiate Honors Council (NCHC) was established to support and advocate for the critical role of collegiate honors education. The mission of the NCHC is to create

> …support for institutions and individuals developing, implementing, and expanding honors education through curriculum development, program assessment, teaching innovation, national and international study opportunities, internships, service and leadership development and mentored research. More generally, NCHC carries out this mission by serving honors professionals and by advocating support for and excellence in higher education for all students. (NCHC, 2012, n. p.)

The purpose of honors education is defined by this mission and "consists of the total means by which a college or university seeks to meet the educational needs of its ablest and most highly motivated students" (Austin, 1986, p. 5). Honors programs have recently expanded across the institutions into two different administrative structures: "honors programs" and "honors

colleges." Honors colleges are separated from the university and departments' educational system and are under the dean's management; while honors programs are integrated into those systems with the director's management (NCHC, 2010). However, the two terms are interchangeably used in research (Rinn, 2007).

There is no universal model for honor programs and colleges, and curricula varies among institutions. The prominent component of the honors programs and colleges is a series of honors courses (NCHC, 2010) and several components are flexibly used, depending on institutional environments. Honors courses include courses related to the general educational requirements and interdisciplinary courses (Shushok, 2002). NCHC (2010) recommended that honors students take 15% to 25% of their coursework via honors programs and colleges. These courses focus on experiential learning, provide small class size, and deliver advanced content. Other components consist of undergraduate research, leadership development programs, and study abroad programs (Owens & Travis, 2013). Honors programs and colleges also provide resources for student engagement, such as dedicated residence halls, quality interactions with faculty and staff, advising for career development, and opportunities for internships or scholarships (Moon, 2012).

There are multiple arguments for why honors programs benefit the institution as well as the entire study body, as well as some dissenting voices. In comparison to non-honors students, honors students tend to have higher GPAs, standardized test scores, graduate rates, and satisfaction with institutions, all of which increase institutional prestige (Campbell, 2005). Additionally, some researchers contend that non-honors students can be encouraged by their honors peers who are engaged in their learning (Clauss, 2011). However, there is criticism that honors programs further elitism and inequality in educational opportunities, disadvantaging different socioeconomic and racial groups (Kinsley & Goldrick-Rab, 2015).

Good practices in honors education

To support environmental influences within the honors college context, three constructs from the National Survey of Student Engagement (NSSE) was used in the quantitative phase. The NSSE provided the contextual information about what extent achieving and underachieving honors students are exposed in good practices in honors colleges.

Chickering and Gamson (1991) proposed seven principles of good practice to remind educators and administrators to reform and improve undergraduate education. On the premise that education is "active, cooperative, and demanding" (Gamson, 1991, p. 5), the seven principles are evidence-based practices that facilitate student learning and performance in colleges and universities (Sorcinelli, 1991). The report of these principles was published in 1987 and has been a positive influence in undergraduate education (Moon, 2012). The seven principles of good teaching are:

- Encourages student-faculty contact,
- Encourages cooperation among students,
- Encourages active learning,
- Gives prompt feedback,
- Emphasizes time on task,
- Communicates high expectations and
- Respects diverse talents and ways of learning (Gamson, 1991, p. 5).

Due to the increasing requests for methods to measure and apply these principles, Robert Pace (1979) developed the College Student Experiences Questionnaire (CSEQ) to measure student exposure to good practices in undergraduate education. This instrument was modified and integrated into the National Survey of Student Engagement (NSSE) (Kuh, 2009). The seven

principles are the process indicators to assess “empirically derived good educational practices” (Kuh, 2009, p. 7).

While the NSSE has been widely used in undergraduate research, student exposure to good practices in honors programs remains an area to be investigated. Ory and Braskamp (1988) conducted research to determine student exposure to good practices and improvement of critical thinking among honors, regular curriculum, and a transition program. A total of 225 freshmen in three groups took the CSEQ. They found that honors students were more exposed to the good practices than regular and transition students. Honors students were more likely than their comparison groups to be involved in experiences with faculty and in influential discussions with peers. In terms of the institution’s efforts to develop relationships with other students, honors and transition students perceived less university emphasis than regular students on working with others as a team member. This was unexpected, because honors programs used many resources to encourage students to develop positive relationships with peers. Although honors students had more opportunities to work with professors, there were no significant perceived differences in the institution’s efforts to increase these opportunities. Finally, within the honors student group, Ory and Braskamp (1988) found a stronger relationship between academic effort and self-reported improvement in the development of intellectual skills than in the other two groups.

There are a handful of other studies comparing honors and non-honors students on this variable. Shushok (2006) conducted a study with 172 honors and non-honors participants to explore collegiate experiences and progress in student outcomes such as intellectual skills. Honors and non-honors participants were equally qualified for college based on their high-school GPAs and a SAT scores. Honors students reported having more opportunities to interact with faculty outside of class and discuss career plans. Honors students also participated in more

academic activities by their senior year. However, while honors students expressed appreciation for the honors program, no statistical difference was found between honors and non-honors students in the growth of their intellectual skills. In another study, Seifert and colleagues (2007) provide information about honors program participants' experiences with good practices in and out of class. In 1993, 1,999 students completed the CSEQ and a follow-up questionnaire. This sample consisted of 13% of the honors students at the college (N = 3,303). The collected data showed honors program participants were more likely to be exposed to six subfields of the good practices: "course related interactions with peers, academic effort/involvement, instructor use higher-order questioning techniques, instructor feedback, number of assigned readings, and instructional skill and clarity" (Seifert et al., 2007, p. 66) than non-honors participants. Although these studies described honors students' experiences with good practices, the data collected from undergraduate in 1990s may not apply to students' experiences in 2010s.

Characterizing Honors Students and Students with Gifts and Talents in Higher Education

"Honors college students retain a distinct constellation of characteristics, motivations, attitudes, and attributes that are often important to their success both in college and life" (Cuevas, 2015, p. 21). Honors students are selected and invited by admission criteria. Although honors colleges and programs have put years of efforts into implementing diverse criteria, two pervasive measures in the admission decision process are high school GPA and SAT or ACT scores (Scott & Smith, 2016). According to the NCHC report in 2014, there is no significant difference in minimum test scores and other admission criteria among about 200 institutions (Cognard-Black, Smith, and Dove, 2017). Honors students have the higher GPA and standardized test scores than their non-honors peers in colleges and universities that include "a variety of other associated characteristics evidenced by their high school and college transcripts.

Namely, they are able, accelerated and advanced" (Achterberg, 2005, p. 76). Some scholars and professionals have emphasized using diverse channels to recruit honors students such as an individual interview because interview is "so-called objective criteria for judging the quality of students fail quite miserably when it comes to predicting success in honors curricula" (Freyman, 2005, p. 23).

Although it is important to investigate student populations, it should be considered that students with gifts and talents are a heterogeneous group with diverse characteristics. Reis and Rezulli (2009) argued that "There is no single homogeneous group of gifted children and adults and giftedness is developmental, not fixed at birth" (p. 233). Rather than developing a list of characteristics, I organized a table on how researchers described honors students and students with gifts and talents in the literature (see Table 1). The following sections describe psychological and environmental factors to describe diverse characteristics of honors students.

Psychological Factors

Cheryl Achterberg, Dean of College Education and Human Ecology at Ohio State University described honors students as "more eager, exploratory, and experienced than their non-honors counterparts (2005, p. 77). In the literature, honors students are described as students who have: (a) academically confident (Kaczvinsky, 2007; Moon 2012), (b) accurate self-appraisal (Clark, Schwitzer, Paredes, & Grothaus, 2018), (c) self-directed learning skills (Pruitt, 2013), (c) mastery goal orientation (Buckner, Shores, Sloane, Dantzler, & Shields, 2016), (d) intrinsic motivation (Siegle, Rubenstein, & Mitchell, 2013), and (e) engagement in their learning (Buckner et al., 2016).

Table 1. *Characteristics of Honors Students*

Characteristics	Researchers
Academically confident	Kaczvinsky, 2007; Moon 2012
Academically engaged	Clauss, 2011; Siegle et al., 2013
Accurate self-appraisal	Clark et al., 2018
Academically honest	Brimeyer et al., 2014
Best and brightest	Clauss, 2011; Cuevas, 2015; Davis & Montgomery, 2011
Committed to research and facilitated by faculty	Abnet, Nichols, & Moss, 2008
Creative	Cuevas, 2015; Scager et al. 2007
Drive to excel	Cossentino, 2006; Hammond, Hébert & McBee, 2007; Moon, 2012; Shushok, 2006
Desire to learn	Scager et al., 2014
Effective information processing	Teske & Etheridge, 2010
Engaged in meaningful conversations	Cossentino, 2006; Cuevas, 2015
Interested	Cuevas, 2015; Kaczvinsky, 2007; Lane, 2007
Interact with faculty	Christopher, 2003; Cossentino, 2006
Interested in various domains	Cossentino 2006; Lancaster, 2014
Involved in activities	Conssentino 2009; Hébert & McBee, 2007
Passionate and purposeful	Lancaster, 2014
Perfectionist	Closson & Boutilier, 2017
Performance goal oriented	Miller & Speirs Neumeister, 2017
Persistent	Conejeros-Solar & Gomez-Arizaga, 2015
Self-directed/effectively use time	Pruitt, 2013
Willing to take challenges	Nix, Etheridge, & Walsh, 2014

Although these studies vary in purpose, five constructs are consistently found among them and can be developed or impeded within the educational setting of an honors programs. These characteristics are also influenced by students' social emotional development.

Learning-Centered Behaviors

Honors students are described as being engaged in learning and talent development activities (Balzora, 2015; Brian, 2007; Clauss, 2011; Kotinek, 2013). In a study on

perfectionism, goal theories, and students with gifts and talents (Ruban & Reis, 2006), honors students were more likely to evaluate their work and to use self-regulated learning strategies than their non-honors peers. For example, honors students preferred to condense notes, create flashcards, and use mnemonic devices and visual cues, which facilitate deep processing. Students on academic probation primarily created flashcards, reviewed notes, and memorize material routinely. This indicated that these students used fewer self-regulated learning strategies. These researchers provided several reasons to explain these different patterns: (a) honors students had more opportunities to develop higher levels of self-regulated learning strategies, (b) honors students were more engaged in academic and extracurricular activities, and (c) honors students had already internalized these strategies throughout their educational experiences.

Buckner et al. (2016) developed a preliminary model of student characteristics and engagement. This model consists of student motivation, attribution, self-regulated learning, and self-handicapping to explain student characteristics and engagement. Results of this study identified student motivation and attribution as predictors of levels of self-regulated learning strategies. Honors students showed more focus on mastery and performance than non-honors students, who showed more detrimental patterns of goal-management. This gap between honors and non-honors students influenced the development of self-handicapping over time. Honors students recorded higher engagement in challenging activities with more complex emphases than non-honors students. These researchers described how honors programs' intensified curriculum and diverse opportunities may support honors students' engagement and their development of mastery and performance approaches. However, some honors students did not feel supported by the university's program (Olenchak & Hébert, 2002) and "may not be as well prepared for

college as expected" (Cuevas, 2015, p. 27). This struggle will be discussed at the end of this chapter.

Academic self-efficacy and academic self-confidence

Bandura (1989) explained the importance of self-efficacy: "among the mechanisms of personal agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives" (p. 1175). Self-efficacy theory is often used to investigate academic achievement in college students. "When compared to the rest of the student body, [honors students] are more academically confident, have greater intellectual interests, and are more willing to challenge their accepted values, beliefs, and ideas" (Kaczvinsky, 2007, p. 93). Honors students are selected according to their higher levels of achievement in high school, which indicates motivation and positive learning characteristics. They are more likely to focus their attention on their grades than do non-honors students (Freyman, 2005). Many honors students have a high need for achievement (Cuevas, 2015). Siegle, Rubenstein, Pollard and Romey (2010) examined students' perceptions about ability and effort, and interest in various skill areas. Results from the survey of 149 honors college students found a statistically significant association between students' interest and their perception of abilities. Students who have ability attribution for their success expressed higher levels of self-efficacy. Students who attributed failures to their ability sought information to improve their skills and were encouraged to work harder. These findings indicate that self-efficacy takes an important role in enhancing goal determination for gifted students.

Moon (2012) conducted dissertation research to examine distinctive patterns in academic self-efficacy and engagement in academic and extracurricular activities between honors and non-honors students. A total of 404 participants were divided into two sub-groups: honors students

who enrolled in the honors program (n = 237) and honors-eligible students who did not accept the honors invitation (n = 151). Findings identified a statistically significant association between self-efficacy and GPA. Additionally, honors students were more engaged in academic and extracurricular activities than the eligible non-participating students. Similarly, Kaczvinsky (2007) also found a difference between honors and non-honors students in their motivation to graduate college and in their academic self-confidence. In the literature, researchers have consistently addressed that self-beliefs, including self-efficacy and self-confidence, play a critical role in facilitating honor students' motivation for learning and achievement (Alexander & Schnick, 2008; Siegle et al., 2010).

Robbins (2010) investigated highly able students' perceptions about the honors program at a private university. A total of 103 participants were assigned into three groups: 49 honors students, five students who chose to withdraw from the honors program, and 49 students who received an invitation to the honors program but did not enroll in the honors program. Robbins concluded that honors students are confident in their abilities to achieve their academic goals. Additionally, they express less concerns about the academic challenges present in a competitive environment than non-honors groups. Rinn and Boazman (2014) explored the relationships between locus of control and academic dishonesty with two groups of high ability students: honors students and non-honors students. In this study, non-honors students were not in the honors program but had equivalent or higher scores in ACT or SAT test than honors students. In the honors group, locus of control was not correlated to academic dishonesty, whereas correlation was found in non-honors group. This indicated that students who have less confidence in their academic abilities are more vulnerable to academic dishonesty. Furthermore,

this finding supports the existing literature for lower level of academic dishonesty among honors students (Arnold, Martin, & Bigby, 2007).

Macias (2015) interviewed sixteen honors students who were first-generation college students and investigated how self-efficacy developed and affected these students' academic success. Participants described mastery/positive experiences in their college lives. Students participated in research projects, leadership opportunities, or study abroad programs that motivated them to learn. One participant, Carolina, said that being elected the president of the academic club "made me feel like people believed in me, even though some days I don't believe in myself. They believed that I can make it and I can be something better and that inspires me. That motivates me" (p. 86). Macias concluded that these mastery experiences and lived experiences positively influenced development of participants' self-efficacy and motivation.

Overexcitabilities

Overexcitabilities (OEs) are more frequently discussed within the context of students with gifts and talents than the general student population (Meadows, 2017). Overexcitabilities refers to "an unproportioned reaction to a stimulus, an extended, long-lasting, accelerated reaction, and a peculiar reaction to a neutral stimulus" (Dabrowski, 1967, p. 89). He further postulated that these examples of sensitive reactions were innate and predictors of future development. As an aside, some research has suggested that OEs may have a neurological component (Gere, Capps, Mitchell, & Grubbs, 2009). Dabrowski viewed the combination of imaginational, intellectual, and emotional OEs as associated with greater developmental potential, thus the tie to gifted education and research. Piechowski and Colangelo (1984) compared mean scores of OEs of three groups: gifted adolescents, gifted adults, and non-gifted graduate students. These researchers asserted that constant OEs scores across ages in the gifted

groups sustained “the idea of developmental potential as original equipment” (p. 87). This finding also supports Dabrowski’s theory that developmental potential is inherently structured and consistent throughout the lifespan (Piechowski,1975).

Meadows (2017) sought to develop a theory regarding the transition to college for gifted high school students. This research considered the overexcitabilities and perfectionism of students with gifts and talents, and their effects on the transition process into the university. Participants consisted of twelve traditional-aged students enrolled in high-ACT and honors sections of an extended orientation course at a small private, Midwestern university. Findings of the study indicated that students’ academic experiences in high school affect the development of their academic self-concept, as well as the nature of their transition and the academic and social coping behaviors they develop. Participants reported a lack of challenge in high school, which for many resulted in delayed development of the requisite academic skills for successful transition to college academics. In addition, participants described feeling fearful and confused when they encountered academic challenges. Participants explained the stigmas of being an honors student, as well as the unrealistic expectations they often experienced from their family and peers. Mendaglio’s (2013) argues that the extent of these difficulties is unclear: “We do not know the proportion of gifted students who find the transition relatively easy, challenging but successful, or difficult to the point of withdrawal or failure” (p. 4).

Perfectionism

Perfectionism is another prevalent term is studies of the characteristics of students with gifts and talents (Rice, Leever, Christopher, & Porter, 2006). There is some evidence that certain OEs could be predictors for specific dimensions of perfectionism (Mofield & Peters, 2015). Perfectionism is conceptualized as a multidimensional construct that ranges from healthy to

unhealthy and from positive to negative (Perrone-McGovern, Simon-Dack, Beduna, Williams, & Esche, 2015). Healthy or positive perfectionism may increase academic self-efficacy and promote academic excellence, while unhealthy and negative perfectionism is associated with pressure and fear of failures, anxiety about tests, and other detrimental consequences for physical and mental health (Hassan, Flett, Ganguli, & Hewitt. 2014).

According to a longitudinal study by Rice, Leever, Christopher, and Porter (2006), unhealthy perfectionism was a statistically significant variable in predicting honors students' psychological problems. Students with unhealthy perfectionism experienced greater levels of psychological difficulties such as social isolation, depression and stress, which affected students' mental health and achievement. They concluded that the association of unhealthy perfectionism with social isolation may result in a mismatch between expected academic performance and students' abilities. Competitive environment works as a moderator in these different directions of perfectionism. Hibbard and Davies (2011) reported correlations between students' perfectionism and the levels of competitive environment in private and public colleges. Students in a private college expressed more concerns over their mistakes and had higher expectation for their work than students in a public college, but the patterns of perfectionism and psychological adjustment were similar between these groups. These findings indicated that some aspects of perfectionism deepen when students meet competitive peers in colleges and universities.

Samuel Schuman (2013), a prominent leader in honors education, published a monograph on holistic honors education and highlighted the risk of perfectionism among honors students. He argued that perfectionism interrupts students when they embrace challenges to learn new subjects. This can cause a loss of creativity and intelligence. According to his argument, perfectionistic tendencies may prohibit students from asking for help and revealing their

weaknesses, which places underserved students at risk. Badenhausen (2010) warned that honors students' "self-concept is so grounded in the idea of academic achievement that seeking assistance calls their very identity into question. Asking for help becomes an attack on the notion of a successful self" (p. 28). That is, honors students may feel an attack on their academic self-concept when they seek for assistance. This leads to the question if educators need to track honors students' emotional and academic needs outside the classroom.

Motivation

The classic study *Talent and Society*, by Harvard psychologist David McClelland and his colleagues, suggests that the key to academic success is an individuals' non-intelligent factor (later known as achievement motivation) about when, where, and how individuals invest their time, effort, and energy (McClelland, Baldwin, Bronfenbrenner, & Strodtbeck, 1958). Renzulli (2012), about 60 years later, also emphasized the value of motivation in achievement. In the three-ring conception of giftedness, he reframed motivation as "task commitment," which is a set of non-intellective traits (e.g., persistence, perseverance, industriousness, self-assurance, and high self-esteem). He described task commitment as "one of the primary ingredients for success among persons who have made important contributions to their respective performance areas" (Renzulli, 2012, p. 153), as it allows them to give themselves completely to a specific endeavor for a long time and be undaunted by challenges that would hinder others.

In the literature, motivation is a main personality facet that characterizes honors students. As a result, there are numerous theories that examine the patterns of motivation in gifted and honors education. Rather than explaining these theories, I highlight the motivational characteristics of honors students that appear in the previous research.

Attribution theory (Weiner, 1974, 1986) explains how individuals translate the results of their performance and how this interpretation influences their future thoughts and actions. In research about students with gifts and talents in higher education, this theory explains how students perceived their success or failure related to their ability or effort, and how this perception affects their motivation. Siegle, Rubenstein, Pollard, and Romey (2010) found that "[honors] students' perceptions of their talent were positively related to their belief that natural ability contributes to high levels of performance for mathematics, writing, logical/reasoning, verbal, and leadership skills" (p. 97), which meant that these students "do not relate high effort to high performance in academic area" (p. 97). In a study of 206 college freshmen at two admission-competitive universities (Etten, Pressley, Freebern, & Echevarria, 1988), participants recognized the importance of effort to earn good grades. However, they still attributed academic achievement to their ability, as students reported that high ability students who put forth less effort would deserve high grades. In terms of failure, these students stated that "it was much more likely to be explained as due to use of an inappropriate strategy or lack of time rather than lack of ability" (Etten et al., p. 114).

Deci and Ryan's (1985) self-determination theory articulates types of academic motivation and how students decide their expectations for themselves. Intrinsic motivation refers to taking actions because of internal rewards; intrinsically motivated students tend to focus on the satisfaction or pleasure of the learning process. Students with extrinsic motivation are encouraged by external rewards, such as grades or money (Griffin, 2006). Honors students are described as being more intrinsically motivated than their non-honors peers. In a comparative study between honors and non-honors groups (Wolfensberger et al., 2004), intrinsic motivation was a significant predictor of differences between the two groups. The honors students were

more willing to ask questions and learn new content than their non-honors peers. However, the honors students, like the non-honors students, expressed similar levels of extrinsic motivation such as getting good grades.

In particular, honors students' achievement can be connected to scholarship or future career (Bensimon, 2007; Mitchell, 2015). In a study of medical students on achievement goal orientation, Horowitz (2009) identified mixed patterns of goal-orientations in pre-med students. Although most of the participants pursued extrinsic goal orientation, 32% of students were still primarily mastery oriented. This researcher described their goals as being "complicated and conflicted" (p. 215) because these students experienced a "strong tension between a desire to learn and a desire to get good grades" (p. 215). Mitchell (2015) found similar patterns of mixed goal-orientation and anxiety with medical students. Honors students also face the increased competition of working in a high-ability peer group. Rinn (2007) used the "Big-Fish-Little-Pond Effect" to describe the potential influence of the increased tension on students' decision to not participate in the honors program. Teachers can also support or modify students' achievement motivation. With freshmen with a university honors program, Siegle, Rubenstein, and Mitchell (2014) found that students' task values when they met challenging tasks were influenced by their teachers' knowledge, passion, and instructional methods.

Social-emotional Development

Traditionally, the portrait of an honors student emphasizes academic excellence and motivation. However, like their peers in non-honors groups, honors students face a variety of challenges throughout their collegiate experiences. They also tend to have more responsibility in maintaining honors status (which is often directly related to scholarships), dividing their time and energy between academic and research activities, and adjusting to competitive peers and

intensive coursework (Achterberg, 2005; Moon 2012). Thus, honors students are more susceptible to negative perfectionism, pressure to be productive, parents' and teachers' expectations, and insufficient intellectual stimulation.

At the same time, some issues are more common to students with gifts and talents, such as parental pressure to achieve, test anxiety, peer pressure, perfectionism, poor study habits, lack of intellectual stimulation or motivation, and fear of failure (Brimeyer, Schueths, & Smith, 2014).

While they may have fewer academic concerns, honors students meet social, emotional, and developmental challenges throughout their collegiate experiences. Honors programs and various factors can facilitate or impede this (Cuevas, 2015). Hébert, and McBee (2007) conducted research using a qualitative case study with seven college students to investigate relationships between participation in the honors programs and these students' academic and social-emotional development. Findings indicated that participation in the honors programs positively affected students' intellectual growth and facilitated their sense of community. Specifically, the roles of faculty who understand students with gifts and talents was highlighted as a positive reinforcer to enhance students' learning experiences.

Researchers and educators in higher education have found that honors students are more likely to discuss new ideas and cross-cultural perspectives than non-honors students (Freyman, 2005). Many honors students are involved in leadership development programs, and they often possess leadership skills to create a positive difference in their communities. Using the NSSE, Moon (2012) discovered that honor students are more exposed to discussions about opposing personal and social values and perspectives on emerging social issues than non-honors students. Honors students exhibited a desire to contribute positively in the campus and community

(Cssentino, 2006; Schuuman, 2013; Soldner, Rowan-Kenyon, Inkelas, Garvey, & Robbins, 2012). Honors students were grateful for the honors program membership, as it provided them with intellectual peers and they could actively participate in activities across campus and build social networks (Hammond et al., 2007; Moon, 2012).

Honors programs have "the responsibility to make sure that a student's academic record predicts meeting that [academic] standard. This kind of prediction becomes more important if honors has a rich social structure and residential community" (Kelly, 2013, p, 26). The honors living environment is designed to provide a physical and emotional place that promotes social connectedness and intellectual exchange among honors students (Austin, 2007; Moon, 2012; Soldner et al., 2012). This place also provides more access to a supportive learning experience with faculty and staff. Findings from the interviews (Cossentino, 2006) indicated that students experienced increased confidence in academics through quality interactions with faculty and were encouraged to understand and reach faculty expectations in the honors community. Additionally, students stated that they felt as if the university were a small community (Cossentino, 2006). However, finding a core group of friends or building meaningful connections with faculty and staff is a still challenging issue in the honors community (Harding, 2008; Owens & Giazzoni, 2010). In dissertation research by Walker (2012), honors students who felt a higher level of social integration within the honors program were less likely to perceive academic challenges as obstacles than the students who were less socially integrated.

Environmental Influences

Bloom (1985), Tannenbaum (1983), and Gagné (2009) all highlighted both the role of individuals who work with students with gifts and talents and the role of the environment in the talent development. Within the honors program context in university, this section examines the

findings regarding the influence of faculty, advisors, peers, and family culture on students' talent development.

Interaction with Faculty

Researchers have pointed out that roles of faculty in the student experience and the quality of interactions between faculty and students are key factors in promoting or reducing students' achievement motivation (Siegle, Rubenstein, & Mitchell, 2014), engagement in learning (Buckner et al., 2016), sense of belonging (Elkins, Forrester, & Noel-Elkins, 2011), grade point averages (Spisak & Squires, 2016), and educational aspirations (Kim & Sax, 2009). Quality interaction with faculty is one of the variables of good practices for undergraduate students (NSSE, 2012). Research findings suggested that quality interactions with faculty in and out classroom tend to provide students with access to other good practices, such as research projects, service learning, and leadership development. In a dissertation study with 945 honors students who were recruited from 11 honors programs, Cuevas (2015) found that quality interaction with faculty facilitated students' sense of belonging to community, which was a statistically significant variable in predicting honors student thriving.

The quality of interaction with faculty leads students to discuss personal and social issues. Students are undergoing a process of identity development in their college years. Meaningful discussions with faculty in and out of classroom allow honors students to think about their purpose in life (Astin, Astin, & Lindholdm, 2011), work on spiritual growth (Cuevas, 2015), and develop the empathetic ability to care "deeply for and about others, and to aspire to become active and caring citizens of local, national, and global communities" (Fleming, Purnell, & Wang, 2013, p. 154).

Honors students expect one advantage of honors programs to be developing their talents in an environment where the faculty, peers and institution support their academic, personal, and emotional development. Quality interaction in a smaller class size is one of the most valuable benefits to honors students. Garrett and Rubie-Davis (2014) identified a statistically significant discriminant function of the interaction with faculty variable with honors and non-honors groups. Results indicated that honors students felt more engaged in quality interactions with faculty in smaller classes. They gained confidence in sharing their perspectives and opinions and contributing to diverse views in discussions. This development also positively correlated to students' achievement.

Advisors

Researchers have reported the significant role and value of advising to students in colleges and universities. In addition to assisting academic success, advising can provide students with guidance to the transition from parents' protection to independent life. In the case of honors students, honors advisors work with students to advise them on how to successfully complete honors requirements and to cultivate their talents throughout diverse scholarly activities. McIvor (2008) found that students who are advised had significantly higher cumulative GPAs and completion rate of the honors requirements than students did not meet with the honors advisors in their first and second years. In terms of assistance in developing a comprehensive plan for the student's learning experience, advising services create a positive atmosphere that make students feel like they can ask for help, build relationships with peers and faculty, and find the resources to reach their goals. Bloom, Hutson, and He (2008) proposed the paradigm of appreciative advising and described it as "the intentional collaborative practice of

asking positive open-ended questions that help students optimize their educational experiences and achieve their dreams, goals, and potentials" (p. 1).

Peers

Another factor contributing to students' talent development in college is their group of peers. As soon as students enter college, they start to form a new group of friends and seek out support from their peer groups. Research on peer groups have highlighted the significant effects of peers on students' psychological comfort as well as on their achievement. In an analysis of six honors students, Hammond et al. (2007) found that students met other students who had similar patterns of motivation and interests in their honors program. This emotional belonging fostered in the honors program allowed students to feel accepted and promoted a secure sense of identity and community. Although peer pressure in the honors college has not been highlighted, a few studies found no significant relationship between honors students' achievement and peer effects (Clark, Schwitzer, Paredes, & Grothaus, 2018). One study pointed out that gender can be a mediator of peer effects within the honors college (Ficano, 2012), but in-depth analysis of peer pressure and gender within the honors context remain as an opportunity for future research.

Peer effects on motivation and achievement are also found in research on underrepresented students with gifts and talents. Bonner's (2001) and Harper (2015) both investigated factors that contributed to the academic success of gifted African-American male students, and they arrived at similar conclusions. Bonner (2001) examined one student from a historically Black college and university (HBCU) and one student from a predominantly White institution (PWI). HBCU refers to "…any historically Black college or university that was established prior to 1964, whose principal mission was, and is, the education of Black Americans…" (The Higher Education Act, 1965, p. 139). PWI are institutions "that have a

historical legacy of excluding Blacks and a historically and predominantly White racial composition" (McDonald, 2011, p. 16). Both students expressed that emotional and academic support from peers were significant in facilitating their academic confidence and achievements. One aspect the two students perceived differently was that of institutional aspirations. The student at the HBCU described his institution as a warm and supportive environment that nurtured his talents. However, the other student in a PWI stated that he "did not wear his academic talent on his sleeve but preferred to be more subtle and unassuming regarding his scholastic achievement" (p. 11). In Harper's (2015) report, similarly, gifted Africa-American male students in PWI still reported confront challenges within their peer groups because of racial stereotypes.

Institutional Environment

Researchers refer to this challenge as a "double dilemma" (Freeman, 1999, p. 16). Strayhorn (2008) conducted research to determine relationships between GPA and the levels of pressure Black honors students felt to demonstrate their intellectual ability (n = 380). Approximately 88% of the participants experienced moments where they had to "prove themselves academically" (p. 383). To reduce this psychological burden, the researcher suggested implementing purposeful activities or programs to facilitate interactions among Black honors students.

Asian American honors students are also marginalized in research. Olenchak and Hébert (2002) described the essential features of the collegiate experience of Asian American students with gifts and talents. Findings included rich narratives about Asian students who come from low socioeconomic level homes and their struggles when they reach college. One participant, Jimmy, confronted obstacles in his relationships with his family and peers, challenges with the intensive

expectations of the university curriculum, and challenges with financial status. He described additional challenges “trying to figure out how I can get my parents to accept my values” (p. 202). Although he attempted to live up with his parents’ traditional beliefs, he wanted to take more flexible views and consider alternative options when selecting his career goals. Henfield, Woo, Lin, and Rausch (2014) investigated Asian American students’ perceptions of honors programs using qualitative approaches. Their findings are consistent with the study by Olenchak and Hébert. These students confronted parents’ expectations, struggled with career decision-making, and encountered problems with ethnicity and achievement. Henfield and colleagues stated that “this study’s participants were found to be keenly aware of others ‘high expectations of them and responded, in turn, with high academic and career aspirations of their own” (p. 146). While this might appear beneficial, the students “failed to establish strong relationships with peers of similar backgrounds” (p. 146). Findings from these two studies emphasized that developing friendships with peers who have similar backgrounds can improve cultural understanding and experiences in the honors program, and that students from minority backgrounds struggle to build these relationships.

Gagné (2009), in his DMGT model, described individuals as one of the significant catalysts that support intrapersonal catalysts and the developmental process. As we have seen, this is consistent with other research on talent development. Although there is a lack of information about parental support and family influence on honors students from diverse and underrepresented backgrounds, researchers have provided quantitative and qualitative support the idea that family, friends and institutional support have direct bearing on students’ talent development. Within the honors program and college context, the most emphasized role in the literature has been faculty and advisor influence.

Underachievement of Students with Gifts and Talents in Higher Education

Although underachievement of students with gifts and talents in K-12 has been extensively studied during the last several decades, little research has focused on the obstacles faced by honors students in colleges and universities. For general students with underachievement, researchers have measured the correlations between academic probation status and the likelihood that the student may be unable to complete college-level work (Amelga 2012), struggles with adjusting to college life (Kuh, 2009), has different expectations for their achievement that the academic expectation faculty (Kuh, 2009), experiences test anxiety and performance pressure (Anderman & Anderman, 2009), and is less engaged in coursework (Friedman & Mandel, 2009). Amelga (2012) finds that "there is a gap between students' aspirations to attend college and their preparedness for college-level work" (p. 1). In study of McCoach and Siegle (2003), both achieving and underachieving students with gifts and talents showed high levels of academic self-perception. However, underachieving students were differentiated from achieving students in attitude toward school, attitude toward teachers and classes, motivation and self-regulation, and goal valuation. Few studies mainly focused on underachievement of students with gifts and talents in postsecondary institutions. Balduf (2009) integrated qualitative methods to investigate students' perceptions of their underachievement at a selective university. She invited participation from students who were enrolled in a highly selective university but did not meet university requirements and thus received an academic warning or were put on academic probation. The analysis revealed that students perceived their academic skills to have not yet developed to successfully meet college-level work requirements and that they had difficulties in managing their time and energy and motivation. The results also underlined that participants believed academic interventions can improve their attitudes and

behaviors would best be effective to reach their achievement potential. Baslanti and McCoach (2006) compared low, moderate, and high achievers among college students with gifts and talents in Turkey in terms of their motivational variables by using a quantitative method. The participants were assigned into achieving (*n* = 91) and underachieving groups (*n*= 74). According to results, underachieving students indicated lower levels of positive attitudes toward school and teachers than their comparison groups. Baslanti (2008) found that students with underachievement at a selective university selected low motivation as an important contributing factor for underachievement. These students had low expectations for their ability to pass a course, which can entail psychological problems such as depression and social disconnection.

Boretz (2012) used a term "Millennial Generation" to describe the recent underachievement phenomenon in university levels with 2,630 freshmen who have struggles with their academic achievement in a state university. She noted "twenty-somethings, known for being sheltered, closely bonded to their parents, heavily pressured to achieve, confident, and overscheduled" (Boretz, 2012, p. 94). Similarly, Twenge, Zhang, and Im (2004) reported that "the average college students in 2002 had a more external locus of control than 80% of college students in the early 1960s" (p. 308) by using meta-analysis with 97 samples of college students (*n* =18,310) in the United States. These researchers addressed "the implications are uniformly negative, as externality is correlated with poor school achievement, helplessness, ineffective, stress management, decreased self-control, and depression" (p. 309).

In honors programs, students' underachievement is directly connected to honors probation. Students who do not meet the minimum academic requirements are placed in probation within an Honors College. In this study site, students who do not achieve GPA 3.5 for two consecutive semesters lose priority for registration. Irwin (2010) provided some insight as to

why honors students are often ill-equipped to handle academic failure, simply stating that they have never failed before. Throughout their childhood education, most of these students regularly received A grades. “The first B” grade can send such students into a tailspin, leading them to question their abilities and their very identities, which are often wrapped up in their definition of success” (p. 43). Outstanding achievement and performance of these students paved the way for admission to the honors program at a college setting. However, there is no guarantee that once they enter an environment with other successful student that they stay on top. The level of competition is greater, and expectations and requirements have increased. Lancaster’s (2012) research attempted to find indicators to students at risk among three groups of honors students based on their cumulative GPA: top, moderate, and poor performers. The students in the poor performance group (a) felt anxious as they get into more competitive levels with their intellectual peers, (b) were frustrated by getting a grade lower than A, (c) were not able to recognize their academic strengths and interest, (d) struggled with asking academic assistance, and (e) did not have adequate skills and knowledge to overcome these challenges. Callard-Szulgit (2003) emphasized the time and effort management within their involvement in academic and extracurricular activities.

Non-completion of honors

There are a number of reasons honors students fail to complete the honors curriculum (Goodstein & Szarek, 2013). Schwartz (2007) pointed out that honors students tend to be more vulnerable to the academic stress that comes with scholarship. Additionally, when a student quits the honors program, removing the label of “honors student” may result in a decrease of confidence of their academic competencies (Campbell & Fuquia, 2008). Cosgrove (2004) reported students who did not complete honors programs failed to show any enhanced ability to

succeed over students who never participated in an honors program. Although the focus of the study was the non-completers, Robbins (2010) also reported eight reasons that students received an invitation to a honors program chose not to accept it: (a) did not know I qualified, (b) did not know about the program, (c) did not see value, (d) was not interested, (e) already overcommitted, (f) did not like the requirements, (g) not offered in my program of study, and (h) preferred to concentrate on Honor Society membership (p. 95).

Many of these studies assert that the developmental aspect of students with gifts and talents still needs to be properly investigated before honors students' needs can be fully addressed. Institutions want to know how to challenge honors students appropriately and how best to support honors students' developmental needs, as they seek to develop the supportive atmosphere of their honors programs (Barefoot, 2011; Cosgrove, 2004; Lanier, 2008; Rinn & Plucker, 2004; Scager et al., 2011; Slavin, Coladarci, & Pratt, 2008). In this study, I attempt to provide a closer investigation of underachieving honors students' experiences and improve understanding of their developmental needs.

CHPATER 3. METHODS

Based on the findings in the literature, in this study I sought to understand the honors students' perceptions of their talent development, using Gagne's (2009) Differentiated Model of Giftedness and Talent as a lens. The purpose of this study was (1) to examine the relationships among their perceptions about gifts, intrapersonal catalysts, interpersonal catalysts, and developmental process in talent development for underachieving honors students as compared to achieving honors students; and (2) to investigate their perspectives and beliefs about the dynamics of the four components of DMGT that influence their talent development. In particular, this study focuses on why some of students with gifts and talents do not develop their gifts into talents, while other students live up to their competencies. I used Gagné's Differentiated Model of Giftedness and Talent (DMGT) as the conceptual framework in the mixed methods design.

In this chapter, I present the methods used to address the research questions as follows: depiction of the design, summary of the participants, legitimacy of method selection, logic behind data collection, discussion of instrumentation (including scale development and validation), and the connections of the research questions to their corresponding data analyses.

Philosophical Paradigm

Pragmatism is a philosophical worldview employed in this research that is "not a methodology per se. It is a doctrine of meaning, a theory of truth" (Denzin, 2012, p. 81). Pragmatists pay attention to the "consequences of research, on the primary importance of the questions asked rather than the methods, and multiple methods of data collection inform the problem under study" (Creswell & Plano Clark, 2011, p. 41). From this perspective, ontology

integrates complex realities and epistemology emphasizes experiences and phenomena that make practical differences in the nature of human experiences.

Dennzin (2012) explained that pragmatic researchers choose mixed methods approaches because they consider the issues to go "beyond any given methodology or any problem-solving activity" (p. 81). Teddlie and Tashakkori (2009) argued that pragmatist researchers "can choose to use both inductive and deductive logic to address their research questions" (p. 89), in addition to abductive reasoning, or "working back from an observed consequence (or effect) to a probable antecedent (or cause)" (p. 329). This combination of research and reasoning approaches allows researchers to embrace variations between knowledge and the context, and to combine contradictory perspectives. Researchers are able to focus on making "the most appropriate use of that knowledge" (Morgan, 2007, p. 72) by drawing on it in as many forms as possible.

From my perspective, a better understanding of the talent development process of achieving and underachieving honors students is one tool that can be used to identify and address problems in honors programs, as a deeper understanding of honors students will lead to an identification of where they struggle and how they can be supported. Thus, a pragmatic focus on desirable outcomes is suitable for this project, as it lends itself to answering the question of how to create a more appropriate environment for honors students where they can reach their potential. Since there is a lack of well-established knowledge on the talent development of honors students, it is important to contribute to the knowledge base. What are the perceptions of achieving and underachieving honors students as they face the present realities of developing their gifts into talents? These experiences can provide insights into the successes and failures of higher education. Thus, the results of this study can make a valuable contribution to the understanding of how the four components of the Gagné's model affect student development and

can be better integrated into honors programs. The secondary focus of this study is achieving and underachieving students' perceptions of their talent development process, and this also benefits from the pragmatic approach. If the relationships between the four components of DMGT and talent development is made more clear, successful practices and appropriate programs for achieving and underachieving honors students could be developed.

Conceptual Framework

The conceptual framework for this study is Gagné's (2009) DMGT. Gagné's model begins by explaining the distinction between gifts as natural abilities or aptitudes and talents as developed skills or competencies. Gifts have four domains (intellectual, creative, social, perceptual) belonging to the mental realm, and two domains (muscular and motor control) belong to the physical realm. Individuals can have gifts in one or more domains, and gifted individuals refer to individuals placing in the top 10% of age peers. Gagné (2008) rejected the use of innate ability to identify giftedness, as he thought natural abilities best described the concept of gifts. He stated that "natural abilities' spontaneous development through maturational processes, as well as non-systematic daily activities, is partially controlled by the genetic endowment" (p. 3). In addition, talents are intentionally developed competencies in the specific domains. While these aptitudes are being developed, two kinds of catalysts, intrapersonal and environmental catalysts, can facilitate or hinder the transformation of gifts into talents.

Intrapersonal catalysts have five subcomponents under two main dimensions, stable traits (physical, mental) and goal management processes (awareness, motivation, volition). Intrapersonal catalysts encompass a wide range of subcomponents, such as the individual's personality and positive and negative behaviors. In Figure 3, the environmental catalysts partially overlap with intrapersonal catalysts to illustrate the way environmental catalysts can affect

intrapersonal catalysts. Environmental catalysts consist of three subcomponents that each contain several factors: milieu (e.g., physical, cultural, social), individuals (e.g., parents, family, peers, teachers), and resources (e.g., enrichment, curriculum, pedagogy).

The third factor, the developmental process, is “the systematic pursuit by talentees, over a significant period time, of a structured program of activities leading to a specific excellence goal” (Gagne, 2008, p. 2). Two processes, maturation (such as physical growth) and informal learning/exercises (e.g., activities, investment of time, progress), are identified in the developmental process.

Gagne (2004) emphasized the complex interactions among these components, as he believed that, “talent emergence results from a complex choreography between the four causal components, a choreography that is unique to each individual." (Gagné, 2005, p. 6). Given that it can be difficult to pull these variables apart, he proposed the question, ‘what makes a difference?’, to determine how these components work to facilitate or impede talent development and how to rank them by order of importance. Based on several extensive literature reviews, Gagné suggested the following hierarchy for his four components, ranked from greatest to smallest effect: gifts, intrapersonal catalysts, developmental processes, and environmental processes. However, he stated that this hierarchy should not diminish the idea that all components of the DMGT play a role for most people. I will use a sequential explanatory mixed method design (Creswell & Plano Clark, 2007) to best understand the role these components play in honors students' talent development, and to understand which elements make a difference in their lives.

A Mixed Methods Research Design

I used a mixed methods research design to best suit the need for research that analyzes students' complicated experiences in higher education. Gomez-Arizaga (2012) asserted that a holistic approach necessitated gaining insight into gifted college students' "difficulties, challenges, and success" (p. 154). Lancaster (2014) similarly emphasized the use of both quantitative and qualitative methods to determine honors students' perceptions about academic service and their academic experience. By using a mixed methods research approach, I am able to investigate issues that are "broad and complex, with multiple facets that may each be best explored by quantitative and qualitative methods" (Tariq & Woodman, 2010, p. 4).

In designing my study, researchers have identified many reasons for conducting a mixed methods research study. Hurmerinta-Peltomati and Nummela (2006) noted four benefits of a mixed methods study: increased validity of findings, informed collection of the second data source, assisting with knowledge creation, and integrating a variety of data analyses. This allows researchers to validate the constructs in the findings from both quantitative and qualitative approaches (O'Cathain, Murphy, & Nicholl, 2008). A pragmatic mixed methods research approach allowed me to explore the complexity of the components of talent development of achieving and underachieving honors students and examine this phenomenon from both participants' perspectives and researchers' perspectives from the previous studies. In this study, I investigated the relationships of students' perceptions of the four components of DMGT and gained an in-depth understanding of their perspectives and beliefs about their talent development with relation to the four components of DMGT. I was then able to compare this in-depth perspective with the quantitative survey data from a larger number of participants, the perspectives of honors professionals, and the existing theoretical models, which allowed me to

better see the contradictions and similarities across the range of findings. Thus, I chose a sequential explanatory mixed methods design as the mixed methods approach that could provide a comprehensive understanding of the research questions (Tashakkori & Teddlie, 2003).

Sequential Explanatory Mixed Methods Design

Two types of the sequential explanatory mixed methods are suggested by Creswell and Plano Clark (2010): the follow-up explanations model and the participant selection model. I employed the follow-up explanation model to combine holistically quantitative and qualitative data. Figure 3 presents a visual representation of the sequential explanatory research design used for this study.

This model is explained by Creswell and Plano Clark (2010) as follows:

> This design starts with the collection and analysis of quantitative data, which has the priority for addressing the study's questions. This first phase is followed by the subsequent collection and analysis of qualitative data. The second, qualitative phase of the study is designed so that it follows from the results of the first, quantitative phase. The researcher interprets how the qualitative results help to explain the initial quantitative results. (p. 71)

In this model, I developed a general understanding of the research questions through analysis of quantitative data. Then, qualitative data and subsequent analysis help me to refine and explain how achieving and underachieving honors students perceive roles of four components of DMGT in their talent development. By using the qualitative component in this study, it is possible to fully explore empirical data and relationships as well as understand the elements of the reality of achieving and underachieving honors students most closely related to their talent development in a dynamic environment. Qualitative insight was employed to further explore the

relationships resulting from the quantitative analysis, which led to more comprehensive results, as described by Creswell and Plano Clark.

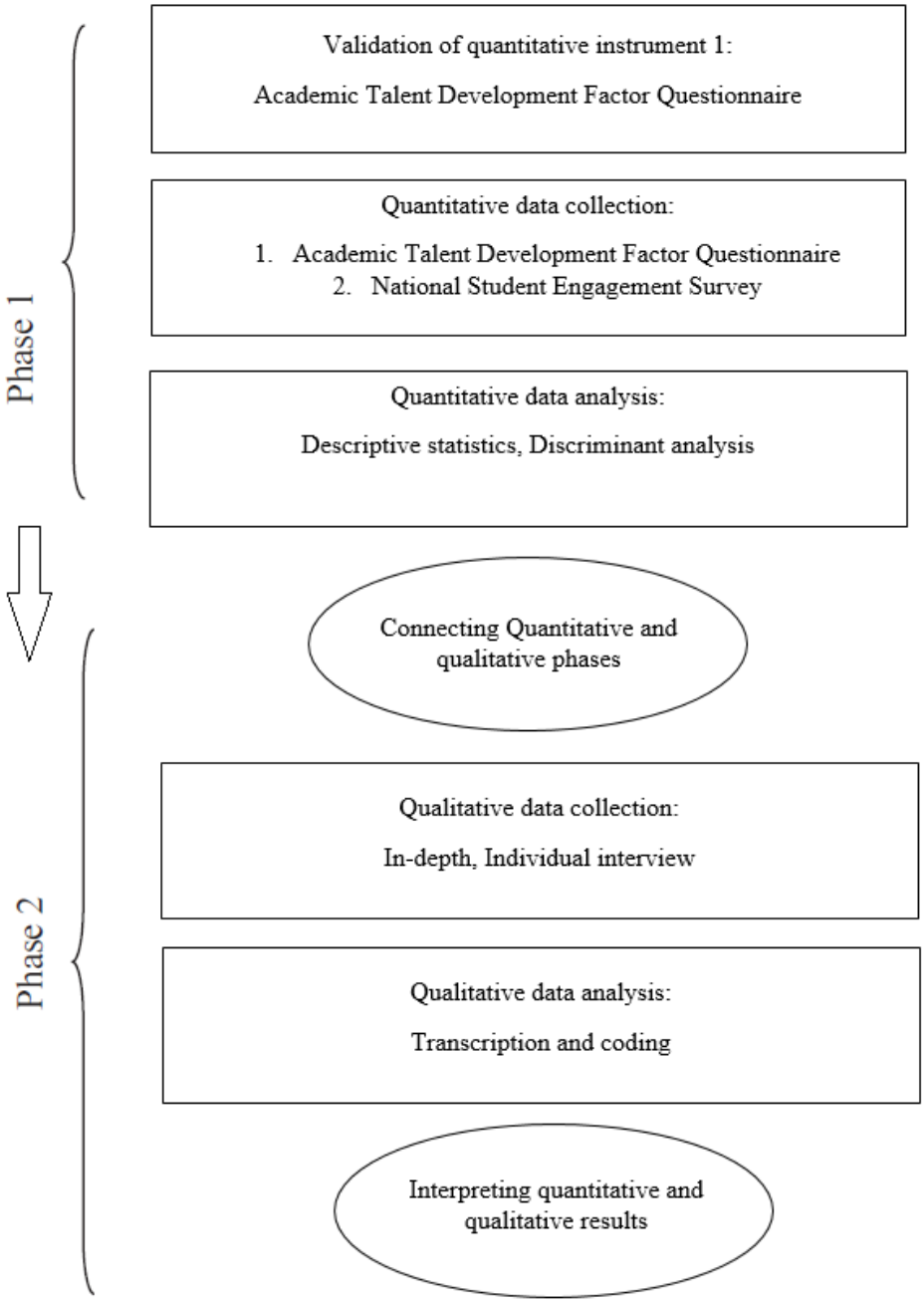

Figure 3. Flow diagram of the research process: sequential explanatory design

Setting

University Setting

This study was conducted at a comprehensive, research-intensive university located in the Midwest region of the United States. This institution enrolled approximately 31,000 undergraduate students and 10,000 graduate students in 2017. This university has more than 200 majors, 10 colleges and schools, an honors college, several learning communities, and many study abroad programs. Engineering undergraduate programs are consistently ranked within the top 10 in the United States (Best Undergraduate Engineering Programs Rankings, 2018). Students participate in more than 800 student organizations and 2,000 research projects in a wide range of the subjects (Undergraduate Admissions, n. d.).

Of 7,567 freshmen in the fall of 2017, approximately 3,800 students have scores that fall in the range between 1160 and 1360 on the Scholastic Aptitude Test (SAT) and between 25 and 31 on the American College Testing (ACT). The final average high school Grade Point Average (GPA) is between 3.60 and 4.00 on the 4.0 grade scale (Freshman Class Profile, Enrollment for Fall 2017, n. d.).

The Honors College within the University

The honors college of this university during the spring and fall semester of 2017 serves as the setting for this study. The university honors program was established in 2005 and the honors college brought together departmental honors programs in 2015. In 2016, The honors college opened a new residence complex in a central location of the campus that includes more than 800 beds, the honors college offices, classrooms, and multipurpose gathering spaces. The mission of the honors college is to “provide exemplary living and learning experiences for high-ability students to excel and to serve as transformative leaders in a diverse, interdisciplinary community

of scholars noted for academic excellence" (Honors College, "Our Mission", n. d.). The four pillars of the honors programs are undergraduate research; leadership development; community and global experiences; and interdisciplinary academics. This honors college offers diverse national and international scholarships. Honors students are encouraged to participate in study abroad programs and service learning experiences.

Every year, about 650 students receive invitations from the honors college. Enrollment in the Honors College is primarily based on the two primary criteria of high school GPA and standardized test scores such as SAT or ACT; however, this honors college also uses the holistic admission criteria. For first year students, students' aptitude for interdisciplinary learning, leadership, and engagement are considered. For current students, selection criteria include a personal statement and projected plan of study to evaluate an applicant's unique experiences and promote diversity in the honors college. Although there are no available data of the average of the test scores, less than 10% of the future first-year students are invited to the honors college. Honors students must complete 24 credit hours of honors coursework including five credits of honors courses and 19 credits to graduate with an honors degree. Students also must submit their thesis or scholarly project manuscript to their faculty and the honors college before graduating. Honors college academic advisors and staff work with students as they navigate the honors college and develop their academic talents. Students are required to have one-on-one meetings with their honors college academic advisor at least once a year to build their paths over the course and career. There are also twenty staff to engage honors students in their learning and career development as campus outreach coordinator, director of community and student, and engagement, staff for the national and international scholarships.

Phase One: Quantitative Measures

The quantitative phase of this study focused on the collection and analysis of data from three-part online survey: Academic Talent Development Factor Survey (TDQ), selected items of the National Survey of Student Engagement (NSSE), and self-reported pre-college characteristics (e.g., gender, ethnicity, and SAT/ACT scores). This quantitative phase included two distinct stages.

Stage One: Validation of the Survey Instruments and Interview Protocol

This stage includes content validity testing with redeveloped instrument.

Survey part 1. Academic talent development factor questionnaire (TDQ)

Although there have been many studies conducted in the area of giftedness and talent, I did not find an appropriate published survey instrument that could be used in this study. Gagné's DMGT also did not yield published survey instruments on college students' talent development. I found a Talent Development Factors Questionnaire that was developed by Lycan (2009) for her doctoral dissertation. This instrument consists of four subscales based on Gagné's DMGT (1985, 2005): gifts, developmental process, intrapersonal catalysts, and environmental catalysts. The original survey included 55 questions that use a 5-point Likert scale, seven open-ended questions, one forced-choice question, and one question with rank-order response. The survey used a 5-point Likert scale where 1 represented the least agreement with the statements and 5 represented the greatest agreement with the statements. Reliability estimates of four subscales ranged between .586 to .788. Although Lycan (2009) conducted content validity with the help of eight students in master's program in higher education, exploratory factor analysis (EFA) results showed items loading below .30 on some factors. The original instrument development did not provide any results of factor model fit such as chi-square or Root Mean Square Error of

Approximation (RMSEA). Lycan (2009) suggested redeveloping the instrument in the following ways: (a) removing open-ended questions to avoid redundancies with in-depth interview, (b) rewording statements in consideration of college students' characteristics and environments, and (c) adding professional staff in environmental catalysts and faith in intrapersonal catalysts, according to qualitative data analysis results. Based on her suggestions, I redeveloped the survey instrument according to Gagné's DMGT.

After I worked through the statistical review with Lycan's (2009) suggestions, the redeveloped instrument consisted of 39 items: 7 items in gifts, 11 items in developmental process, 9 items in intrapersonal catalysts, and 12 items in environmental catalysts. After a validation study, the final survey instrument consists of 35 items: 5 items in gifts, 9 items in developmental process, 11 items in intrapersonal catalysts, and 10 items in environmental catalysts. The instrument consisted predominantly of questions with a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). I addressed the several issues in the revision as follows. First, I removed open-ended questions to avoid redundancies. Second, I analyzed 23 items in Lycan's questionnaire (2009) and removed 9 items that yielded Cronbach's alpha below .70 in gifts and developmental process sections. Then, I redeveloped 14 items for these sections. These items are developed based on the foundation of the DMGT (Gagné, 2009). Third, I reviewed factor analysis results for the two subscales, intrapersonal and environmental catalysts, to determine if all items constructed within DMGT framework would correlate with a single latent factor. Watkins (2018) stated that factor loadings less than .30 are considered weakly correlated and should be rejected. I found two items with loadings less than .30 and reworded them. Fourth, Lycan (2009) identified professional staff in co-curricular activities and faith as important factors in environmental and intrapersonal catalysts respectively. I developed

and added these items. Finally, two statements for each subscale were negatively worded, and these statements are intended to reduce positive response bias.

Survey, part 2. National survey of student engagement (NSSE)

Three variables—good teaching and high-quality interactions with faculty, academic challenge and high expectations, and diversity experiences—with forty-eight items made up the second portion of the online survey for this study (Table 2).

Table 2. *Variables, Subscales, and Rating Scale*

Variables	Subscales	Number of Items	Rating Scale
Good teaching and high-quality interactions with faculty (GT)	Faculty Interest in Teaching and Student Development (FI)	5	from strongly disagree (1) to strongly agree (5)
	Prompt Feedback (PF)	3	from never (1) to very often (5): 2 items from strongly disagree (1) to strongly agree (5)
	Quality of Non-Classroom Interactions with Faculty and Advisor/Staff (QN)	5	from strongly disagree (1) to strongly agree (5)
	Overall Exposure to Clear and Organized Instruction (TC)	9	from never (1) to very often (5)
Academic challenge and high expectations (AC)	Academic challenge and Effort (AE)	11	from never (1) to very often (5)
	Challenging Classes and High Faculty Expectations (CH)	6	from never (1) to very often (5)
	Integrating Ideas, Information, and Experiences (IE)	6	from never (1) to very often (5)
Diversity experiences (DE)	Diversity Experiences (DE)	8	from never (1) to very often (5)

This instrument is a self-report questionnaire to examine participants' thoughts about their experiences. Because the self-report questionnaire relies on participants' honest responses, NSSE focused on using clear, precise, and unambiguous wording about their experiences (Kuh, 2001). As a result, "psychometric analyses produce acceptable levels of reliability and demonstrate reasonable response distributions for most items" (Kuh, 2001, p. 13).

The first variable selected for this study was good teaching and high-quality interactions with faculty with twenty-two items. Students were asked whether (a) their faculty members were genuinely interested in student learning (5 items), (b) they received prompt feedback on their academic work (3 items), (c) they had meaningful interactions with their faculty outside of the classroom (5 items), and (d) they had faculty members who provide clear instructions with organized materials (9 items). The second variable was academic challenge and high expectations with eighteen items. Students reported whether (a) they had clear expectations for time and effort required to meet or exceed academic performance goals (7 items), (b) they experienced challenges and high expectations (6 items), (c) they were challenged to critically explore their own ideas (5 items). Third variable was diversity experiences with eight items. Students reported that if they were encouraged to have communications with diverse peers (8 items).

This instrument consisted of questions to which students respond using a 5-point Likert scale from strongly disagree to strongly agree or a 5-point frequency scale from never to always.

Survey part 3. Pre-college characteristics

The pre-college characteristics section consisted of questions about gender, ethnicity, and SAT/ACT scores. This was included because previous research on honors education has indicated that demographic factors can be a significant predictor of students' academic success.

Studies have found differences that correlate with student ethnicities (Balzora, 2015), and gender (Campbell & Fuqua, 2008), and have found SAT/ACT scores to also predict performance (Abdel-Salam, Kauffmann, & Williamson, 2006).

Interview protocol for student participants

Phenomenology refuses to use a framework that is primarily shaped by the researchers' perspectives, as this allows the researcher to accurately describe the phenomenon according to the participant's experiences and perceptions. As developed by Creswell (1998), this type of interviewing begins by exploring the meaning of past experiences for participants and asking participants to describe their lived experiences. Seidman (1998) proposed that three in-depth interview questions comprise phenomenological inquiry: experience with the phenomenon of interest, present experience, and participant's unique experience with the phenomenon. In this study, honors students and staff/advisors participated in in-depth interviews. For students, the interview protocol began by asking participants about past school experience and personal backgrounds regarding their natural abilities in the DMGT. Consequently, I introduced questions that investigated participant's experiences with how their talent development was influenced by internal catalysts and environmental catalysts, as well as their time and energy investment in activities. For staff/advisors, the first interview question was about their work experiences with honors students in the past. The main questions were designed to examine participants' experiences with and perceptions about the talent development process in the honors college. For the final step of the interview protocol, I developed reflective questions to help participants share their feelings about the experience they had shared (Seidman, 1998). In the flow of the interview, participants could add their ideas and researchers could ask additional questions regarding the

responses. This flexibility allowed me to collect rich data and maximize data analysis (Lindlof & Taylor, 2010).

Validity of redeveloped survey and interview protocol

I conducted a validation study to review the revised instrument and interview protocol and determined which questions needed revisions. The Content Validity Index (CVI) and the coefficient of reliability evaluated the content validity of the survey instrument and interview protocol. The CVI is a method to quantify the evidence of content validity (Delich, 2011). Lynn (1986) used relevance as the only parameters of content validity before, Yaghmale (2003) implemented three additional parameters: simplicity, clarity, and ambiguity. Lynn (1986) and Yaghmale (2003) both recommended a minimum of five experts who provide reasonable agreement. This study included the participation of two groups of experts. The first group of experts consisted of professionals who had at least a master's degree related to higher education and who were working with undergraduate students in Student Life and the Honors College. The second group consisted of graduate students in gifted education. After obtaining an approval from the Institutional Review Board (IRB), I contacted the Division of Student Life, Honors College, and the Gifted, Creative, and Talented Studies program at the current research site to secure participants for the validation portion of this study. Five professionals in the higher education experts group and ten graduate students in the gifted education experts group participated in the validation study.

Content validity index of the quantitative instrument. The survey instrument and interview protocol were presented to two groups of experts with instructions to assess relevance, clarity, simplicity, and ambiguity of the instruments.

Table 3. *Criteria for Measuring Content Validity for Each Item of the Survey*

Scores/ Characteristics	1	2	3	4
Relevance	Not relevant	Needs some revision	Relevant but needs minor revision	Very relevant
Clarity	Not clear	Needs some revision	Clear but needs minor revision	Very clear
Simplicity	Not simple	Needs some revision	Simple but needs minor revision	Very simple
Ambiguity	Doubtful	Needs some revision	No doubt but needs minor revision	Meaning is clear

Simultaneously, I provided a brief introduction of the purpose and methods of this study. The experts used the scoring system in Table 3. I used proportions of experts who scored items with either a 3 or 4 to calculate CVI for each item. The formula of the proportion is:

$$CVI = \frac{the\ number\ of\ experts\ who\ rated\ the\ item\ with\ 3\ or\ 4}{the\ total\ number\ of\ experts}$$

In order to be content valid, items should score three or four on a Likert scale of four and have a CVI of over 0.75 (Drost, 2011). I also asked the participants to offer feedback on the rating template as to whether they could be responded easily to the items regarding the four parameters of relevance, clarity, simplicity.

The CVI for relevance (.91) was higher than were the values for the other three parameters: simplicity (90), clarity (.88), and ambiguity (.90). Four items (3, 19, 32, 39) were withdrawn for not reaching this threshold (see Table 4). Item 3 was a question about the perception of participants concerning their observation skills, item 19 was about students' cultural background and learning, item 32 was about students' socioeconomic status, and item 39 was about effects of the university's location on students' academic talent development.

Table 4. *Calculation of Item Scale Validity Index for the Quantitative Instrument*

Item	R[a]	I-CVIs	S[b]	I-CVIs	C[c]	I-CVIs	A[d]	I-CVIs	A/R[e]
1. My intellectual ability is something I born with	22	.95	22	.95	23	1.00	22	1.00	A
2. No matter how intelligent I am, I am able to develop my academic talent	23	1.00	20	.86	21	.91	22	.95	A
3. My observation skills are acute	16	.69	20	.86	14	.60	15	.65	R
4. I was selected for the honors college because I am intelligent	21	.91	21	.91	20	.86	20	.86	A
5. I feel I am gifted when I do something without mistakes	21	.91	22	.95	19.	.82	21	.91	A
6. I will succeed in the honors college because I am intelligent	21	.91	23	1.00	19	.82	23	1.00	A
7. The honors courses are challenging which allows me to develop my academic talent	23	1.00	23	1.00	20	.86	21	.91	A

Note. [a]Relevance, [b]Simple, [c]Clarity, [d]Ambiguity, [e]Accept/Reject
Numbers in relevance, simple, clarity, and ambiguity columns are the numbers of experts giving a rating of either 3 or 4.

Table 4 continued

Item	R[a]	I-CVIs	S[b]	I-CVIs	C[c]	I-CVIs	A[d]	I-CVIs	A/R[e]
8. The honors college courses have provided sufficient opportunities to develop my academic talent	22	.95	22	.95	21	.91	22	.95	A
9. My critical thinking skills are developed through the content of the honors college courses	21	.91	21	.91	22	.95	21	.91	A
10. The honors college courses have helped me set up reachable goals	22	.95	22	.95	22	.95	22	.95	A
11. I have been adequately challenged in the honors college courses	22	.91	21	.91	21	.91	20	.86	A
12. The honors college courses have been helpful to cultivate my future goals	23	1.00	20	.86	21	.91	21	.91	A
13. I have found opportunities for future success by participating in the honors college courses	23	1.00	22	.95	22	.95	21	.91	A
14. I have the ability to check my performance progress in the honors college	20	.86	21	.91	20	.86	22	.91	A
15. I am allowed to progress in my academic talent development at the pace I want to maintain	20	.86	20	.86	21	.91	22	.91	A

Table 4 continued

Item	R[a]	I-CVIs	S[b]	I-CVIs	C[c]	I-CVIs	A[d]	I-CVIs	A/R[e]
16. I am not able to prioritize tasks between my major requirements and honors college requirements	21	.91	22	.95	22	.95	22	.95	A
17. I am willing to learn new things	23	1.00	23	1.00	23	1.00	23	1.00	A
18. I enjoy participating in various programs in the honors college that help me develop my academic talent	23	1.00	22	.95	21	.91	21	.91	A
19. I regularly read material relating to social issues to develop critical thinking	15	.65	17	.73	17	.73	14	.60	R
20. I am actively participating in projects to develop my academic talent	22	.95	21	.91	20	.86	21	.91	A
21. I am aware of my weaknesses when it comes to in developing my academic talent	21	.91	21	.91	21	.91	21	.91	A
22. I do put forth a great deal of personal effort to attain my performance level in the honors college	22	.95	22	.95	21	.91	22	.95	A
23. I prefer to work in situations that require a higher level of critical thinking skills	23	1.00	21	.91	21	.91	21	.91	A

Table 4 continued

Item	R[a]	I-CVIs	S[b]	I-CVIs	C[c]	I-CVIs	A[d]	I-CVIs	A/R[e]
24. It is worthwhile to take risks to develop my academic talent	23	1.00	22	.86	20	.86	22	.95	A
25. Faith is an important factor that compels me to put efforts into achieving my goals	18	.78	21	.91	20	.86	21	.91	A
26. I fear a failure in the honors college	21	.91	22	.95	21	.91	22	.95	A
27. I feel that I have good characteristics to help me achieve my goals	22	.95	20	.86	22	.95	22	.95	A
28. My peers in the honors college pay a large role in the development of my academic talent	22	.95	21	.91	22	.95	22	.95	A
29. Mentors in the honors college are integral in the development of my academic talent	21	.91	22	.95	22	.95	22	.95	A
30. I feel my parents/guardians contribute to my academic talent development	22	.95	23	1.00	20	.86	22	.95	A
31. High quality interactions with faculty members are integral to my academic talent development	23	1.00	22	.95	20	.86	21	.91	A
32. My family's socio-economic status influenced my academic talent development	14	.60	16	.69	21	.91	21	.91	R

Table 4 continued

Item	R[a]	I-CVIs	S[b]	I-CVIs	C[c]	I-CVIs	A[d]	I-CVIs	A/R[e]
33. I have a positive relationship with a mentor who contributes to my academic talent development	20	.86	22	.95	22	.95	22	.95	A
34. Discussions with honors advisor(s) are influential in my academic talent development	22	.95	22	.91	21	.91	22	.95	A
35. Interactions with faculty member(s) are influential in my academic talent development	22	.95	21	.91	20	.86	22	.91	A
36. Where I grew up affected the development of my academic talent	23	1.00	22	.95	21	.91	22	.91	A
37. My family's culture has influence on the development of my academic talent	23	1.00	21	.91	20	.86	22	.91	A
38. Where I have lived on campus has affected my academic talent development	21	.95	20	.86	20	.86	22	.91	A
39. The location of my university has contributed to the development of my academic talent	15	.65	14	.60	15	.69	15	.69	R

Lynn (1986) suggested the instrument should be revised when there are many items with minimum agreement of experts. However, Yaghmale (2003) argued that a CVI of .80 or higher is acceptable and is considered sufficient. Items with the CVI between .70 and .79 requires revision and the items need to be deleted if the CVI is less than .70. Since the CVI for all the variables was higher than .80, this instrument was considered sufficient. Table 4 provides data for understanding the item content validity index (I-CVI).

Content validity index of the interview protocol. For student participants, thirteen questions were initially developed. Based on the experts' evaluations, one item was revised, and one item was removed out. The first interview question was about the experience with gifted education in their K-12 education. The second and third questions were developed to explore how these students realized and perceived their intellectual gifts. Question four and five of the interview protocol were designed to identify how these students spent their time, energy, and money for developing their intellectual gifts. Questions six and seven focused on influences of the intrapersonal catalysts (e.g., personality or motivation) in academic talent development. Question eleven was designed to explore the influence of socioeconomic status on educational performance and academic talent development. Question twelve was designed to identify other factors that may affect academic talent development. The last question offered an opportunity to summarize the factors on academic talent development.

The CVI of this protocol was 11/13 = .84. Item 6, about the influence of personal characteristics on academic talent development, states, "Describe how your personal characteristics (e.g., personality, motivation, self-management, or behaviors) helped you continue to develop your academic talent in K to 12 grades and the honors college".

Table 5. *Calculation of Item Scale Validity Index for the Interview Protocol for Students*

Item		R[a] I-CVIs	S[b] I-CVIs	C[c] I-CVIs	A[d] I-CVIs	Accept/ Reject
1.	Tell me how you recognized that you have intellectual giftedness	1.00	1.00	1.00	1.00	A
2.	What does your giftedness mean to you? Define your giftedness in your own words	1.00	.86	.92	1.00	A
3.	Describe how your intellectual ability is reflected by your academic achievement	1.00	.94	1.00	1.00	A
4.	Describe how the honors college curriculum influenced your achievement. Please provide details or examples of positive and/or negative influence	1.00	1.00	1.00	1.00	A
5.	What kinds of extracurricular programs have helped you to maintain your achievement in the honors college?	1.00	1.00	1.00	1.00	A
6.	Describe how your personal characteristics (e.g., personality, motivation, self-management, or behaviors) helped you continue to develop your academic talent in K to 12 grades and the honors college	1.00	.84	.84	.78	A
7.	Describe what and how your personal characteristics (e.g., personality, motivation, or self-management) impeded the development of your academic talent	1.00	1.00	1.00	1.00	A

Note. [a]Relevance, [b]Simple, [c]Clarity, [d]Ambiguity

Table 5 continued

Item	R[a] I-CVIs	S[b] I-CVIs	C[c] I-CVIs	A[d] I-CVIs	Accept/ Reject
8. Describe someone (e.g., parents, peers/friends, honors advisors or professional staff) who has had a positive influence on your academic achievements. Specifically, describe the details of that influence in the honors college	1.00	1.00	1.00	1.00	A
9. Describe someone (e.g., parents, peers/friends, honors advisors or professional staff) who has had a negative influence on your academic achievements. Specifically, describe the details of that influence in the honors college	1.00	1.00	1.00	1.00	A
10. If you lived in the honors college residence hall, describe how the honors college residence hall environment has had positive or negative influence on your academic talent development	1.00	1.00	1.00	1.00	A
11. Describe whether your socio-economic status influenced your academic talent development in the honors college and at Purdue University	.95	.76	.81	.78	R
12. Describe whether your ethnicity, gender, or religion influenced your academic talent development in the honors college and at Purdue University	1.00	1.00	1.00	1.00	A
13. What is the most important factor that positively affected your academic talent development?	1.00	1.00	1.00	1.00	A

For this item, CVIs for each parameter were 1.00 on relevance, .84 on simplicity, .84 on clarity, and .78 on ambiguity. Experts' recommendations included "students might be confused with their K-12 experiences to honors college experiences". I added the clarification, "Please explain how your personal characteristics influence was different from K to 12 grades". Item 11 was eliminated due to ethical issues and to keep consistency with the quantitative instrument (see Table 5).

Table 6. *Calculation of Item Scale Validity Index for the Interview Protocol for Staff/Advisors*.

Item		R[a] I-CVIs	S[b] I-CVIs	C[c] I-CVIs	A[d] I-CVIs	Accept/ Reject
1.	What position or roles do you hold in the honors college?	1.00	1.00	1.00	1.00	A
2.	How long have you been working with honors college students?	1.00	1.00	1.00	1.00	A
3.	Please define an honors college student. How do you think their intellectual abilities differentiate these students from non-honors college students?	1.00	1.00	1.00	1.00	A
4.	If you agree that honors students' intellectual abilities are related to their academic achievement, please describe how and why	1.00	1.00	1.00	1.00	A
5.	Describe how the honors college courses influence students' academic talent development. Please provide examples of positive and negative influence	1.00	1.00	1.00	1.00	A

Note. [a]Relevance, [b]Simple, [c]Clarity, [d]Ambiguity

Table 6 continued

Item		R[a] I-CVIs	S[b] I-CVIs	C[c] I-CVIs	A[d] I-CVIs	Accept/ Reject
6.	Describe personal characteristics of students (e.g., personality, motivation, self-management, or behaviors) you have worked with in the honors college. Please provide details about how their characteristics helped or impeded them develop their academic talent	1.00	1.00	1.00	1.00	A
7.	Describe roles and effects of individuals (e.g., parents, peers/friends, honors staff) on students' academic talent development in the honors college	1.00	1.00	1.00	1.00	A
8.	Describe how the honors college residence hall environment has had positive or negative influence on honors college students' academic talent development	1.00	1.00	1.00	1.00	A
9.	If you have experiences with students who were on honors probation, please provide details about students' characteristics and challenges they met. And then, tell me how you helped these students reverse underachievement	1.00	1.00	1.00	1.00	A
10.	What factor has the biggest influence on academic talent development of students in the honors college?	1.00	1.00	1.00	1.00	A

For staff/advisor participants, ten questions were developed, and all items received 3 or 4 scores on the four parameters (see Table 6). Question one and two were designed to examine the participants' general information and work experience with honors students. Question nine was developed to explore the participants' experiences with underachievement of honors students. The same questions about the intellectual gifts (questions 3 and 4, intrapersonal characteristics (question 6), environmental catalysts (question 7 and 8) and developmental process (question 5)

with the student interview questions. The participants summarized their experiences in the last question. Therefore, I used these ten questions in the interviews with staff/advisors.

Stage Two: Quantitative Data Collection

This stage includes collecting data via instruments.

Populations and target population characteristics

The population examined in this study consisted of students enrolled in the honors college in the United States because they (a) represent students who have high academic potential and (b) have experienced positive and negative factors on their academic talent development in the honors college. According to the Admission, Retention, and Completion survey in 2014-15 by NCHC, including data from 224 institutions, there were 63.78% female and 36.18% male in students who enrolled the honors programs or colleges. In terms of self-identified ethnicity, 66.96% were White, 11.20% were Black, 8.91% were Hispanic, 5.91% were Asian, and American Indian or Alaska Native were 0.63% in this population.

The target population was students who enrolled the honors college at this research university (n = 2,022). Within this honors college, there were 1,046 (52.13%) females and 845 (47.87%) males in 2017, of which 1,356 (66.91%) indicated that they were White, 114 (5.64%) were Black, 214 (10.58%) were Asian, 112 (5.54%) were Hispanic, and 3 (0.15%) were American Indian or Alaskan Native. Comparing to the NCHC survey, the target population had a greater percentage of males, which corresponds to the demographics of this large engineering university. The Asian student group was also greater in the target population. This gap may be because this university is one of the top 5 public universities in the United States when it comes to the size of the international student population (Neubert, 2017). Quantitative and qualitative

phases required separate samples. The qualitative sample consisted of a smaller selection of students from the first sample and also included staff/advisors at the honors college.

Sample

The total sample (*n* = 174) consisted of 143 (82.2%) achieving honors students who maintained their honors status and 31 (17.7%) underachieving honors students who were on honors probation (see Table 7). It was difficult to enroll students who were on honors probation to complete the survey and stay in the interview process via email recruitment. Recruiting underachieving participants has been an issue at secondary levels (Rubenstein, Siegle, Reis, & McCoach, 2012).

Table 7. *Population, Target Population, and Sample*

	Population[a] (N= 224 Institutions)	Target Population (N = 2,022)	Sample (n = 174)
Gender			
Females	63.78	52.13	64.9
Males	36.18	47.87	33.9
Ethnicity			
European American/White	66.96	66.91	76.4
African American/Black	11.20	5.64	1.1
Hispanic	8.91	5.54	1.7
Asian	5.91	10.58	18.3
American Indian	.63	.15	0.6

[a]There was no information about the total number of students from the 2014-2-15 NCHC Admissions, Retention, and completion Survey of Member Institutions. Among 224 higher education institutions in the United States, the average size of their honors program and/or college was 451.96 students.

Of the total sample, the 113 female students (64.9%) outnumbered the 59 male students (33.9%). The female participants (*n* = 113) consisted of 90 achieving students (79.6%) and 23 underachieving students (20.3%). Within the male student group (*n* = 59), 51 students (86.4%) were in the achieving group and 8 students (13.5%) were in the underachieving group.

Comparing to the honors student population in U. S, this sample (n = 174) represented a similar gender ratio. The majority of participants was White (76.4%) although this is greater than population (66.96%). Additionally, this sample included smaller groups of Black and Hispanic student groups and larger groups of Asian and American Indian student groups than population (see Table 7). This gap reflected characteristics of the target population and institution.

Before I collected data, I computed the estimated sample size (Dillman, Smyth, & Christian, 2000). The estimate was 238 participants for this sample based on a confidence level of 90% and 5% of margin of error as follows:

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1+(\frac{z^2 \times p(1-p)}{e^2 N})} = 238$$

Although the 174 respondents are smaller than the statistical estimate sample size, Hair, Black, Babin and Anderson (2010) recommended ten times larger sample size than the number of variables. In this study, there are ten variables, so the required sample should be 100 or more.

The survey responses came from 174 students of the target population, resulting in an 8.6% response rate for the quantitative phase of this study. In terms of effective survey response rates, researchers have put forth considerable efforts to gain unbiased estimates that help them achieve robust response rates. Some researchers in social science disciplines have confirmed that response rates greater than 20% are effective (Adams, Khan, Raeside, & White, 2007) but other researchers have argued that low response rates need not necessarily lead to biased results (Massey & Tourangeau, 2013; Peytchev, 2013). Fosnacht, Sarraf, Howe, and Perck (2017) reviewed 555 survey administration using NSSE between 2010 and 2012. These researchers did not find a difference between 5% response rates and 75% response rates in forming unbiased population estimates.

Procedures

After conducting the validity study for the instrument and subsequently revising items, I contacted the Honors College to confirm the number of potential participants and discuss how to recruit student participants. The Honors College distributed the survey link and information via their weekly newsletter to all enrolled students (n = 2,022) in the spring of 2017. The survey was built in the university's online survey system and consisted of three parts: introduction of survey, consent form and main research questions. When the participants accessed the survey, they were asked to read the instructions and provide their signatures to confirm their agreement in the first page. Then they had to sign up the consent form to proceed to the survey. I offered an incentive to promote the return rate. Among those who completed the survey, I randomly selected 15 participants to receive a gift card. As I requested, the Honors College sent a reminder to students who had not participated in the survey in the following weeks. 190 students began the online survey and 174 students completed the survey.

Data analyses

The quantitative data were collected from the online survey, which consisted of three parts: the academic talent development questionnaire, selected variables from the NSSE, and pre-college characteristics. All statistical data analyses were performed using SPSS version 24.0 (IBM Corp, 2016) and AMOS version 23.0 (Arbuckle, 2014).

Handling missing data. Cheema (2014) recommended that researchers should explain missing data and how to handle it properly when designing the data analysis. In this study, I selected mean substitution to replace the missing data with the mean of observed data for the particular variable. Although there are statistical limitations for using this method, only 0.89% of all items had not filled out and required the mean substitution.

Quantitative analysis 1. Confirmatory factor analysis was used to address the first research question of this study.

Research question #1. To redevelop an instrument of the academic talent development factors, two questions guiding the validation process are:

a) *Can a reliable measure of the honors students' perceptions and experiences of four components of the DMGT be developed for this study?*
b) *Do the items in the instrument adequately reflect the content dimensions of academic talent?*

To answer the first research question, a confirmatory factor analysis (CFA) on the redeveloped Academic Talent Development Factors Questionnaire was conducted to test the fit of the four-factor structure. To assess the model-fit, usually, researchers use the minimum fit function χ^2 to assess the goodness-of-fit (Brown, 2006). However, "since chi-square is N – 1 times the minimum value of the fit function, chi-square tends to be large in large samples if the model does not hold" (Jöreskog & Sörbom, 1993, p. 122). That is, the statistical significance of chi-square is influenced by the sample size is large, so chi-square itself is not a prominent measure of the model fit (Hu & Bentler, 1995). Researchers have proposed various goodness-of-fit measures to decrease a risk of using chi-square with various sizes of samples. Therefore, I used chi-square supplemented with additional fit indices: the comparative fit index (CFI; Bentler, 1990), the normed fit index (NFI: Bentler & Bonnet, 1980), the non-normed fit index (NNFI, Bentler & Bonnet, 1980), and the Root Mean Square error of approximation (RMSEA; Steiger & Lind, 1980). I used the following guidelines to evaluate a good model fit (from Brown, 2006; Hu & Bentler, 1999): (1) the CFI value is greater than .90; (2) the NFI value is greater than .90; (3) the NNFI value is greater than .95, and (4) the RMSEA value is close to .06 or below. Given the

reference to the χ^2, the RMSEA presents the model fit based on the population and CFI estimates the "covariances among all input indicators are fixed to zero" or no relationship among variables is posited (Brown, 2006, p. 84). The NFI evaluates the discrepancy between the χ^2 value of the null model and the χ^2 value of the target model. The fit is underestimated when the sample is small; whereas, the fit can be overestimated as researchers put additional parameters. The NNFI proposed a better fit to resolve this issue. Additionally, I analyzed factor loadings to evaluate whether the latent constructs are reliable to measure observed variables in this study. Finally, I used Cronbach's alphas to measure the internal consistency of the subscales regarding the whole sample.

Quantitative analysis 2. Discriminant analysis was used to address research question 2 of this study:

Research question #2: Is there a difference in pre-college characteristics of achieving and underachieving honors students?

Discriminant analysis allows the researcher to examine distinctive patterns between two or more groups in regard to several variables simultaneously. For the analysis to be effective, each case should be independent, and the group membership should be mutually exclusive (McLachlan, 2004). There are two types of discriminant analysis, descriptive and predictive. In this study, I used descriptive discriminant analysis (DDA), which allows researchers to specify discriminators to explain variance between groups. The groups in this study, achieving and underachieving honors students, are compared based on their pre-college characteristics of gender, ethnicity, and SAT/ACT scores. Response variables should be continuous variables and describe group difference. Discriminant analysis permits multiple response variables if two or more variables exist in addition to the number of grouping variables. According to Huberty and

Olejnik (2006), “In a group comparison problem, a grouping variable plays the role of an *independent* variable, whereas response variables play the role of *dependent* variables” (p. 11). The following section describe variables in this study

Grouping variable. The two achievement statuses were grouping variables. Discriminant analysis in this study aims to determine to what degree these ten response variables explain the variance between achieving and underachieving honors student groups. Once students enroll in honors programs, they must meet a 3.50 GPA to be in good standing. Students who have maintained this GPA are defined as achieving honors students in this study. If students fail to achieve the required GPA, they are placed on honors probation. These students were defined as underachieving honors students in this study. Variables were numerically coded as “1” for achieving honors students and “0” for underachieving honors students.

Response variables. Theoretically, response variables can differentiate between achieving and underachieving honors students when analyzed with DDA. The response variables were the pre-college characteristics in question two. Gender, ethnicity, and SAT/ACT scores are examined as the background variables of the honors students.

Gender. Female students were significantly more likely to complete honors requirements with a higher GPA than males in the previous studies (Achterberg, 2005; Campbell & Fuqua, 2008; Herron, 2013; McKay, 2009). In this study, variables were coded as “0” for male and “1” for female.

Ethnicity. There is a paucity of research currently available on Black and Latino honors students’ talent development. Regarding underachievement of students with gifts and talents, the existing literature contains studies that have primarily observed secondary and elementary education. Dummy variables were used to examine race. Each race (e.g., Asian/Pacific Islander,

Black, Caucasian, Hispanic, Native American), was coded as "1" and all others as "0" in turn (e.g., Black = 1 and All others = 0, White = 1 and All Others = 0).

SAT/ACT scores. SAT/ACT scores are used to select honors students. The research site did not provide cut-off scores for Honors College admission. Total SAT or ACT scores were coded as 1 to 5 (e.g., total SAT scores below 1800 = 1, 1800–1890 = 2, 1900–1990 = 3, 2000–2090 = 4, and above 2100 = 5; composite ACT scores below 23 = 1, 24–26 = 2, 27 29 = 3, 30–32 = 4, and above 33 = 5).

Quantitative analysis 3. Discriminant analysis was used to address research question 3 of this study:

Research question #3: To what extent do underachieving honors students differ from achieving honors students in terms of their perceptions of intellectual gifts, intrapersonal and environmental catalysts, and developmental process?

Grouping variable. The achievement status - achievement and underachievement - were the grouping variable.

Response variable. For the third research question, students' perceptions of their intellectual gifts, intrapersonal catalysts, environmental catalysts, and developmental process were the response variables. I inputted the survey items as individual variables.

Gifts. Five items in the revised instrument measured this variable on a 5-pont Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

Intrapersonal catalysts. Eleven items in the revised instrument measured this variable on a 5-pont Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

Environmental catalysts. Ten items in the revised instrument measured this variable on a 5-pont Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

Developmental process. Nine items in the revised instrument measured this variable on a 5-pont Likert scale, ranging from 1 = never to 5 = always.

Quantitative analysis 4. Discriminant analysis was also used to determine differences between two groups for the fourth research question:

Research question #4. To what extent do underachieving honors students differ from achieving honors students in their experiences with "good practices in undergraduate education" during their participation in the honors college?

Variables in the analysis. The grouping variables are achievement status: achieving = 1 and underachieving = 0. The three response variables with eight subscales, and the rating scale response options, are described in Table 7. The reliability evidence from the original study and this study will be presented in Chapter 4.

Phase Two: Qualitative Measure (Phenomenological Study)

The second phase of this study used a phenomenological approach to investigate students' lived experiences and perceptions of academic talent development. This approach allowed researchers to unpack the students' voices and understand how the participants similarly and differently perceived and reacted to a shared phenomenon (Kafle, 2011). Phenomenology studies "capture as closely as possible the way in which the phenomenon is experienced within the context in which the experience takes place" (Giorgi & Giorgi, 2003, p. 27). That is, phenomenological approach identified honors students' lived experience of their talent development process in the honors college (Creswell, 2014).

Participants and Procedures

Participants

The participants in the qualitative phase of this study were invited from among the participants in the quantitative phase. This nested relationship was designed to correspond to the sequential explanatory research design. Data from the qualitative phase provided further evidence from the participants' perspectives to support the quantitative findings, as "the sample members selected for one phase of the study represent a subset of those participants chosen for the other facet of the investigation" (Onwuegbuzie & Collins, 2007, p. 292).

Student participants

Creswell (2014) recommended a sample size between five and twenty-five participants to explore the lived experiences for phenomenological studies. Due to the small sample size in the quantitative phase, I planned to invite more than twenty-five students to ensure an adequate sample size in this phase. At the end of the survey, there was a check box to obtain students' agreement to participate in an in-depth interview. Seventy-six students were interested in the in-depth interviews. After the participants completed the survey, the data were analyzed briefly, the average of each subscale was calculated, and these results were ranked in descending order. I identified the twenty highest and lowest scoring students in the achieving group and five highest and lowest scoring students in the underachieving students from each subscale. Among these students, I identified twenty-five achieving students and seven underachieving students who are also interested in the in-depth interviews.

Procedures

I sent an information sheet with a consent form to invite these students to the interview phase of this study. Eleven achieving students and one underachieving student returned the

consent forms within two weeks. I sent a reminder to the rest of the students on the list and two more achieving students and six underachieving students returned the consent form. From these twenty students, twelve achieving students and four underachieving students participated in the interviews but one achieving student withdrew from this study for personal reasons. Thus, the interview data from 11 achieving students and four underachieving students were analyzed in this study. I began interviews in April 2017 and completed the last interview at the end of November 2017. Individual interviews last between 45 minutes and one hour. Table 8 includes participants' pseudonyms, gender, ethnicity, year in school, major and academic status.

Except for one student who dropped out of the interview, nine female students (60.0%) and six male students (40.0%) participated in the interviews. According to the participants' self-identification, nine students (60.0%) were White, four students (26.7%) were Asians, one student was Hispanic (6.67%) and one student (6.7%) was Black. Of the fifteen students interviewed, five (33.3%) were in the second year, eight (53.3%) were in the third year, and two (13.33%) were in their fourth year at the university. Participants were from nine programs: four (26.7%) were in mechanical engineering, three (20.0%) were in biomedical engineering, two (13.33%) were in biology and one (6.7%) each from biological engineering, chemical engineering, film studies, American Studies, pre-pharmacy, and special education. Nine participants (60.0%) were from engineering programs.

Table 8. *Demographic Information of the Student Interviewees and Interview Dates*

Pseudonym	Gender	Ethnicity	Year	Major	Status	Interview Date
Ajex	Male	White	Junior	Biological Engineering	Achieving	04/15/2017
Alexandra	Female	White	Sophomore	Pre-Pharmacy	Achieving	05/05/2017
Ava	Female	White	Junior	Biology	Achieving	06/06/2017
Billy	Male	White	Junior	Mechanical Engineering	Underachieving	07/21/2017
Darek	Male	White	Junior	Biomedical Engineering	Achieving	04/20/2017
Emily	Female	White	Sophomore	Mechanical Engineering	Achieving	05/03/2017
Harley	Female	White	Sophomore	Film Studies	Achieving	06/11/2017
Jackie	Female	Black	Junior	Chemical Engineering	Underachieving	10/03/2017
John Lee	Male	Asian	Junior	Mechanical Engineering	Underachieving	08/31/2017
Leanne	Female	Asian	Senior	Biomedical Engineering	Achieving	04/22/2017
Lob	Male	Asian	Sophomore	Special Education	Achieving	09/01/2017
Louis	Male	White	Sophomore	Mechanical Engineering	Achieving	05/03/2017
Maya	Female	White	Junior	American Studies	Achieving	04/24/2017
Sophia	Female	Asian	Senior	Biomedical Engineering	Achieving	09/01/2017
Silvia	Female	Hispanic	Junior	Biology	Underachieving	04/24/2017

Staff/Advisor participants. I added participants from staff/advisor positions to provide administrative perspectives on academic talent development in the honors college. Along with recruiting students, I sent an email request for survey participation to the honors college. Twenty staff and advisors in the honors college received the information sheet with the consent statement via an online newsletter. Two advisors and one director of student engagement returned the

consent form and took part in in-depth interviews. All participants self-identified as White. Their position, gender, ethnicity, years of work experience with honors students in higher education, and interview dates are represented in Table 9.

Table 9. *Demographic Information and Interview Dates of the Staff/Advisor*

Pseudonym	Position	Gender	Ethnicity	Years[a]	Interview Dates
Eric	Advisor	Male	White	6	November 31, 2017
Julie	Advisor	Female	White	1	November 14, 2017
Sarah	Staff	Female	White	4	November 15, 2017

Notes. [a]Years of work experience with honors students in higher education

I had in-depth interviews on a mutually agreed upon place on campus. At each interview, participants were asked to review the information sheet. Then, I explained the purpose of this study first and reminded participants that their participation was voluntary and that they could withdraw their participation at any time during the interview process. Prior to the interview, I offered the opportunity to ask any questions about the interview process and this study.

Interview protocol

All semi-structured interviews followed a specific and validated interview protocol (see Table 5 and 6). The interview protocol served as a guide to help the interviewer keep on track to address key points throughout the interview. Based on the participants' responses, I asked additional questions to help participants understand the terms and provide more in-depth information.

Recording and notes

Using a digital voice recorder, I collected all interview data. Additionally, I wrote field notes to highlight important details, with the participants' permission. I immediately transcribed the interview data after each interview.

Data Analysis

The qualitative analysis used for this study was the Stevick (1971)-Colaizzi (1973)-Keen (1975) technique as modified by Moustakas (1994, p. 121-122). This method provides a clear procedure for data collection and analysis, including the textural-structural description, to gain insights into the sample's perceptions of their lived experiences (Creswell, 2014). The data analysis is composed of six steps (Creswell, 2014; Moustakas, 1994). The analysis begins with a statement of the researcher's position to put aside the researcher's personal views about the investigated phenomena. Eliminating personal views improves the trustworthiness of the study. In the second step, the researcher identifies phrases and statements that are relevant to research questions. The researcher generates a complete list of these, and then eliminates overlapping phrases and statements. The third step is to categorize the key phrases and statements and to identify themes. Following that, the researcher develops a textural description that explains what participants experienced regarding the phenomenon. The fifth step is to write a structural description about the situations, i.e., how the participants interpreted their experience in the context. Finally, the researcher combines of the textural and structural descriptions to highlight key findings in the data analyses.

Coding and Themes

Participants' verbatim responses were recorded and transcribed. These raw qualitative data were organized and analyzed via the data analysis software NVivo for Windows version 11.0 (NVivo, 2012). The themes I developed portray the phenomenon from participants' perspectives within their context (Creswell, 2014). These themes include stories about how the participants experienced and interpreted the influence of intellectual gifts, intrapersonal catalysts, environmental catalysts, and the developmental process on their academic talent development within the honors college.

Validity and Trustworthiness

I used multiple strategies to systemically evaluate the validity and trustworthiness so as to attain rigorous validity and trustworthiness in conducting this study.

Validity

McMillan and Schumacher (2006) lists procedures that researchers can use to establish research validity: "prolonged and persistent field work, multi-method strategies, participants language verbatim accounts, low-inference descriptors, multiple researchers, mechanically recorded data, participant researcher, member checking, participant review, negative or discrepant data" (p. 28-29). For this study, I used digital recording, member checking, and participant language verbatim accounts to ensure validity and trustworthiness.

Member checking. The key method was member checking which is "way of finding out whether the data analysis is congruent with the participants' experiences" (Curtin & Fossey, 2007. p. 92). I transcribed interview data and sent each participant their transcript. I asked participants to review the transcript and correct the content if needed. Of the 16 student participants who participated in the interviews, one student participant chose to withdraw from

the study during the member checking process. Although I asked for an explanation, the participant did not reply to my request. I directly removed the audio file and transcript of this participant. The rest of the participants confirmed that they had reviewed their transcripts. I did not receive any requests to correct the content. As a result, I had interview files from 15 student participants and three staff participants.

Participant language and verbatim. I used the provision of a participants' statements in reporting my research findings to establish validity. By providing as much detail from students as possible, I hope to "transport readers to the setting and give the discussion an element of shared experiences" (Creswell, 2009, p. 191). This strategy provides evidence that the research findings are reliable and honest. In addition to providing context and content that increases the trustworthiness of the conclusions, the detailed description and statements of the participants' voice offers valuable insight into the phenomenon of the talent development of honors students.

Trustworthiness

Qualitative research requires a different approach to establishing trustworthiness than the methods used in quantitative research. To establish the "integrity and honesty of the research" (Polkinghorne, 2005, p. 144), this study attempted to attain the four-aspect model of trustworthiness that Guba (1981) suggested: (a) truth-value, (b) applicability, (c) consistency, and (d) neutrality.

Truth-value. Krefting (1991) explained that "truth value asks whether the researcher has established confidence in the truth of the findings for the subjects or informants in the context in which the study was undertaken" (p. 215). This truth value is usually gained from the investigation of human experiences as participants lived and interpreted their experiences. In this

study, truth-value was obtained by integrating the perspectives of the achieving students, underachieving students, and staff/advisors.

Applicability. This refers to "the degree to which the findings can be applied to other contexts and settings or with other group" (Krefting, 1991, p. 216). The goal of this research is not to establish statistical generalizations and provide a representative description of the academic talent development of university students with gifts and talents. However, this study offers a rich, detailed description of this phenomenon that is supplemented by the voices of the students themselves.

Consistency. This principle asserts that findings should be consistent across time and researchers if the study were replicated with similar participants and context. Qualitative research allows multiple realities in human experiences, so complete consistency cannot be obtained across participants. Thus, the best manner to evaluate consistency in qualitative research is to look for dependability (Polkinghorne, 1991). A dependable study is one where "variability can be ascribed to identified sources" (Polkinghorne, 1991, p. 216). In this study, consistency was achieved by ensuring that all data were treated equally and in a consistent manner in data collection and analysis, including any extreme cases.

Neutrality. This refers to "the degree to which the findings are a function solely of the informants and the conditions of the research, and not the result of other biases, motivations, and perspectives" (Krefting, 1991, p. 216). I, as a researcher, was not influenced by and did not influence the study. Furthermore, neutrality refers to the neutrality of data as well as the neutrality of the investigator (Lincoln & Guba, 1985). I thus developed and validated an interview protocol that minimized bias.

In conclusion, this study seeks to achieve four criteria of Guba's (1981) trustworthiness model: truth-value, applicability, consistency, and neutrality. In addition, the validity of the qualitative phase was increased through digital recording, member checking and detailed inclusions of participants' language in the qualitative findings.

Ethical Considerations. I followed the ethical standards set by the University's IRB for conducting research with human participants as subjects. Before the interview, I explained the goal of this study and assured the participants that they were protected, and their vulnerabilities taken seriously. During the study, I guarded the participants' privacy and the confidentiality of their information.

Student participants were asked to sign the consent form with their electronic signature prior to participation in the online survey. This form was posted on the first page of the online survey. There was a check box to ensure students' agreement to participate and their understanding of the information in the consent form. At the end of the survey, participants were asked whether they were willing to participate in the in-depth interview. Participants who responded to this request received a consent form for interview participation. In this form, I provided detailed information about the in-depth interview, such as time, recording, and risk to the participants. At the beginning of the interview, I read the consent form with the participants and asked them to sign it. Participants gave me a pseudonym before the interview. I used this pseudonym in recording interviews and data analysis; their pseudonyms were removed at the end of the data analysis.

CHAPTER 4. RESEARCH FINDINGS

The quantitative and qualitative data generated from this study are presented, analyzed, and interpreted in this chapter. The data were generated using variables that had the potential to discriminate achieving from underachieving honors students in a research-intensive public university in the Midwest. Findings were organized around each research question; therefore, all quantitative results are followed by qualitative results.

Phase 1: Quantitative Results

Research Question One

In developing an instrument for the academic talent development factors, the following two questions guiding the validation process are:

a) *Can a reliable measure of the honors students' perceptions and experiences of the four components of the DMGT be developed for this study?*
b) *Do the items in the instrument adequately reflect the content dimensions of academic talent?*

In the university survey platform, I created an online survey with thirty-five items. Participants were asked to rate their agreement or disagreement with each of the statements on a scale from 1 to 5, indicating strongly disagree to strongly agree.

Lycan (2009) investigated the construct validity of a four-factor model based on a strong theoretical platform. Using AMOS 23.0 (Arbuckle, 2014), I performed a confirmatory factor analysis to add a level of statistical precision to the hypothesized model, with a four-factor model and thirty-five items. The chi-squire goodness of fit test should be significant with $p > .05$ to present a good fit of the model to the data (Marcoulides & Harshberger, 1997). However, the

chi-square test is so sensitive to the sample size, so several fit indices were selected to construct the evidence for validity, as discussed in the previous section: chi-square goodness of fit, the Comparative Fit Index (CFI) (Bentler, 1990), the Normed Fit Index (NFI) (Bentler & Bonnett, 1980), and the Non-Normed Fit Index (NNFI) (Bentler & Bonett, 1980). Additional index of fit included in this study were the RMSEA (Steiger & Lind, 1980).

Table 10. *Goodness-of-fit statistics and their comparisons for two alternative measurement models*

Models	χ^2	*df*	CFI	NFI	NNFI	RMSEA
Model 1	1817.96	293	.84	.80	.79	.079
Model 2	1238.11	246	.87	.81	.80	.068

The fit indices for the four-factor model included chi-square = 1817.96 ($p < 0.001$), RMSEA = .079, SRMR = .073, CFI = .84, NFI = .80, and NNFI = .79. Factor loadings ranged from .32 to .65 (Table 11). The reliability coefficients were calculated using SPSS 24.0 (IBM Corp, 2016). The reliability coefficients for the four variables with 35 items ranged from .58 to .72 (gifts .58, developmental process .72, intrapersonal catalysts .68, and environmental catalysts .70) (Table 11). Since this model fit was not a satisfactory result, I reexamined factor loadings and standardized coefficients if each item is deleted. Then, I found eleven items (question 1, 2, 6, 7, 9, 15, 17, 18, 22, 23, 33) with factor loadings below .40 and checked their standardized coefficients if they are deleted. I eliminated one item at a time and returned the analysis after each change. Finally, I identified 24 items to refine items.

Table 11. *Factor Loadings, Standardized Coefficient, and Alpha Reliability*

Factor	Item	Loading	α if deleted[b]	α[c]
Gifts	1. My intellectual ability is something I born with[a]	.36	.72	.58
	2. No matter how intelligent I am, I am able to develop my academic talent[a]	.36	.75	
	3. I was selected for the honors college because I am intelligent	.43	.65	
	4. I feel I am gifted when I do something without mistakes	.48	.60	
	5. I will succeed in the honors college because I am intelligent	.49	.60	
Developmental Process	6. The honors courses are challenging which allows me to develop my academic talent[a]	.36	.89	.72
	7. The honors college courses have provided sufficient opportunities to develop my academic talent[a]	.38	.89	
	8. My critical thinking skills are developed through the content of the honors college courses	.65	.83	
	9. The honors college courses have helped me set up reachable goals[a]	.34	.90	
	10. I have been adequately challenged in the honors college courses	.43	.83	
	11. The honors college courses have been helpful to cultivate my future goals	.45	.82	
	12. I have found opportunities for future success by participating in the honors college courses	.57	.85	
	13. I have the ability to check my performance progress in the honors college	.53	.82	
	14. I am allowed to progress in my academic talent development at the pace I want to maintain	.43	.82	

Notes. [a]Deleted Item, [b]Standardized coefficients, [c]Cronbach's Alpha reliability

Table 11 continued

Factor	Item	Loading	α if deleted[b]	α[c]
Intrapersonal Catalysts	15. I am not able to prioritize tasks between my major requirements and honors college requirements[a]	.34	.88	.68
	16. I am willing to learn new things	.43	.80	
	17. I enjoy participating in various programs in the honors college that help me develop my academic talent[a]	.36	.90	
	18. I am actively participating in projects to develop my academic talent[a]	.36	.90	
	19. I am aware of my weaknesses when it comes to in developing my academic talent	.43	.78	
	20. I do put forth a great deal of personal effort to attain my performance level in the honors college	.48	.78	
	21. I prefer to work in situations that require a higher level of critical thinking skills	.49	.79	
	22. It is worthwhile to take risks to develop my academic talent[a]	.36	.89	
	23. Faith is an important factor that compels me to put efforts into achieving my goals[a]	.38	.89	
	24. I fear failure in the honors college	.65	.80	
	25. I feel that I have good characteristics to help me achieve my goals	.34	.79	
Environmental Catalysts	26. My peers in the honors college pay a large role in the development of my academic talent	.43	.76	.70
	27. Mentors in the honors college are integral in the development of my academic talent	.45	.69	
	28. I feel my parents/guardians contribute to my academic talent development	.57	.79	

Table 11 continued

Factor	Item	Loading	α if deleted[b]	α[c]
	29. High quality interactions with faculty members are integral to my academic talent development	.53	.69	.70
	30. I have a positive relationship with a mentor who contributes to my academic talent development	.43	.78	
	31. Discussions with honors advisor(s) are influential in my academic talent development	.34	.75	
	32. Interactions with faculty member(s) are influential in my academic talent development	.43	.76	
	33. Where I grew up affected the development of my academic talent[a]	.36	.80	
	34. My family's culture has influence on the development of my academic talent	.43	.73	
	35. Where I have lived on campus has affected my academic talent development	.48	.76	

As a result, I constructed the second model which consisted of twenty-four items: three items in gifts, six items in developmental process, six items in intrapersonal catalysts, and nine items in environmental catalysts. The fit indices for the second model was chi-square = 1238.11 ($p < 0.001$), RMSEA = .068, SRMR = .067, CFI = .87, NFI = .81, and NNFI = .80. Since the two models are non-nested, I did not compare chi-square value to assess a better fit. Considering other model indices, the second model showed improved fit (Table 10).

Excepting the gifts, the other three subscales in the first redeveloped model with 35 items had improved alphas compared with the version in Lycan's (2009) study (Table 12). The short version with 24 items had the highest reliability coefficients. Specifically, the alpha reliability coefficients of the subscales were as follows: gifts .68, developmental process .85, intrapersonal catalysts .87, and environmental catalysts .79. An acceptable result for Cronbach's alpha is frequently cited as equal to or greater than .70 (Nunnally, 1978). Lance, Butts, and Michels (2006), however, argued that an acceptable cut-off depends on the purpose of the study. Cho and Kim (2015) agreed that "one size does not fit all" (p. 218). Researchers use lower thresholds depending on their purpose. In the first edition of his book, Nunnally (1967) explained that Cronbach's values as low as .50 are adequate for exploratory research. Hair et al. (2010) suggested that values as low as .60 are acceptable for an exploratory study. Thus, the redeveloped instrument has acceptable internal consistency reliability estimates for the constructs (Gable, & Wolf, 1993; McCoach, Gable, & Madura, 2013).

Table 12. *Comparison of Reliability Estimates*

	Lycan (2009) Coefficient Alpha with 55 items	Redeveloped Model 1 Coefficient Alpha with 35 items	Redeveloped Model 2 Coefficient Alpha with 24 items
Gifts	.65	.58	.68
Developmental Process	.59	.72	.85
Intrapersonal Catalysts	.79	.68	.87
Environmental Catalysts	.70	.70	.79

Cronbach's alpha is a measure that "describes the extent to which all the items in a test measure the same concept or construct" (Tavakol & Dennick, 2011). It is "computed by

correlating the score for each scale item with the total score for each observation, and then comparing that to the variance for all individual item scores" (University of Virginia Library, "Using and Interpreting Cronbach's Alpha, n. d.). Table 13 presents the item analysis and alpha reliability of the redeveloped versions.

Table 13. *Response Percentages and Alpha Reliability Estimates*

		Response Percentage							*r* with	α if	Alpha
Variable	Item	1	2	3	4	5	Mean	SD	total[a]	deleted[b]	Reliability
Gifts	3	7	15	21	43	14	3.76	1.20	.46	.65	.68
	4	10	19	32	33	6	3.63	1.26	.49	.60	
	5	10	18	32	31	9	3.59	1.13	.52	.60	
Developmental	8	5	12	26	44	13	3.79	1.05	.43	.83	.85
Process	10	5	12	26	45	12	3.53	1.36	.68	.83	
	11	9	17	30	34	10	3.40	1.22	.68	.82	
	12	4	11	25	48	12	3.52	.89	.58	.85	
	13	5	12	27	40	16	3.49	.90	47	.82	
	14	7	11	24	37	21	3.81	1.11	58	.82	
Intrapersonal	16	5	12	27	45	11	3.91	1.02	.49	.80	.87
Catalysts	19	5	10	25	47	13	3.91	.84	.55	.78	
	20	6	13	21	44	16	3.72	.92	.68	.78	
	21	5	12	26	46	12	4.05	1.25	.65	.79	
	24	7	22	27	37	7	3.84	1.04	.69	.80	
	25	5	12	27	45	11	3.41	1.01	.58	.79	
Environmental	26	6	12	25	43	14	3.47	1.38	.55	.76	.89
Catalysts	27	9	16	29	34	12	2.98	1.35	.42	.69	
	28	7	22	25	38	8	3.57	1.02	.53	.79	
	29	5	12	25	48	10	3.79	1.01	.50	.69	
	30	6	15	23	44	12	3.26	1.06	.49	.78	
	31	9	23	20	44	4	2.66	1.29	.60	.75	
	32	7	22	25	37	9	4.03	1.12	.61	.76	
	34	6	17	30	38	9	3.87	1.02	.53	.73	
	35	9	22	23	37	9	3.62	1.16	.59	.76	

Notes. [a]correlations. [b]standardized coefficients

Intercorrelations among the factors ranged from .36 to .83. Intercorrelations between developmental process and intrapersonal catalysts (.82) were high. Intercorrelations among gifts and other three factors were below .40. (Table 14)

Table 14. *Intercorrelations among the factors*

	Gifts	Developmental Process	Intrapersonal Catalysts	Environmental Catalysts
Gifts	1.00	.37	.36	.37
Developmental Process		1.00	.83	.64
Intrapersonal Catalysts			1.00	.69
Environmental Catalysts				1.00

Research Question Two

Is there a difference in pre-college characteristics of achieving and underachieving honors students?

Self-reported demographic data include participants' achievement status, ethnicity, and gender. The demographic variable of student academic status differentiates students by sub-groups: achieving and underachieving students.

The total sample for the second research question (n = 174) consisted of two groups of achievement: achieving (n = 143) and underachieving students (n = 31). Discriminant analysis was run to uncover which statistically significant differences exist among the precollege characteristics of achieving and underachieving students. Discriminant function analysis permits unequal sample sizes, as long as the sample size of the smallest group exceeds the number of predictor variables.

Table 15. *Profile of Total Sample*

	Frequency (Percentage)		
	Achieving	Underachieving	Total
Status	143 (82.2)	31 (17.8)	174 (100.0)
Gender			
Female	90 (51.7)	23 (13.2)	113 (64.9)
Male	51 (29.3)	8 (4.6)	59 (33.9)
Not Confirmed	2 (1.2)	0	2 (1.2)
Totals	143 (82.2)	31 (17.8)	174 (100.0)
Year			
Freshman	73 (42.0)	1 (0.6)	74 (42.6)
Sophomore	37 (21.3)	14 (8.0)	51 (29.3)
Junior	12 (6.9)	12 (6.9)	24 (13.8)
Senior	21 (12.0)	4 (2.2)	25 (14.3)
Totals	143 (82.2)	31 (17.8)	174 (100.0)
Ethnicity			
African-American/Black	1 (0.6)	1 (0.6)	2 (1.2)
American Indian/Alaskan Native	1 (0.6)	0	1 (0.6)
Asian/Pacific Islander	29 (16.7)	3 (1.7)	32 (18.4)
European American/White	107 (61.4)	26 (14.9)	133 (76.3)
Hispanic/Latino	3 (1.7)	0	3 (1.7)
Other	2 (1.2)	1 (0.6)	3 (1.7)
Totals	143 (82.2)	31 (17.8)	174 (100.0)
SAT scores			
Below 1800	10 (5.7)	1 (0.6)	11 (6.3)
1800-1890	5 (2.8)	4 (2.3)	9 (5.1)
1900-1990	21 (12.1)	4 (2.3)	25 (14.4)
2000-2090	25 (14.4)	5 (2.8)	30 (17.2)
Above 2100	66 (38.0)	8 (4.6)	74 (42.6)
Totals	127 (73.0)	22 (12.6)	149 (85.6)
ACT scores			
Below 23	2 (1.2)	0	2 (1.2)
24-26	6 (3.4)	1 (0.6)	7 (4.0)
27-29	4 (2.3)	0	4 (2.3)
30-32	38 (21.8)	8 (4.6)	46 (26.4)
Above 33	63 (36.2)	12 (6.9)	75 (43.1)
Totals	113 (64.9)	21 (12.1)	134 (77.0)

As a “rule of thumb” (Nunally, 1978, p. 421), the subject to item ratio of 5 to 1 is recommended for discriminant analysis. The maximum number of independent variables is $n - 2$, where n is the sample size. The smallest sample size for each group should include at least 20 observations (Meyers, Garnst, & Guarino, 2016).

Among the participants, a greater percentage was female than male. There were two achieving students (1.1%) who did not confirm their gender; whereas none of the underachieving students self-identified as non-confirmed. All years of students participated in this study, from freshmen to seniors. Freshmen accounted for the largest group among all the students. Sophomores constituted the second largest group, and seniors represented the third largest group of the honors students. Juniors represented the smallest group of honors students. Within the achieving student group, the largest year represented was freshmen. The second largest group was sophomores, and the third largest group was seniors. The smallest group was juniors. Within the underachieving student group, sophomores represented the largest year; whereas one freshman participated in this study. 12 juniors represented 38.7% and four seniors represented 12.9% of the total underachieving student sample.

The ethnic profile of the total sample is shown in Table 15. White was the most prevalent ethnicity for the subsample of both achieving and underachieving students. There was no one who self-identified as American Indian or Hispanic in the underachieving group (see Table 15). This indicated that the achieving group was more diversified than the underachieving group in this study.

Of the 174 students, 149 students self-reported their composite SAT scores. The achieving student group (5.7%) had a greater percentage of students who earned a score below 1800 than underachieving student group (.6%). In addition, 134 students self-reported their ACT

scores. Students who earned a score above 33 represented 43.1% (n = 75). Achieving student group had a greater percentage (1.2%) of students who earned below 23 than underachieving student group (0%) of the total sample.

Discriminant analysis

Corresponding to the second research question, discriminant analysis was used to analyze differences between achieving and underachieving student groups with respect pre-college characteristics as follows: gender, ethnicity, and SAT/ACT scores.

The results of the discriminant analysis conducted for achieving and underachieving honors students yielded one discriminant function (see Table 16), which was not statistically significant (*Wilks'* λ = .974, χ^2 = 2.716, df = 4, p = .606). A Wilk's Lambda of 1.00 is when the observed group means are equal. It means that the variance of the dependent variables does not contribute to discriminate function. Thus, the lower the value of Wilks' Lambda, the greater discriminatory ability of the function. (Huberty & Olenjnik, 2006). In this study, Wilks' Lambda was .974, very close to 1, which means that the dependent variables had a negligible effect on group means. The associated chi-square statistic was used to test the hypothesis. The statistical hypotheses associated with the second research question are:

H_0: There is no significant discriminating power in the three pre-college characteristics between achieving and underachieving student groups.

H_1: There is a significant discriminating power in the three pre-college characteristics between achieving and underachieving student groups.

Table 16. *Wilks' Lambda and Canonical Correlation between Achieving and Underachieving Groups*

Function	*Wilks'* λ	χ^2	*df*	*p*	Canonical Correlation (R_c)	R_c^2
1	.974	2.716	4	.606	.160	2.6%

According to the results, the null hypothesis was not rejected at 95% level of significance. The canonical correlation is a measure of correlation between the discriminant scores and the levels of the dependent variables (Huberty & Olenjnik, 2006). In this research question, the canonical correlation was .160. The square of the canonical correlation is equivalent to eta-squared and was .026. Thus, only 2.6% of the variance in achievement status was accounted for by the discriminant function composed of pre-college characteristics. As a result, there was no significant discriminatory difference in the pre-college characteristics of achieving and underachieving honors students in this study.

Research Question Three

To what extent do underachieving honors students differ from achieving honors students in terms of their perceptions of intellectual gifts, intrapersonal and environmental catalysts, and developmental process?

I used discriminant analysis to answer the third research question and determine differences between the two student groups' perceptions and experiences of their academic talent development. Discriminant analysis provided evidence on the differences between achieving and underachieving honors student groups with regard to the four components of DMGT. The academic talent development factor survey with 24 items was used to answer question three.

Descriptive data

A descriptive summary of the achieving and underachieving students for each of the variables is presented in Table 17. Whereas the achieving student group showed the highest mean on developmental processes (3.58) and the lowest mean on gifts (3.28), the underachieving student group showed the highest mean on gifts (3.09) and the lowest mean on environmental processes (2.83). All means of the achieving group were over 3.0 but the underachieving group has means under 3.0 on three variables: developmental processes, intrapersonal catalysts, and environmental catalysts. That is, underachieving students are characterized with lower means for the influences of developmental processes, intrapersonal catalysts, and environmental catalysts on academic talent development than the achieving students in this study.

Table 17. *Mean Comparisons for Achieving and Underachieving Student Groups*

Variable	Achieving (n = 143)		Underachieving (n = 31)		
	M	*SD*	*M*	*SD*	d^a
Gifts	3.28	.81	3.09	.87	.22
Developmental Process	3.58	.64	2.86	.54	.93
Intrapersonal Catalysts	3.45	.71	2.99	.61	.69
Environmental Catalysts	3.37	.67	2.83	.74	.76

Notes. [a]Cohen's *d*

Cohen's *d* between the two groups was calculated to examine the differences in mean scores, to estimate the range of values, and to examine the strengths of the relationships among variables Cohen's d statistics were identified by the effect size levels (Cohen, 1998): small effect ($|.2| \leq d \leq |.5|$), medium effect ($|.5| \leq d \leq |.8|$), and large effect ($d > |.8|$). The largest difference

in mean scores for the four variables was found in the variable of developmental process; whereas the variable of gifts included the smallest mean difference. According to Cohen's rule, the developmental process variable (d = |.93|) showed a large effect size, the environmental catalysts (d = |.76|) and intrapersonal catalysts (d = |.69|) variables had a medium effect size, and the gifts variable (d = |.22|) showed a small effect size. That is, underachieving students significantly different perceptions and experiences with the effects of developmental process from their achieving peers.

Discriminant analysis for perceptions of academic talent development

The statistical hypotheses associated with the third research question are:

H_0: There is no significant discriminating power in the four components of DMGT between achieving and underachieving student groups.

H_1: There is a significant discriminating power in the four components of DMGT between achieving and underachieving student groups.

There were two groups, so one discriminant function was created (*Wilks'* λ = .826, χ^2 = 32.480, df = 4, p <.001). Thus, the null hypothesis was rejected. The results showed a Wilks' Lambda of .826, which is transformed to a chi-square value of 32.480 with four degrees of freedom, where the observed significance level was less than 001. This confirmed the alternative hypothesis that the four components of DMGT took significant roles in separating achieving and underachieving student groups. Specifically, the achieving students evaluated the effects of intrapersonal catalysts, environmental catalysts, and developmental process on their talent development higher than their underachieving peers did.

The canonical correlation was .417. The square of the canonical correlation is equivalent to eta-squared and was .173. Thus, the discriminant function that combines four variables

explains 17% of the variance between achieving and underachieving student groups (see Table 18). Although the discriminant function of the combined variables was significant in separating the two groups, the effect size (.173) was small (Cohen, 1988) because the means of the two groups differ by only .173 standard deviations.

Table 18. *Wilks' Lambda and Canonical Correlation between Achieving and Underachieving Groups*

Function	*Wilks'* λ	χ^2	*df*	*p*	Canonical Correlation (R_c)	R_c^2
1	.826	32.480	4	< .001	.417	17%

In this study, *Wilks' Lambda* is .826, close to 1, which is supported by the trivial effect size. Based on linear combinations of four predictor variables (i.e., gifts, developmental process, intrapersonal, and environmental catalysts), underachieving students held different views than achieving students when evaluating the levels of effects of these four variables on their academic talent development. The two groups of students perceived a similar level of effect for intellectual gifts, but underachieving students evaluated intrapersonal catalysts, environmental catalysts, and developmental process as having less influence on their talent development than achieving students. This difference, however, is small.

The result of the group mean equality test showed significant differences on the means of four variables—gifts, intrapersonal catalysts, environmental catalysts, and developmental process—between achieving and underachieving student groups (Table 19).

Table 19. *Test of Equality of Group Mean Between Achieving and Underachieving Students*

Variables	*F*	*Wilks' λ*	*df1*	*df2*	*p*
Gifts	1.039	.994	1	172	.310
Developmental Process	21.158	.890	1	172	<.001
Intrapersonal Catalysts	7.361	.959	1	172	.007
Environmental Catalysts	14.128	.924	1	172	<.001

The *F* tests were significant for developmental process (*Wilks' λ* = .890, $F_{1, 172}$ = 21.158, *p* <.001), intrapersonal catalysts (*Wilks' λ* = .959, $F_{1, 172}$ = 7.361, *p* = .007), and environmental catalysts (*Wilks' λ* = .924, $F_{1, 172}$ = 14.128, *p* < .001). Again, there is no difference between the two groups on gifts (*Wilks' λ* = .994, $F_{1, 172}$ = 1.039, *p* = .310). Additionally, the smaller the Wilks lambda, the more the variable contributes to the discriminant function. Therefore, developmental process was the most significant variable separating the two groups of students, whereas, the variable gifts did not contribute to the discriminate function. That is, the underachieving student group was separated from the achieving student group by developmental process, intrapersonal catalysts, and environmental catalysts.

The next step of discriminant analysis is checking for the relative importance of each independent variable. Table 20 has three columns. The first column presents the response variables in this analysis. The "Standardized Canonical Coefficient" in the second column indicates the variable's contribution to the discriminant function between the two groups. In this analysis, developmental processes had a high positive weight (.529). Environmental catalysts (.320) and intrapersonal catalysts (.125) also had positive weights. Finally, the gifts variable had the smallest weight (.032).

Table 20. *DMGT Variables in Discriminant Analysis*

Variables	Standardized Canonical Coefficient	Structure Coefficient
Gifts	.032	.293
Developmental Process	.529	.954
Intrapersonal Catalysts	.125	.551
Environmental Catalysts	.320	.464

Based on these weights, the relative importance of the variables can be summarized in decreasing order of rank, as follows: developmental processes, environmental catalysts, intrapersonal catalysts, and gifts. The third column presents the results from the structure matrix table. These values demonstrate the correlation between variables with the discriminant function score. These correlations thus are conceptually analogous to factor loadings in factor analysis. Structure coefficients that are ≥ .3 are considered meaningful (Kwak & Kim, 2017). Developmental process, intrapersonal catalysts, and environmental catalysts had coefficients that were ≥ .3 in the discriminant function. However, as in previous analyses, the gifts variable was not significant.

Next step was to verify the predictive capacity of the discriminant function. The classification results table (Table 21) includes the number and percentage of cases that were correctly assigned to their groups. It has been observed that 84.5% (n = 147) of data was correctly classified as achieving and underachieving student groups by the discriminant function. Specifically, 98.6 percent (n = 141) of the cases with achieving students were correctly classified, and 80.6% (n = 25) of the cases with underachieving students were correctly classified. This describes that the four variables had a higher level of predictive power for the cases with achieving students than underachieving students. This result indicates the capacity of

the linear combination of the four variables in the discriminant function. That is, when combined, the four variables have the capacity to separate the achieving and underachieving student groups.

As a result, underachieving students were characterized with lower means on four of the variables than achieving students. The group mean difference on the variable of gifts did not have discriminant power, but the group mean differences on the other three variables did have discriminant power. That is, underachieving students reported that they had fewer positive experiences with intrapersonal catalysts (e.g., volition, goal-orientation), environmental catalysts (e.g., interactions with parents or faculty, peer effects), and developmental process (e.g., curriculum, extracurricular activities). However, the effect size of the discriminant function of these three variables combined was small.

Table 21. *Classification Result*

		Predicted Group Membership		
		Achieving	Underachieving	Total
Original	Achieving	98.6%	1.4%	100.0
	Underachieving	19.4%	80.6%	100.0

Research Question Four

To what extent do underachieving honors students differ from achieving honors students in their experiences with "good practices in undergraduate education" during their participation in the honors college?

Three variables with eight subscales were used to examine participants' experiences with *good practices* in the honors college. I summarized variables and subscales in Table 7 in the previous chapter to provide clear vision of the structure of the variables. Table 22 includes

specific items, means, standard deviations, and alpha reliability estimates of the original study and the current study. In the present study, except for the subscale, challenging classes and high faculty expectations (α = .53), all subscales had alpha internal consistency estimates of .70 or greater.

Descriptive data

The achieving and underachieving student groups had the largest means on the first subscale of good teaching and high-quality interactions with faculty (see Table 23). For the diversity experiences variable, the underachieving student group reported a greater mean (3.14) than the achieving student group (2.99). These are also the lowest means among the subscales for both groups. This variable had the largest standard deviations; .85 for the achieving student group and .93 for the underachieving student group. This result indicated that these students were exposed to a wide array of experiences about the cultural diversity and social issues. As a result, underachieving students were characterized by higher levels of exposure to academic challenge and high expectations, as well as by diversity experiences.

In terms of the group mean difference, Cohen's *d* was calculated and showed a medium effect size with the good teaching and high-quality interactions with faculty variable (*d* = |.44|). Additionally, there was a trivial level of effect size with the variable of diversity experience (*d* = |.16|) and the variable of academic challenge and high expectations (*d* = |.08|). That is, the mean difference in the good teaching and high-quality interactions with faculty between the two groups was considerable. However, the difference was small in terms of academic challenge and high expectations and diversity experiences (Table 23).

Table 22. *Specific Items, Means, Standard Deviations, and Alpha Reliability Estimates*

Variable	Subscale	Item	*M*	*SD*	Original Study (α)	Present Study (α)
Good Teaching and High-Quality Interactions with Faculty (GT)	Faculty Interest in Teaching and Student Development (FI)	1. Most faculty in the honors college with whom I have had contact genuinely are interested in students	4.29	.63	.85	.79
		2. Most faculty in the honors college with whom I have had contact are interested in helping students grow in more than just academic areas	4.03	.78		
		3. Most faculty in the honors college with whom I have had contact are outstanding teachers	3.87	.92		
		4. Most faculty in the honors college with whom I have had contact are genuinely interested in teaching	4.28	.64		
		5. Most faculty in the honors college with whom I have had contact are willing to spend time outside of class to discuss issues of interest and importance to students	4.16	.76		
	Prompt Feedback (PF)	6. Have faculty informed you of your level of performance in a timely manner?	3.68	.74	.68	.80
		7. Have faculty checked to see if you learned the material well before going on to new material?	3.72	.78		
		8. Have you received prompt written or oral feedback from faculty on your academic performance?	3.64	.90		

Table 22 continued

Variable	Subscale/ Question	Item	*M*	*SD*	Original Study (α)	Present Study (α)
Good Teaching and High-Quality Interacti-ons with Faculty (GT)	Quality of Non-Classroom Interactions with Faculty and Advisor/ Staff (QN) (Q 9-Q13) To what extent do you agree that:	9. Your non-classroom interactions with faculty have had a positive influence on your personal growth, values, and attitudes?	3.78	.74	.85	.77
		10. Your non-classroom interactions with faculty have had a positive influence on your intellectual growth and interest in ideas?	3.45	.76		
		11. Your non-classroom interactions with faculty have had a positive influence on your career goals and aspirations?	2.90	1.31		
		12. You have developed a close, personal relationship with at least one faculty member since coming to the honors college?	3.92	.78		
		13. You are satisfied with the opportunities to meet and interact informally with faculty members?	3.89	.78		
	Overall Exposure to Clear and Organized Instruction (TC) (Q 14-Q23) How often did your faculty:	14. Make good use of examples and illustrations to explain difficult points?	3.92	.78	.89	.76
		15. Effectively review and summarize the material?	4.06	.61		
		16. Interpret abstract ideas and theories clearly?	3.85	.93		
		17. Interpret abstract ideas and theories clearly?	4.03	.79		
		18. Give assignments that helped in learning the course material?	4.49	.77		
		19. Present material in a well-organized way?	4.03	.79		
		20. Come to class well prepared?	4.19	.85		
		21. Clearly explain course goals and requirements?	4.01	.85		
		22. Have a good command of what they were teaching?	4.41	.78		

Table 22 continued

Variable	Subscale	Item	*M*	*SD*	Original Study (α)	Present Study (α)
Academic Challenge and High Expect-ations (AC)	Acade-mic Challen-ge and Effort (AE)	23. Have you worked harder than you thought you could to meet an instructor's standards or expectations?	3.92	.78	.88	.82
		24. Have you asked questions in class or contributed to class discussions?	4.06	.61		
		25. Have you made a class/conference presentation?	3.85	.93		
		26. Have you prepared two or more drafts of a paper or assignment before turning it in?	4.03	.79		
		27. Have you come to class without completing readings or assignments?	4.49	.77		
		28. To what extent does your honors faculty emphasize spending significant amounts of time studying and on academic work?	4.03	.79		
		29. To what extent during the school year did your examinations or projects challenge you to do your best work?	4.19	.85		
	Challen-ging Classes and High Faculty Expect-ations (CH)	30. Have faculty asked challenging questions in class?	4.01	.85	.64	.53
		31. Have faculty asked you to show how a particular course concept could be applied to an actual problem or situation?	3.61	.78		
		32. How often have faculty asked you to point out any fallacies in basic ideas, principles, or points of view presented in the course?	3.36	.97		
		33. How often have faculty asked you to argue for or against a particular point of view?	3.37	.92		
		34. How often have faculty challenged your ideas in class?	3.31	.87		
		35. How often have students challenged each other's ideas in class?	3.37	.85		

Table 22 continued

Variable	Subscale	Item	*M*	*SD*	Original Study (α)	Present Study (α)
Academic challenge and high expectations (AC)	Integrating Ideas, Information, and Experiences (IE)	36. Have you worked on a paper or project that required integrating ideas or information from various sources?	3.37	.76	.76	.76
		37. Have you put together ideas or concepts from different courses when completing assignments or during class discussions?	3.85	.86		
		38. Have you discussed ideas from your readings or classes with others outside of class (students, family members, honors advisors, residence hall R.A, etc.)?	3.85	.99		
		39. Have your coursework or projects emphasized synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships?	3.61	.86		
		40. Have your coursework or projects helped you make judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions?	3.57	.84		
Diversity Experiences (DE)	Diversity Experiences (DE)	41. Have you attended a course or program on a current political/social issue?	3.71	1.32	.65	.81
		42. Have you participated in a racial or cultural awareness workshop or program?	3.63	1.34		
		43. Have you had serious discussions with honors college staff (e.g., residence hall staff, counselor, student council, honors advisor, or honors mentors) whose political, social, or religious opinions were different from your own?	2.60	1.29		
		44. Have you had serious conversations with students of a different race or ethnicity than your own?	3.70	.92		
		45. Have you had had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values?	3.63	.86		

Table 23. *Mean Comparisons for Achieving and Underachieving Groups*

Variables	Achieving (n = 143)		Underachieving (n = 31)		
	M	*SD*	*M*	*SD*	*d*
Good Teaching and High-quality Interactions with Faculty (GT)	3.94	.39	3.74	.50	.44
Academic Challenge and High Expectations (AC)	3.46	.47	3.51	.65	.08
Diversity Experiences (DE)	2.99	.85	3.14	.93	.16

Notes. [a]Cohen's *d*

Discriminant analyses for variables in Good Practices

The statistical hypotheses associated with the fourth research question were:

H_0: There is no significant discriminating power in the three subscales of the "good practice in undergraduate education" between achieving and underachieving student groups.

H_1: There is a significant discriminating power in the three subscales of the "good practice in undergraduate education" between achieving and underachieving student groups.

One discriminant function resulted, and it was statistically significant: *Wilks'* λ = .938, χ^2 (3, N = 174) = 2, p = .012. Thus, the null hypothesis was rejected. The discriminant function did significantly separate the achieving student group and underachieving student group with respect to those students' exposure to good teaching and high expectations, academic challenges, and diverse interaction (see Table 24). The canonical correlation was .249, which indicated a small effect size (Cohen, 1988). The squared canonical correlation value explained that 6.2% of

the variation in the construct was accounted for by the three variables of "good practices in undergraduate education". Like the third research question, effect size was small.

Table 24. *Wilks' Lambda and Canonical Correlation between Achieving and Underachieving Groups*

Function	*Wilks'* λ	χ^2	*df*	*p*	Canonical Correlation (R_c)	R_c^2
1	.938	10.932	3	.012	.249	6.2%

The test of group mean equality between achieving and underachieving student groups was used to determine whether there are any significant differences with regard to each of the variables between the groups. The result indicated that one variable, good teaching and high-quality interactions with faculty, significantly predicted achievement status (see Table 25). The *F* tests were significant for the variable of good teaching and high-quality interactions with faculty (*Wilks'* λ = .969, $F_{1, 172}$ = 5.563, p = .019).

Table 25. *Test of Equality of Group Mean Between Achieving and Underachieving Students*

Variables	*F*	*Wilks'* λ	*df1*	*df2*	*p*
Good Teaching and High-Quality Interactions with Faculty (GT)	5.563	.969	1	172	.019
Academic Challenge and High Expectations (AC)	3.283	.998	1	172	.055
Diversity Experiences (DE)	.698	.996	1	172	.405

However, there was no statistically significant difference between two groups on the variable of academic challenge and high expectations (*Wilks'* λ = .998, $F_{1, 172}$ = 3.283, p = .055)

and the variable of diversity experiences (*Wilks'* λ = .996, $F_{1, 172}$ = .698, p = .405). That is, underachieving student group characterized with their experiences with good teaching and high-quality interactions with faculty from achieving student group in this study.

In addition, I examined the relative importance of each of the variables in explaining group difference. The standardized discriminant function coefficients for the three variables were good teaching and high-quality interactions with faculty (.699), academic challenge and high expectations (.258), and diversity and experience (-.248). Based on these weights, the relative importance variables can be summarized in decreasing order of rank, as follows: good teaching and high-quality interactions with faculty, academic challenge and high expectations, and diversity experiences. The variable of good teaching and high-quality interactions with faculty had the largest influence to separate achieving and underachieving student groups (see Table 26). The variable of good teaching and high-quality interactions with faculty had a structure coefficient that is >.3. This indicates a meaningful correlation with the discriminant function.

Table 26. *Discriminant Function Analyses Results*

Variables	Standardized Canonical Coefficient	Structure Coefficient
Good Teaching and High-Quality Interactions with Faculty (GT)	1.182	.699
Academic Challenge and High Expectations (AC)	.672	.258
Diversity Experiences (DE)	-.273	-.248

The classification table explains how accurately the discriminant function works. Using the three subscales, the discriminant analysis correctly classified 59.8% (n = 104) of the cases

(see Table 27). Specifically, 58.0% (*n* = 83) of the cases in the achieving student group and 67.7% (*n* = 21) of the cases in the underachieving student group were correctly classified.

Table 27. *Classification Result*

		Predicted Group Membership		
		Achieving	Underachieving	Total
Original	Achieving	58.0%	42.0%	100.0
	Underachieving	32.3%	67.7%	100.0

Discriminant analyses results indicated that the underachieving student group was separated from the achieving student group with respect to the three variables of good practices in undergraduate education in this study: good teaching and high-quality interactions with faculty, academic challenge and high expectations, and diversity experiences. Underachieving students reported less exposure to these practices than achieving students in this study. In terms of the variable of diversity experiences, both groups' experiences with different cultures varied from never to always. These three variables had a significant discriminant function between achieving and underachieving student groups, with trivial effect size. The good teaching and high-quality interactions with faculty variable had a greater discriminating ability than the other variables, with the significant mean difference between groups. The next step is to examine the discriminant function of the subscales for two of the variables: good teaching and high-quality interactions with faculty, and academic challenge and high expectations. The variable of diversity experiences did not have subscales.

Discriminant functions of the subscales: Good teaching and high-quality interactions with faculty.

The first variable, good teaching and high-quality interactions with faculty, consisted of four subscales: faculty interest in teaching and student development, prompt feedback, quality of non-classroom interactions with faculty, and teaching clarity and organization.

Descriptive data and mean comparisons of subscales. The mean scores of the subscales ranged from 3.58 to 4.15 in the achieving group and from 3.33 to 3.91 in the underachieving group (see Table 28). Both groups had the highest mean on the variable of faculty interest in teaching and student development and the lowest mean on the variable of quality of non-classroom interactions with faculty and advisor/staff. However, the variable of quality of non-classroom interactions with faculty and advisor/staff had the largest standard deviations among four subscales. The standard deviation measures the distance from the mean and is affected by outliers. This indicates that the responses to this variable varied widely. That is, students' experiences of non-classroom interactions with faculty and advisor/staff were diverse. The means of all variables were less than 4.0 for the underachieving student group and were lower than the mean for the achieving student group. Additionally, the underachieving student group had larger standard deviations than the achieving student group on all subscales except for prompt feedback. These results indicated that the underachieving student group may have fewer positive experiences with the influences of these four subscales on their development.

Table 28. *Mean Comparisons for Achieving and Underachieving Groups*

Variables	Achieving (n = 143)		Underachieving (n = 31)		
	M	*SD*	*M*	*SD*	d^a
Faculty Interest in Teaching and Student Development (FI)	4.15	.48	3.91	.54	.47
Prompt Feedback (PF)	3.69	.65	3.67	.49	.03
Quality of Non-Classroom Interactions with Faculty and Advisor/Staff (QN)	3.58	.69	3.33	.71	.36
Overall Exposure to Clear and Organized Instruction (TC)	4.09	.42	3.89	.69	.35

Notes. [a]Cohen's *d*

Cohen's *d* indicated that the two groups' means of the variable of prompt feedback (*d* = |.03|) was small because they did not differ by 0.1 standard deviation. The faculty interest in teaching and student development had medium effect size (*d* = |.47|) for the achieving and underachieving student groups. Additionally, the variable of quality of non-classroom interactions with faculty and advisor/staff (*d* = |.36|) and the variable of overall exposure to clear and organized instruction (*d* = |.35|) had medium effect size to explain variance between the two groups.

Discriminant analysis. In the variable of good teaching and high quality of interactions with faculty, one discriminant function resulted (see Table 29). It was statistically significant: *Wilks'* λ = .946, χ^2 = 9.421, *df* = 4, *p* = .048. The null hypothesis that there is no discrimination between two groups was rejected at 95% level of significance with α = .05. Canonical correlation was .232 and the eta-squared .053. Thus, these subscales explained 5% of the variance in achievement status. This result indicates that the four subscales can separate the two groups of students, but the effect size was small in explaining differences.

Table 29. *Wilks' Lambda and Canonical Correlation between Achieving and Underachieving Groups*

Function	*Wilks' λ*	χ^2	*df*	*p*	Canonical Correlation (R_c)	R_c^2
1	.946	9.421	4	.048	.232	5.3%

The test of the group mean equality between achieving and underachieving student groups indicated that two variables. Faculty interest in teaching and student development showed a significant result. (*Wilks' λ* = .967, $F_{1, 172}$ = 5.841, *p* = .017)

Additionally, the variable of quality of non-classroom interactions with faculty and advisor/staff (*Wilks' λ* = .975, $F_{1, 172}$ = 4.332, *p* = .039) significantly predicted achievement status (see Table 30). That is, underachieving and achieving student groups showed differences with respect to their exposure to faculty interest in teaching and student development (FI) and quality of non-classroom interactions with faculty and advisor/staff (QN).

Table 30. *Test of Equality of Group Mean Between Achieving and Underachieving Students*

Variables	*F*	*Wilks' λ*	*df1*	*df2*	*p*
Faculty Interest in Teaching and Student Development (FI)	5.841	.967	1	172	.017
Prompt Feedback (PF)	.031	.998	1	172	.861
Quality of Non-Classroom Interactions with Faculty and Advisor/Staff (QN)	4.332	.975	1	172	.039
Overall Exposure to Clear and Organized Instruction (TC)	3.451	.980	1	172	.065

Among the subscales, the variable of faculty interest in teaching and student development had a large positive weight (.645), and the quality of non-classroom interactions with faculty and advisor/staff (.533), and exposure to clear and organized instruction (.261) had positive weights; whereas, prompt feedback had a negative weight (-.589) (see Table 31). This result indicates the

variable of faculty interest in teaching and student development was the main factor differentiating the group of achieving students from their underachieving peers.

Table 31. *Discriminant Function Analyses Results*

Variables	Standardized Canonical Coefficient	Structure Coefficient
Faculty Interest in Teaching and Student Development (FI)	.645	.972
Prompt Feedback (PF)	-.589	.056
Quality of Non-Classroom Interactions with Faculty and Advisor/Staff (QN)	.533	.593
Overall Exposure to Clear and Organized Instruction (TC)	.261	.265

Classification results showed that 65.5% (n = 114) of the original cases were correctly classified (Table 32). 68.5% (n = 98) of the cases in the achieving student group and 51.6% (n = 16) of the cases in the underachieving student group correctly classified. Discriminant analyses results indicated statistically significant difference between the achieving and underachieving student groups with respect to four subscales: faculty interest in teaching and student development, prompt feedback, quality of non-classroom interactions with faculty and advisor/staff, and overall exposure to clear and organized instruction. Although underachieving students were characterized with less exposure to these four subscales, the effect size in explaining variances was small. Specifically, underachieving students' positive and negative experiences with these subscales were more variable than achieving students' experiences. Faculty interest in teaching and student development had the strongest discriminating ability among these subscales.

Table 32. *Classification Result*

		Predicted Group Membership		
		Achieving	Underachieving	Total
Original	Achieving	68.5%	31.5%	100.0
	Underachieving	48.4%	51.6%	100.0

Discriminant functions of the subscales: Academic challenge and high expectations.

The second variable was academic challenge and high expectations with three subscales: academic challenge and effort, challenging classes and high faculty expectations, and integrating ideas, information, and experiences.

Descriptive data and mean comparisons of subscales. The descriptive data analyses found that integrating ideas, information, and experiences (IE) had the largest means in both groups. Mean scores on the subscales ranged between 3.07 and 3.66 in the achieving group and between 3.31 and 3.67 in the underachieving group (Table 33). The underachieving group showed larger means than the achieving group on the all subscales of this variable. All subscales had means below 4.0. These results indicated that underachieving students had more experiences than their peers with academic challenge and effort, challenge classes and high faculty expectations, and integrating ideas, information, and experiences. In addition, Cohen's *d* was calculated the effect size, using the means and standard deviations of the two groups. According to Cohen's rule (1988), the variable of academic challenge and effort and the variable of challenge classes and high faculty expectations had medium effect size to account for variance between the achieving and underachieving groups.

Table 33. *Mean Comparisons for Achieving and Underachieving Groups.*

Variables	Achieving (n = 143)		Underachieving (n = 31)		
	M	*SD*	*M*	*SD*	d^a
Academic Challenge and Effort (AE)	3.07	.63	3.31	.55	.41
Challenging Classes and High Faculty Expectations (CH)	3.23	.68	3.46	.60	.36
Integrating Ideas, Information, and Experiences (IE)	3.66	.62	3.67	.63	.01

Notes. [a]Cohen's *d*

Discriminant analysis. Discriminant analysis yielded significant results on all three subscales—academic challenge and effort (AE), challenging classes and high faculty expectations (CH), and integrating ideas, information and experiences (IE). The results included *Wilks'* λ = .945, χ^2 = 9.677, *df = 3*, *p* = .022 (see Table 34), which indicated that the null hypothesis was rejected with 95% of confidence level with α = .05.

Table 34. *Wilks' Lambda and Canonical Correlation between Achieving and Underachieving Groups*

Function	*Wilks'* λ	χ^2	*df*	*p*	Canonical Correlation (R_c)	R_c^2
1	.945	9.677	3	.022	.135	1.8 %

That is, the underachieving student group differed from the achieving student group with respect to their exposure to the three subscales. Canonical correlation was .135 and eta-squared.018. Thus, these subscales explained 1.8% of the variance in achievement status. Like

the previous analyses with other variables, the discriminant function exists with these three subscales, but the effect size was small.

Table 35. *Test of Equality of Group Means Between Achieving and Underachieving Students*

Variables	*F*	*Wilks' λ*	*df1*	*df2*	*p*
Academic challenge and Effort (AE)	3.994	.978	1	172	.047
Challenging Classes and High Faculty Expectations (CH)	4.168	.967	1	172	.046
Integrating Ideas, Information, and Experiences (IE)	.248	.999	1	172	.519

The test of the group mean equality between students in the achieving and underachieving groups indicated that two variables – academic challenge and effort (*Wilks' λ* = .978, $F_{1, 172}$ = 3.994, *p* = .047) and challenging classes and high faculty interactions (*Wilks' λ* = .967, $F_{1, 172}$ = 4.168, *p* = .046) – significantly differed. That is, underachieving students perceived that they were involved in academically challenging efforts (AE) and in challenging classes with high faculty expectations (CH) more often than their peers in the achieving group (Table 35).

Table 36. *Discriminant Function Analyses Results*

Variables	Standardized Canonical Coefficient	Structure Coefficient
Academic challenge and Effort (AE)	.545	.830
Challenging Classes and High Faculty Expectations (CH)	.547	.845
Integrating Ideas, Information, and Experiences (IE)	-.012	-.154

Among the subscales, the challenging classes and high faculty expectations variable and the academic challenge and effort variable had similar weights of .547 and .545. These two subscales were main factors to discriminate between the two groups (see Table 36).

Classification results indicated that 50.6 % (*n* = 88) of the original cases were correctly classified (Table 37). In the achieving student group 47.6% (*n* = 68) of the cases and 64.5% (*n* = 20) of the cases in the underachieving student group correctly classified.

Table 37. *Classification Result*

		Predicted Group Membership		
		Achieving	Underachieving	Total
Original	Achieving	47.6%	52.4%	100.0
	Underachieving	35.5%	64.5%	100.0

Additional Questions

I posed additional three questions to gather basic information about participants' experiences within the honors curriculum as follows:

Q 52. How often have you met your honors advisor(s) per semester?

Q 53. What part of the honors college curriculum was the most beneficial to your academic talent development?

Q 54. What part of the honors college environments were the most helpful in your academic talent development?

For question 52, participants coded never as "0", 1 to 2 times as "1" and 3 to 5 times as "2". The achieving student group (*n* = 143) was comprised of 40 students (27.9%) who never met with their honors advisor, 88 students (61.5%) who met their honors advisor less than 2

times, and 15 students (10.4%) who met the honors advisor 3 to 5 times during the semester. Among the 31 underachieving honors students, 10 students (32%) never met their honors advisor, 18 students (58%) students reported meeting 1-2 times, and 3 students (9.6%) reported meeting with their advisors 3-5 times. More than 50% of the participants in each group met their honors advisor at least once per semester. Approximately 30% of the honors students did not have a meeting with their advisors, and that finding led to more investigation in the qualitative phase of this study.

For question 53, participants ranked the helpfulness of the following choices toward their academic development: honors mentors, honors courses, global awareness programs (e.g., exchange program), and scholarly projects. They also could select 'others' as an option and enter their own responses. Participants ranked the importance of these program components from 1 (most beneficial) to 5 (least beneficial). Table 38 presents the results of how honors programs were ranked according to the contribution to positive academic talent development.

Table 38. *Rankings of Influence of Honors Programs in Talent Development of Honors students*

	Achieving (n = 143)		Underachieving (n = 31)	
Program components	Ranking	% of the group	Ranking	% or the group
Honors mentors	3	6.9	5	6.5
Honors courses	1	64.44	3	19.35
Global awareness programs	5	4.19	4	19.4
Scholarly projects	2	20.97	1	32.2
Others	4	3.4	2	22.5

Table 30 reports the relative influence of the honors programs on their talent development. This table indicates that achieving honors students valued honors course work and scholarly projects. Seven of 31underachieving honors students left comments under 'Other' such

as: not related to honors college, interdisciplinary seminar, honors residence hall, programs out of the honors college, and a professor or advisor's name in their academic programs. These results indicate that achieving students pursue their academic interests and goals in the honors college; whereas, underachieving students found programs outside of the honors program or non-academic activities.

For question 54, participants ranked the benefits of participating in the honors college. Their options were advanced pace/challenging classes, small class size, quality of interactions with faculty, interactions with honors advisors or staff, interactions with honors peers, and diverse opportunities for developing leadership skills. There was also 'Others' as an option, where they could enter their own response. Table 39 presents the summary of the students' responses.

Table 39. *Rankings of Benefits to Honors College Participation*

	Achieving (n = 143)		Underachieving (n = 31)	
Program components	Ranking	% of the group	Ranking	% or the group
Advanced Pace	4	12.01	4	5.51
Small class	2	17.20	3	22.1
Interactions with faculty	3	16.90	1	39.8
Interactions with honors advisors or staff	5	9.80	5	2.20
Interactions with honors peers	1	38.40	2	25.7
Diverse opportunities of developing leadership skills	6	5.70	6	1.90
Others	7	-	7	3.0

The underachieving honors students reported opportunities for interactions with faculty and interacting with honors peers as the most appealing components of the honors college. Achieving honors students selected interactions with honors peers and small classes as the

largest benefits they had experienced. Results indicated that developing a network with peers and faculty attracted both achieving and underachieving students. The responses under ‘others’ included non-honors courses. One respondent said, “due to a lack of STEM courses in the honors.”

Phase 2: Qualitative Results

Research Question Five

What are the perspectives and beliefs of achieving and underachieving honors students regarding the four components (gifts, intrapersonal catalysts, interpersonal catalysts, and developmental process) of DMGT as factors in their talent development? In addition, what are the perspectives and beliefs of staff and advisors about the factors on the academic talent development of honors students?

The answers to the interview questions provided a more in-depth understanding of the quantitative data discussed under the third and fourth research questions. Responses and comments enriched the answer to the third research question on aspects related to the students’ perceptions of intellectual gifts, intrapersonal catalysts, environmental catalysts, and developmental process. In addition, these responses provided a deeper understanding of the dynamic interactions between honors students and curriculum, instructions, and individuals in the honors college rated under the fourth research question. Through the students’ spoken words, I gained in-depth insight into their perspectives that could not have been gained through a quantitative tool.

Composite Textural from Student Interviews

Sixteen students and three staff/advisors participated in the in-depth interviews. One student declined to proceed with coding the data from her interview. Thus, I report data analysis results from the fifteen transcripts of student interviews. I address the staff interview results in the following section. From the student interviews, four composite textural themes with thirteen subthemes and four structural themes with three subthemes were identified (Table 41). A total of 230 phrases or sentences were identified that were classified into four composite textural themes (see Table 41). These themes will be discussed as follows: exposure to good practices (theme 1), importance of the family cultures and interactions with faculty/staff (theme 2), motivation and sensitivity to pressure (theme 3), and intellectual gifts as evidence of achievement (theme 4).

Table 40. *Frequency of Student Participant Responses by Themes*

	Composite Textural Theme			
	Theme # 1	Theme # 2	Theme # 3	Theme #4
Ajex	5	4	2	2
Alexandra	6	4	3	3
Ava	4	4	2	1
Billy	5	6	4	2
Darek	6	5	4	3
Emily	3	5	5	2
Harley	6	2	3	2
Jackie	5	6	3	2
John Lee	6	4	3	3
Leanne	5	6	4	2
Lob	5	5	3	1
Louis	5	5	4	1
Maya	3	6	5	2
Sophia	5	3	4	2
Silvia	6	6	4	3
Total	**75**	**71**	**53**	**31**

Table 41. *Variables, Composite Textural Themes, and Structural Themes*

DMGT/ Good Practices	Composite textural theme • Sub-theme	DMGT/ Good Practices	Composite structural theme
Developmental Process/ Academic challenge and high expectations	1. Exposure to Good Practices • Challenge or unattainable curriculum • Within or outside the honors college • Valuable or unreasonable investment of time and energy	Environmental catalysts/ Good teaching and high-quality interactions with faculty	Empowering and value-driven environments • Generation Z and their parents' involvement • Expectations for faculty/staff • Peer effects
Environmental catalysts/ Good teaching and high-quality interactions with faculty	2. Importance of the family cultures and interactions with faculty/staff • Encouraging and/or forceful family cultures • Quality interactions with people who know the gifted and talented • Valuable or worthless peer interactions	Developmental Process/ Academic challenge and high expectations	Comprehensive talent development
Intrapersonal catalysts	3. Motivation and sensitivity to pressure • Personal expectation of academic excellence and anxiety • Volition as acts of will power • Mixed influence of introversion and extroversion • Self-management as a measure of success	Intrapersonal catalysts	Dynamic and mixed goal orientations
Intellectual gifts	4. Intellectual gifts as evidence of achievement • Early discovery of intellectual gifts • Value of noncognitive elements in defining intellectual gifts • Redefining intellectual gifts into specific skills	Intellectual gifts	Critical awareness of academic identities

Composite textural theme 1: Exposure to good practices. The developmental process is defined as "the systematic pursuit by talentees, over a significant period of time, of a structured program of activities leading to a specific excellence goal" (Gagné, 2008, p. 2). This is an intentional, rather than accidental or incidental, process. The three sub-components are activities, progress, and investment. This theme included the largest number of key statements (n = 75) among four composite textural themes. Three subthemes emerged as follows: (a) challenge or not attainable curriculum, (b) within or outside the honors college, and (c) valuable or unreasonable investment of time and energy (Table 42). The responses and comments indicated that both achieving and underachieving students were exposed to the high expectations of professors and to academic challenges, which supported the statistical findings of the fourth research question.

Subtheme 1: Challenging or unattainable curriculum. The honors curriculum provide an interdisciplinary seminar. In this seminar, students had opportunities to explore options outside of their initial interests, both within and outside the honors college. Students also have required course work they must complete to graduate with honors. These honors course opportunities were influential in shaping the students' long-term goals. Students were able to develop their interest in coursework into career goals. Some students changed their majors after their coursework. Thirty-two (42.66%) of 75 responses supporting the fourth composite textural theme described different perceptions and experiences with respect to curriculum. Key phrases included "critical thinking opportunity," "waste of time," "academic challenge," and "expectations are higher."

Achieving group. Twenty-two of 53 responses (41.50%) from the achieving group described the relationships between academic challenge and student engagement. The honors college designs and offers enriched academic content with novel challenges.

All achieving students reported diverse experiences with the difficulty of their classes, both within and outside of the honors college. Six students were willing to take challenging coursework and be challenged. Leanne and Louis had already taken four AP classes each in high school and wanted to continue to be challenged. Louis said, "I already got many AP courses and advanced classes. I want to stretch myself. The honors college challenged me to use my creativity in the research project (Louis, personal communication, April 20, 2017). Ajex stated, "I wanted anything expand my learning experiences. My honors courses have met my expectations so far, [with] more opportunity for broader and deeper learning" (Ajex, personal communication, April 15, 2017). Darek found the challenges he encountered to be essential to his academic talent development, as they pushed him to think in novel ways:

> I am a slow learner. For the first time, all the answers didn't come easily. I had to actually pay attention and learn how to think through different problems. I think those prepared me to be ready to handle challenge. Coursework here is what set me up to come closer to the next level. In the engineering projects, we would not know the end solution to climate change or to income inequality or access to health care. We started down this process without knowing the end goal. We worked out way to that. That was developing the way of thinking. That was a new talent the honors college helped me develop in engineering. (Darek, personal communication, April 20, 2017)

Table 42. *Composite Textural Theme 1: Sub-themes, Frequency of Responses, and Example Responses*

		Achieving Group *n* = 11 T. Number of Responses[a] = 53		Underachieving Group *n* = 4 T. Number of Responses[a] = 22
Subtheme	Freq. (%)[b]	Example Response	Freq. (%)[b]	Example Response
Challenge or unattainable curriculum	22 (41.50%)	"My honors courses have met my expectations so far, [with] more opportunity for broader and deeper learning." "Coursework here is what set me up to come closer to the next level."	10 (45.45%)	"I will not continue the honors requirements because it is too much hassle." "I would get an A in a general chemistry class, but I would get a B in honors chemistry."
Within or outside the honors college	20 (37.73%)	"It was an opportunity to work closely with faculty to plan and implement the course I often talk to him about research." "I want to be a leader. I enjoy being a leader."	6 (27.27%)	"Honors students get involved in one, two, or three activities in honors college and their department honors council. They should get involved outside of the honors community ."
Valuable or unreasonable investment of time and energy	11 (20.75%)	[He created a study group] "to make the most out their time in the course" "I have learned to set a cut-off for how long I will spend doing schoolwork (for me, 40 hours a week, approximately 8 hours a day)"	6 (27.27%)	"We are all going through a very similar process that other students aren't going though." "I felt that I need to prove my abilities against stereotypes."

[a]Total number of responses per group,

[b]Percentage of responses = $\frac{\text{a total number of responses per subtheme}}{\text{a total number of response per group}}$

Sophia and Harley were encouraged to think critically about diverse issues in their honors seminars. Harley described the effect of her class on her development:

> Topic was terrorism. The part I like of the seminar was interaction. We talked about the topic, but we didn't have to make any conclusions. The professor challenged me to back up my ideas. I was able to apply my ideas to discussions. We talked about media, stereotyping of Muslims, religion, like that. It taught me to look at film differently and shaped my social views as well. (Sophia, personal communication, June 11, 2017)

Five students, however, did not find a balance between challenge and engagement in class. Ava felt frustrated with the level of class expectations in some courses. She said, "the problem is not working hard enough, but being worked too hard. I was burnt out" (Ava, personal communication, June 6, 2017). Alexandra complained about the difficulty of some classes because she did not find them to have appropriate challenges for learning. After Sophia took a class that was known being the hardest course in her field, she realized that "It's very difficult to push myself to study something I felt [was] frustrating and uninteresting. It was boring" (Personal communication, May 5, 2017). In contrast, two students did not find adequate intellectual challenge and found their workload to be too small. Emily enjoyed discussion-based honors seminars but thought that the "content and instruction were too broad to develop academic talent" (Emily, personal communication, May 3, 2017). Lob also believed that the honors seminars were enjoyable but did not affect his academic talent development.

Underachieving group. Ten responses (45.45%) out of 22 responses from the underachieving group described a similar range of experiences with the curriculum. Like the achieving students, the underachieving students experienced intellectual challenges in their

honors courses. John Lee stated that the professors used a variety of instructional methods, which helped him to not get distracted. Jackie described the positive effects of the honors courses on her academic development, as she said that the "challenges are worth the effort," but she emphasized that this perspective may not be valid for other courses (Jackie, personal communication, November 2, 2017).

Whereas achieving students emphasized the benefits of the honors courses, all four underachieving students described the drawbacks of extra work and the increased intensity. Silvia said, "Professors [in engineering honors courses] assumed that honors students have a solid chemistry preparation" (Silvia, personal communication, November 2, 2017). Billy said:

> There's an engineering class. There are endless tasks you have to memorize and understand. Being in college, like I said earlier, I've realized that I'm not smart and I'm only here because of my grit and my willingness to work, versus other kids who are just here because they're naturally smart, which is good for them. But these honors college courses have made me really see how difficult things really are, and I've never really been challenged like this before. This is one of the hardest things I've ever done. And I know people have always said college is hard, but you don't realize how hard it is until you get here. (Billy, personal communication, July 22, 2017)

Silvia also stated, "I will not continue the honors requirements because it is too much hassle even though the mandatory honors seminars were very cool" (Personal communication, November 2, 2017). John Lee was disappointed in his honors coursework, but mostly blamed his peers:

> The seminar courses are, were, the biggest disappointment for--not the courses themselves--but the groups I was paired up with. I don't know if they were not sharing their thoughts due to shyness, but the end result of those groups is that...people don't share anything, and if you don't share anything, maybe it's safe to assume that they weren't thinking about anything...and it's frustrating… I want to know if they've been thinking; and it's frustrating and it's disappointing. And all of those experiences combined with the high hopes, it kind of let down a lot of things, a lot of expectations that are just lowered and not answered. And the side product of that is me...not wanting to be a part of honors college anymore. (John Lee, personal communication, August 31, 2017)

Subtheme 2: Within or outside the honors college. Extracurricular activities within and outside the honors college include various resources for cultivating students' talents. The honors college provided varied opportunities from study abroad to leadership positions that enriched students' learning and developed their potential. Twenty-six of 75 responses (34.66%) supported the second textural theme, and focused on the influence of service learning, study abroad, and leadership opportunities. Phrases used in this theme were "meeting other cultures" and "deserve or not deserve."

Achieving group. Twenty of the 53 responses (37.73%) described the positive effects of extracurricular activities on academic talent development. Students increased their self-awareness and understanding of cultures. Ava had a meaningful experience with a study abroad program in Europe that became a starting point to differently view her college experience and cultural identity. She stated:

> This was a big learning opportunity. I love meeting my mom's cultures and seeing what kind of things is normal to them. I had the opportunity to experience many different cultural aspects. I learned about the direction I was thinking about. (Personal communication, June 6, 2017)

Maya was planning to study abroad. She stated, "We make numerous decisions every day. Sometimes we are emotional; sometimes we make decisions with even thinking at all. I think we all have some bias. I am an American Studies major and would like to work for the underrepresented children in Washington, D.C. I want to learn other cultures and understand differences" (Maya, personal communication, April 24, 2017). These students perceived their extracurricular experiences as contributing to their personal and social development.

The students' honors college offered diverse leadership development opportunities. Eight of eleven (72.72%) achieving students served in leadership roles within an activity or program. Alexandra and Darek were mentors in the honors seminar. It was vital in their academic development and success, because this experience exposed them to a new way of processing information. Alexandra shared her experiences:

> Sometimes I have to take into consideration how people might interpret the language differently. For example, when I get asked about social issues, I use my experience and my knowledge from being a pre-pharmacy student standpoint. When I am able to incorporate this, it becomes much easier for my peers and myself to understand. (Alexandra, personal communication, May 5, 2017)

Darek found his role in the course useful because it allowed him to connect with the professor: "It was an opportunity to work closely with faculty to plan and implement the course I often talk to him about research" (Personal communication, April 20, 2017).

Five students stated that leadership development meant an opportunity to grow. Harley described herself as introverted and described the benefits of leadership positions in helping her step out of her comfort zone:

> I'm part of the Honors Ambassador Program. We talk to prospective students. Once I realized how much I loved the honors college, "I want to talk to other people about this." I feel that has developed my leadership abilities like tenfold. I came from a home-school family, I was an introvert, I am an introvert. But I want to be a leader. I enjoy being a leader. Learning how to do that was really important to me, and I think that has taught me how to work with a group in an academic setting and how to pull together a group outside of class. (Harley, personal communication, June 11, 2017)

Ajex said, "by stepping outside of my comfort zone, I was able to grow and prosper from my interactions with others" (Personal communication, April 15, 2017).

Louis was one of the leaders in a service learning committee in the honors college. He got involved in this activity because he wanted to hone his leadership, problem solving, and communication skills to better him in his future endeavors. He said, "The leadership roles I had the chance to be a part of helped me to lead group discussions with my peers, which has helped me tremendously" (Personal communication, May 3, 2017). Alexandra and Ava worked as resident assistances in a residence hall that was open to honors and non-honors students. That experience opened Ava's eyes to diverse perspectives:

> Exposure to different points of view that make you re-evaluate how you think and go about life. I love meeting with different people and [finding out] about what specifically motivates them and what they want to do, especially if they are a

> driven, passionate, and interesting person. An example is the computer science RA that I mentioned before. I've also met someone passionate about aquatics and fisheries and he was a really interesting person, too. I've met people who have done really amazing things like work at a wheat farm in Mexico for 6 months after high school or have served in the military (because they were from South Korea where that is mandatory). I find it inspiring and when I meet these people I try to figure out how I can apply their experiences to my own life. (Personal communication, June 6, 2017)

Ten of 11 achieving students (90.90%) were also involved in other activities across campus such as a major-related student council, fraternity or sorority, religious organization, music related activity, or sports clubs. Seven responses pointed to the importance of involvements outside the honors college. Darek said, "There are tons of opportunities to get involved. There is no limit to how you can make a difference on our community" (Personal communication, April 20, 2017). Lob believed that many international students in the honors college participated in student organizations across campus. Harley suggested this was important, as "we need to participate in not only the honors programs but also student organizations or major-related activities outside of the honors programs" (Personal communication, June 11, 2017). Ajex said, "The leadership position was an eye-opening experience, because I got to learn how to step outside my comfort zone and respect everyone; no matter what their background was" (Personal communication, April 15, 2017).

Underachieving group. Underachieving participants' responses were not consistent for this theme. Six (27.27%) of 22 responses from the underachieving group belonged to this theme, and they confirmed that all students participated in extracurricular activities in the honors

college. Two students held leadership positions. Jackie was actively involved in activities and programs across campus. These activities opened the gate for participants to explore and develop thoughts about subjects they may not have been interested in before. Billy was a member of the university newsletter editorial board and he experienced many benefits in his talent development:

> Every day I have to write a short essay as an activity of my team. This helped me to become more fluid with my day to day language. Also, the adrenaline rush I got from being pressured to outline an essay was fun. (Personal communication, July 22, 2017)

As with the achieving students, the three responses from Billy, Jackie, and John Lee recommended that honors students get involved with activities across campus. John Lee and Silvia did not actively participate in extracurricular activities within the honors college. John Lee explained, "I didn't know a lot of them [honors students] until later into the first semester, and by then I was too busy. Nowadays, I don't really find myself connecting with the honors college very much" (Personal communication, August 31, 2017). Similarly, Silvia did not have time for extracurricular activities in the honors college because she found a core group of friends outside the honors college. She was a member of major-related student council. Although Jackie took leadership roles both within and outside of the honors college, she really stressed that honors students should become more involved with networks outside and step out of their comfort zone once in a while.

Subtheme 3: Valuable or unreasonable investment of time and energy. Investment refers to committing intensity, psychological energy, or finances to a process. Seventeen responses out of 75 responses (22.66%) described how students' success was closely related to parental support

and the students' effort and time investment. Key phrases used in this theme were "spend time for study," "develop research skills," and "the value of participation."

Achieving group. Eleven (20.75%) of 53 responses from the achieving students reported that they spent at least two hours a day in mastering their course content or completing assignments during the semester. Ajex, Darek, Emily, Harley, Leanne, Louis, Sophia, and Alexandra explained that they completed all the required readings before class. For example, Ajex spent three to four hours and Darek spent at least three hours a day on their academics. Alexandra spent about two to three hours a day, and more on the weekends, on school tasks and spent additional time reading science articles for her personal academic development. She also served in an officer position in the honors society.

Seven responses stated that the students attended additional seminars, workshops, courses, or tutoring to accomplish their academic goals or develop academic skills. Ajex experienced difficulties in engineering courses and labs because these courses required a strong mathematics background. He created a study group with his friends "to make the most out their time in the course" (Personal communication, April 15, 2017). Sophia and Leanne attended several research workshops. Maya participated in online writing workshops. Lob was preparing for an art therapy certificate. Darek was "planning to take research software seminars and professional writing workshops" for developing his academic skills (Personal communication, April 20, 2017).

Harley spent more than twenty hours a week on school tasks and academic development. Her attitudes toward time and effort investment changed in sophomore year:

> I was in too many things in my freshman year and sophomore fall. I used to study more or less continuously and doing activities that weren't studying felt like a

> painful trade-off of sacrificing study for non-study. Now I have learned to set a cut-off for how long I will spend doing schoolwork (for me, 40 hours a week, approximately 8 hours a day). Past those hours, on the weekend, etc. I do not do any schoolwork at all and I only enjoy my free time. It leads to a much healthier work-life balance in my opinion. Also related to the "grand project" idea which I adopted from Cal Newport, is that my grades aren't of utmost importance anyway- If studying only 40 hours a week leads to getting some A- or B+ instead of A or A+, it truly is all right. Or even if I get a C! It really is OK. (Personal communication, June 11, 2017)

Three students described of the effects of environmental supports on their academic talent development. When it comes to investment of time, money, and energy, parental and environmental support is an essential element of talent development. Darek described the environment where he grew up:

> My town was a middle-upper, middle-class suburban town where a massive portion of our budget went to the public-school system. We were very well-funded. We never had to worry about like, sport teams or arts being cut. All those opportunities were open all the time. Nothing was closed off because we didn't have funding. I mean, the opportunities there absolutely made a difference. (Personal communication, April 20, 2017)

Louis extended the discussion to his social privilege as a White male in the upper-middle class. He said he has not experienced any discrimination regarding educational opportunities. Ava touched on how the positive environments where she grew up developed her academic talent.

> I grew up here, right next to a major university. It probably did positively affect my talent development. I had chances to do research in university labs and to have those events sponsored by university students and 12R, Innovation to Reality or something like that. I went to that every single year in the summer when I was in sixth to eighth grade. There were tons of stuff that I can grow up to do, and I can do whatever I want to do like, "I like bugs. I can be an entomologist. I like flowers. I can be a botanist. I don't have to be just the one thing my parents say I have to be. If I like it, I can pursue it." (Personal communication, June 6, 2017)

Underachieving group. Six responses out of 22 responses (27.27%) from the underachieving student group fit this subtheme. Like the achieving students, all four underachieving students stated that they spent at least two hours per day on studying. For example, John Lee spent one or two hours per credit and Silvia said, "a lot" (Personal communication, November 2, 2017). Additionally, three students, John Lee, Silvia, and Billy, participated in seminars, workshops, and other activities for their talent development. John Lee was attending leadership seminars and Silvia was in a living-learning community. Billy was attending online and offline writing workshops for his honors thesis and research skills.

The differences between these two groups arose in our extended discussions about time and effort investment. Silvia was trying to reverse her underachievement to apply for medical schools and was also considering other academic paths. She said, "I could be getting a minor in Spanish or a minor in management with those HONR-designated courses" (Personal communication, November 2, 2017). John Lee prioritized tasks differently after he joined the ROTC program. He "did not really see any value in the honors diploma other than higher post-bachelor's education" (Personal communication, August 31, 2017).

Composite textural theme 2. Importance of the family cultures and interactions with faculty/staff. The academic talent development of honors students is facilitated or hindered by environmental factors. Honors students interacted with parents, peers, professors, and professional staff in their educational experiences. This composite textural theme arose from the questions about environmental catalysts. This theme covered "good teaching and high-quality interactions with faculty" in the "good practices in undergraduate education" section. Among four composite textural themes, this theme included the second highest number of key statements (n = 71). Forty-nine responses from the achieving students and 22 responses from the underachieving group supported this theme (see Table 43). During their collegiate experiences, honors students interact with the people around them and exchange positive and negative influences. Three themes emerged as follows: (a) encouraging and/or forceful family cultures, (b) quality interactions with people who know the gifted and talented, and (c) valuable or worthless peer interactions.

Both achieving and underachieving groups described family culture as a prominent factor that nurtures the honors students' attitudes toward learning. However, the two groups were dissimilar in their perceptions of and experiences with their honors peers, professors, and professional staff. These findings helped explain the statistically significant difference between achieving and underachieving groups with respect to "environmental catalysts" and "good teaching and high-quality interactions with faculty" from the quantitative results of the discriminant analyses.

Subtheme 1: Encouraging and/or forceful family cultures. Twenty-seven responses consisted of 20 responses from the achieving group and seven responses from the underachieving student group. Honors students' academic talent development was especially

influenced by family culture when it came to their attitudes toward learning and their academic goals. This culture often positively and sometimes negatively affected the academic talent of both achieving and underachieving honors students.

Parents helped achieving and underachieving students understand the value of education and created an environment of academic excellence. Phrases included “dedicated to education” and “strict on rules on education.”

Achieving group. Twenty of 49 responses (40.81%) from the achieving group described the value of education in their family cultures. These students’ families encouraged them to focus on their studies and their academic talent development. All of the achieving students who talked about their families stated that their academic talent development was influenced by their family culture, and specifically by their parents’ support. Students described how their parents provided many opportunities for their talent development. Sophia, Ajex and Alexandra stated that they were encouraged to complete workbooks outside of classwork and went to several academic camps every year. These students also explained how their intelligence was developed by their parents’ support. Emily’s parents always attended school activities and were first to volunteer at school. They kept themselves updated on news and information from the school and gave her many opportunities to cultivate her talents. Another positive influence was parents’ passion for educating their children. Leanne described her family cultures regarding education:

> My parents are a huge component of why I’m successful. They were very careful in planning where I grew up. My family has lived in seven different states. I appreciated every time we moved, my parents looked for a good neighborhood [and] good school system. They prioritized that-elementary, middle, high school, college-I always went to a good school and had resources like honors programs

> or advanced courses. I know that other schools don't have as many resources, maybe they don't have AP classes. I think having access to those helped me, definitely helped me mature in my intellectual ability. I am proud of being an Asian American, having Confucian values. It becomes very clear, especially in college, who has certain values, and how those values affect school life and personal life. (Leanne, personal communication, April 22, 2017)

Lob also shared his parents' enthusiasm for their child's education. He knew his parents spent a lot of money on educating him. The value of education was not limited to Asian culture. Darek's parents are White and professors. They were dedicated to raising him as a well-rounded and bright student. They were always members of the parent council, music, and athletic booster clubs.

The other positive parental influence was teaching the students the importance of diligence when working. Ava's father emphasized that hard work achieves goals. Maya explained that, "My family culture had the fostering effect that I can always do better, and I need to believe in myself before the honors college. Even transitioning into the honors college, [family culture] was definitely important to my academic talent development with competitive peers" (Personal communication, April 24, 2017).

Table 43. *Composite Textural Theme 2: Sub-themes, Frequency of Responses, and Example Responses*

		Achieving Group *n* = 11 T. Number of Responses[a] = 49		Underachieving Group *n* = 4 T. Number of Responses[a] = 22
Subtheme	Freq. (%)[b]	Example Response	Freq. (%)[b]	Example Response
Encouraging and/or forceful family cultures	20 (40.81%)	"My parents are a huge component of why I'm successful." "My family culture had the fostering effect that I can always do better."	7 (31.81%)	"I know my GPA is my parents' money and their sacrifice. I feel guilty, if I do not attain their expectations" "My dad very much values education, so he taught me things at a very young age."
Quality interactions with people who know the gifted and talented	17 (34.69%)	"She knows when to challenge students and knows when to support them in the right ways, and in terms of developing my research ability." "He not only helped me to develop academically by understanding chemistry concepts, but like professionally as well and taught me that you can form bonds with college professors."	6 (27.27%)	"They are really out of touch with the students." "I would tell him about my life. He would express how much he believed in me."
Valuable or worthless peer interactions	12 (24.48%)	"My friends sparked my interest in engineering" "There's a community that wants to spend time with you and complete your journey."	9 (40.90%)	"We are all going through a very similar process that other students aren't going though." "I felt that I need to prove my abilities against stereotypes."

[a]Total number of responses per group,

[b]Percentage of responses = $\frac{\text{a total number of responses per subtheme}}{\text{a total number of response per group}}$

However, five students also described the negative influence of parenting styles on their academic talent development. Parents' expectations drained students' energy and motivation. Leanne and Maya's parents checked their grades and scheduled every aspect of their life. Leanne described her parents as "coaches" and Maya called them "Siri" because they always had a solution. Leanne said, "I will never meet their expectations." (Personal communication, April 22, 2017). Ava reported:

> My parents had a flipside of negatives because that constant push to do your best, be your best has detrimental effects. I became anxious like, 'If I don't do my best, then what good am I?' That anxiety made me forget how to relax. If I'm not accomplishing something, I feel like I'm useless' that's not healthy" (Personal communication, June 6, 2017).

Emily felt that it is difficult for her parents to accept Bs. When she earned Bs or Cs, her parents' response was to consistently tell her, "You need a tutor." Her mother even registered Emily for a leadership development conference without telling her; Emily discovered that she was on the participant list one day before the conference (personal communication, May 3, 2017). Lob realized that he followed his parents' expectations for his future career. He said, "I know what I want to do, but they don't trust me" (Lob, personal communication, September 1, 2017).

Underachieving group. Seven of 22 responses (31.81%) from the underachieving group described the roles of family cultures in their academic talent development.

All the underachieving students who discussed their families described their parents' enthusiasm for education. Like the achieving students, their parents put education first and created a secure and dedicated environment for learning. Jackie felt her father did his best to provide her educational opportunities, although her family's economic situation was not good

enough to support every opportunity. She went to the local family center after school while she was waiting for her parents came back home. However, her father applied for scholarships and financial aid to send her to university summer camps, leadership camps, and SAT preparation programs. John Lee and Billy emphasized their parents' sacrifice for education, and Silvia always felt that her parents paid attention to what she learned and what she likes.

Silvia and Billy felt frustrated with parents' high expectations. They avoided talking to their parents about problems. Silvia's mom kept telling her "you're gifted," and she did not find that encouraging (Personal communication, November 2, 2017). Differences were detected in the students' reflections on their parents' supports. Two students, John Lee and Jackie, experienced feelings of guilt or anxiety about their parents' sacrifice. John Lee reported:

> My dad worked at the Korean restaurant, Chinese restaurant, and Chinese markets all day. My parents hope to open a restaurant of their own, but they are waiting for my brother to finish high school. I know my GPA is my parents' money and their sacrifice. I feel guilty, if I do not attain their expectations" (Personal communication, August 31, 2017).

Jackie's father was very serious and had high expectations for her achievement. She said, "My father's strict rules on achievement encouraged me in academic pursuits but did not help me enjoy my learning due to test anxiety."

Subtheme 2: Quality interactions with people who know the gifted and talented. Students created friendships and received emotional and intellectual support from trained professionals. The honors college includes professors and advisors who provide appropriate and challenging curriculum and assist honors students with personalized mentoring. Participants benefited from the professors and advisors at the honors college who understood the characteristics of these

highly able students and who welcomed their diversity. Twenty-three responses (32.39%) out of 71 responses were classified into this subtheme. Phrases to describe this theme included "encouraged" and "who understands the honors student population."

Achieving group. Seventeen of 49 responses (34.69%) from the achieving group indicated that students experienced positive interactions with faculty in the honors college. Darek described his experience with a research professor who challenged him appropriately and intellectually:

> One of my biggest influences has been my research professor in the honors college. She's the advisor of the bioengineering team, and I've known her since the summer after my freshman year. … She knows when to challenge students and knows when to support them in the right ways, and in terms of developing my research ability and kind of like bioengineering way of thinking through problems. (Personal communication, April 20, 2017)

Alexandra's professor kept pushing her to do more because he knew Alexandra's strengths and had faith in her abilities. Through her participation in the honors college, she felt as if the university were a tight-knit community. Leanne described the quality of interactions with professors and mentors in the honors college. The honors mentor program helped her accomplish additional projects and keep learning. She thought her academic talent was positively developed in her honors classes because she could talk to professors one-on-one and ask them questions during and after classes. She remarked:

> It made [university] a little smaller for me; many honors college students in my year I know because I either saw them in my 19901 and 19902 classes or because they lived with me at Shreve. It gave me access to a group of professors that I

> routinely see outside of class because they show up to honors college events. These professors have diverse interests and personalities. I was able to learn more about subjects outside my field of study, such as anthropology and political science. (Personal communication, April 22, 2017)

Students were encouraged in their learning when professors demonstrated openness to new ideas. Ava and Maya enjoyed open discussions in honors seminars. Ava said, "There was no right or wrong. Only diverse opinions" (Personal communication, June 6, 2017). Ajex stated that professors were well-prepared and "excited to teach" in honors courses. He said, "[one of my professors] kicked off the class with discussion always. I felt confident to express my opinions in open-minded interaction like that" (Personal communication, April 15, 2017). Emily said that her honors chemistry professor "brought donuts to class and made sure he knows all of our names. He not only helped me to develop academically by understanding chemistry concepts, but like professionally as well and taught me that you can form bonds with college professors." (Personal communication, May 3, 2017)

Five students indicated that honors advisors or staff provided helpful resources and facilitated students' engagement in the honors college programs. Ajex, Harley and Sophia pointed out the benefit of easy access to staff offices. They learned about diverse leadership development and scholarship opportunities through discussions with their advisors or staff. Alexandra said, "The honors advisors and staff there gave me helpful advice on not only what classes to take, but also about my career" (Personal communication, May 5, 2017). Maya's honors advisor encouraged her to try the study abroad program. She said, "I didn't know she has a ton of resources. She encouraged me to apply for the study abroad and sent me the follow up

emails. [After that] I sometimes stopped by her office just to talk" (Personal communication, April 24, 2017).

Compared to the positive experiences with advisors and staff, five students expressed concerns with the quality of their interactions with honors advisors. Emily, Ava, Louis, Lob, and Darek felt that the honors college did not care about individual students once they were not freshman. Emily said, "They were very clear freshman year in the honors college about what classes you should take because it's planned out, but there's less options and they're not as clear about what you can take after freshman year. I feel the honors college and staff more care about people coming in rather than people graduating with honors" (Personal communication, May 3, 2017). Darek pointed out that he had erroneously assumed that his advisor would provide useful advice about issues other than course selection:

> Meetings with honors advisors were very perfunctory. It was just like, "Let's go down the checklist. Let's cover these bases. You need to make sure that you're taking the right classes and you're on a good trajectory to finish the curriculum and everything. But for me, the real value in advising is talking about other things. I could go through a computer program that would do the same thing. People say, "They're doing so well. They're finding internships. They're getting good grades. I don't need to worry too much about them. But I think still working with and developing those longer-term life plans, that is going to be challenging. (Personal communication, April 20, 2017)

Lob said that the honors advisors he met understood international students but did not have insights or resources to help him. Louis thought his honors advisor was nice, but he was not sure if his advisor benefited his academic talent development as an engineering student.

Underachieving group. Six responses (27.27%) of 22 responses from the underachieving group belonged to this theme. Like the achieving students, two students, Billy and John Lee, stated that open-minded professors and discussion-based approaches created positive learning environments. Billy felt that the honors courses had greater "opportunities to ask questions and interact more informally with the professor" (Personal communication, July 22, 2017) than general courses. However, two students felt their relationships with professors were strained because of the pressures of more work and because of the high expectations about their abilities. John Lee said:

> We have only three professors in the engineering honors program. They are really out of touch with the students. They are pushing all of these exams on us at the same time these big projects are due, and they want a lot of unfeasible things. Of course, some kids can do it, but I got overwhelmed" (Personal communication, August 31, 2017).

Silvia was overwhelmed by the amount of content and assignments, which she did not expect. She stated, "Many professors assume that honors college students love learning and we can do more work" (Personal communication, November 2, 2017).

Compared to the achieving students, only one underachieving student reported a positive influence by staff in the honors college. This experience described the critical roles of staff and advisor to assist students who are at risk. Jackie shared her journey to reverse underachievement. Her GPA dropped below 3.50 in her sophomore year. An academic excellence coach in the honors college helped her reverse her underachievement.

> Academic excellence within the honors college I would say started as least beneficial, but now is probably the most beneficial because of how unique their

> perspective to learning is. He was one of the directors of Academic Excellence. When I was put on academic probation, our relationship grew stronger. He understood me very quickly; most of our meetings weren't about my academic excellence. They were about getting to know each other, feeling comfortable with each other. He would tell me about his life. I would tell him about my life. He would express how much he believed in me. It was beneficial in terms of my academic excellence because I always left his meetings happy. I always left his meetings feeling very motivated and go-getter type of mentality. (Personal communication, October 3, 2017)

However, two Silvia and Billy indicated that underachieving students did not find meeting with honors advisors and staff to be helpful. Billy felt that the honors advisor did not understand his needs regarding the underachievement and Silvia said, "I needed a tutor for my Calculus 2 honors course. She gave me information of the website, but that was it. Most of the meeting was about the courses I should take" (Personal communication, November 2, 2017).

Subtheme 3: Valuable or worthless peer interactions. Honors students met more competitive peers in the university and in the honors college than they had in high school. Twenty-one out of a total of 71 responses (29.57%) described peers as a compelling factor in both supporting and hindering their motivation for academic and psychological development. The discussions included the effect of the honors residence hall communities on the students' academic talent development.

Achieving group. Twelve of 49 responses (24.48%) from the achieving group for this theme described the positive effects of highly able peers, as the students were able to enjoy the dedicated academic atmosphere of the honors college. Harley stated:

> My program is very small. We are going to every class and most of them are honors students. Even when I'm feeling like I don't want to do the assignment or something, some people say, "We have this due. Do you want to work on it with me?" We are able to just sit in a room in complete silence and do homework together. It's restful and encouraging. I have a friend who's not doing well at all in the honors college and [watching her taught me] how not to juggle my personal experiences. That will influence how I will work, and how I prioritize. (Personal communication, June 11, 2017)

Her honors peers also fortified Sophia's motivation to learn and achieve. For Maya and Louis, honors peers meant resources who aided them in discovering their interests. Emily said, "My friends sparked my interest in engineering" (Personal communication, May 3, 2017). Leanne stated:

> This is on one hand unfortunate, since… I missed out on the diverse perspectives other people would bring (and statistically people in the non-honors classes are more racially and socioeconomically diverse). However, it also meant that my classes could cover more challenging material without leaving people behind and that in general there were fewer behavioral problems like inappropriately timed talking. (Personal communication, April 22, 2017)

Students also emphasized the high quality of the relationships in the honors college. The honors residence hall is a place to get to know other freshman honors students. Sophia was frustrated by the work of finding friends in the large university, because she came from a small town and high school. She found her first friend group in the honors dorm. For her, the honors college meant "connection." Emily and Darek used the metaphor of sisters and brothers to

describe relationships with their honors peers. Alexandra said, “I feel like I’m more connected to my work. There’s a community that wants to spend time with you and complete your journey” (Personal communication, May 5, 2017). Darek stated, “Everyone I meet through the honors college instantly becomes that connection on campus. I mean the people I talk to everyday as I’m walking from one end to the other are honors people. I felt that I am connected” (Personal communication, April 20, 2017).

However, three male participants Ajex, Louis, and Lob expressed a different perspective about the effect of their honors peers. Ajex felt uncomfortable with his roommates, who were extremely focused on school work. Louis pointed out a lack of friendship and increase in pressure:

> I am not a big fan of the dorm because I felt isolated in my boarding school. There’s a little bit of that peer effect. Just walking by the white boards and seeing that linear algebra exam tomorrow … I thought I should start studying. I saw engineering groups out there working and putting in all the time. I thought I should be putting some more work into that. But it’s a lot more minor compared to the actual peer-to-peer interaction. (Personal communication, May 3, 2017)

Lob, an international student, did not actively make friends in the honors college, although he had many friends in the Korean student association. He did not find helpful resources in the honors community, but seniors and friends in his Korean student clubs actively helped him adjust to campus life. He said:

> I think I feel isolated because I have those stigmas of what an honors college student would be or look like. I don’t want to say [I am not] being comfortable, but not having a connection, deep level of connection with anyone else in the

> room or very few other people in the honors college. (Personal communication, September 1, 2017)

Underachieving group. Nine responses (40.90%) out of 22 responses described the positive effects of peer interaction on academic improvement. This subtheme includes the most responses from the underachieving student group in their descriptions of environmental catalysts. Billy found that many honors students enjoy learning for its own sake. It reminded him of the time when he enjoyed math and learning in high school. Silvia's honors peers motivated her to learn when she saw that they already knew advanced content. John Lee chose "collaborative learning" as the best aspect of the honors college. Although he reported that he did not connect with honors peers outside the classroom, he developed social connections with honors students in class and experienced "positive reinforcement in the classroom" (Personal communication, August 31, 2017). Jackie said, "We are all going through a very similar process that other students aren't going though. I made progress with them" (Personal communication, October 3, 2017).

Compared to the majority of achieving students who addressed the positive roles of honors residence hall, two male students expressed concerns about the honors residence hall and peer group effect. Like Billy, John Lee was not sure that "living in the residence hall means building a community and social connections." Three students had concerns with diversity in the residence hall; John Lee moved to an off-campus apartment in order to attain support from diverse students who could provide him with a variety of perspectives. Two other students focused on the diversity issue within the honors residence hall. Silvia shared her experiences:

> I was fortunate to live in the old and mixed residence hall, so I was surrounded by a few non-honors college people who came from diverse backgrounds and gave a

> really interesting perspective on life to me. I feel that being surrounded by all high achieving people means that people lose out the diversity of different perspectives. For instance, a student who is focused on working many hours at the dining courts because she struggles paying for school, if that person lived in the honors residence hall this person would probably feel very left out. All people hear and talk about are finding internships and networking and so forth, and it's easy to fall into this immense pressure of having to take on many extracurricular activities and score high-prestige internships as an achieving person. While, there is a less chance to meet people who can expose you to alternate viewpoints. (Personal communication, November 2, 2017)

Although Jackie emphasized the creative and positive effects of the honors residence hall, she also pointed out the diversity issue as well. She said, "[there are] fewer Black students" compared to her experiences elsewhere on campus. Thus, "I felt that I need to prove my abilities against stereotypes" (Personal communication, October 3, 2017).

Composite textural theme 3: Motivation and sensitivity to pressure. Participants discussed what intrapersonal catalysts helped or hindered them in developing their academic talent in the honors college. In this study, motivation is defined as the reinforcer to set up students' goals and manage their time and effort to accomplish these goals. This goal entails developing appropriate learning behaviors and interest (Gagné, 2009). A total of fifty-three responses were identified that consisted of 39 responses (73.58%) from the achieving student group and 14 responses (26.41%) from the underachieving group. These responses are categorized into four subthemes as follows: (a) personal expectations of academic excellence and anxiety, (b) volition as acts of will power, (c) mixed influence of introversion and extroversion,

and (d) self-management as a measure of success. Table 44 presents a map of qualitative data analysis results for this theme.

Subtheme 1: Personal expectation of academic excellence and anxiety. Honors students experienced internal competition by which they pushed themselves to be their best, as well as external competition from being surrounded by intellectual peers. Competition contributed as either a motivating force or depressing force in their achievement. Differences between the two groups arose when the participants discussed academic failures or stress. Twenty-one responses out of 53 responses (39.62%) supported this theme. Phrases used for this theme were "competition," "need to succeed," and "want to do well."

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Achieving group. Among 39 responses from the achieving group that came under composite textural theme 3, fourteen responses (35.89%) were classified into this theme. Eight students wanted to excel at the top of their personal ability but were not necessarily trying to surpass others.

These students pushed themselves to produce work that was up to the standards that they wanted. Darek said, "I'm competitive. Personally, though, not against others, but top spots in education. I'm capable of getting As. Most of the classes, except for early morning classes, I got

As" (Personal communication, April 20, 2017). Lob strived against his prior accomplishments in high school. He had always been in the top 10% in his school. His principal posted the mid-term and final exam scores of all the students in the hallway. Teachers mandated one to three extra periods after class for students who earned B, C, or below. Despite the change in environment however, Lob still found a motivation for academic excellence in college that made him study.

Louis had similar experiences in his high school and said, "I'm addicted to the highest achievement." (Personal communication, May 3, 2017). Sophia realized that getting a B in an honors class was not better than getting an A in a regular class, because most public universities and colleges do not give honors courses more weight. Sophia, however, did not move to regular classes to earn As because she did not consider that to be her place.

Alexandra said, "I'm very driven to be academically successful, and that I will be the best than I can be" (Personal communication, May 5, 2017). Leanne felt satisfied with tangible achievements like getting straight As or awards, but did not accept people's meaningless praise like, "Good job" (Personal communication, April 22, 2017). Maya also described of her desire to achieve the highest level she felt she deserved. Emily said, "I want to achieve and succeed. I want to excel academically and work creatively" (Personal communication, May 3, 2017).

Based on these answers, I asked whether their internal drive to compete exerted a negative influence. Six students identified anxiety or perfectionistic tendencies but did not interpret them as having negative effects. Darek experienced a high level of stress about getting the highest grade but he did not have a fear of failure. He said, "I'm not disappointed with myself getting a low grade. I never let my life goes downhill because of that single grade" (Personal communication, April 20, 2017). Sophia said, "I may have perfectionist characteristics, but a little perfectionism is a good motivator" (Personal communication, September 1, 2017). Leanne

experienced anxious feelings when she did not meet her strict standards for her achievement. She, however, said she believed she has the ability to overcome this tension and change this force into "motivation" (Personal communication, April 22, 2017).

Maya said, "[A negative influence] might be focusing on what I didn't get. I got 294 points out of 300 in a class; that is an A, but I kept finding reasons why I missed 6 points" (Personal communication, April 24, 2017). However, Maya focused on room for improvement, not failures. For Emily, who strives for the highest grade, getting an A- was a warning sign. She identified herself as a "lovely nerd" who did not sleep until she perfectly completes class readings, homework, and studying for tests. Lob also mentioned his perfectionism, but he said, "I was overwhelmed by stress in school, but I keep saying to myself, I don't need to strive for perfection because I'm good enough at core. There is nothing known as perfect" (Personal communication, September 1, 2017).

Underachieving group. Among 14 responses from the underachieving group supporting the composite textural theme 3, seven responses (50%) were identified for this subtheme. Like achieving students, underachieving students selected their urge for academic excellence as one of their important internal catalysts. Differences between the two groups were found in students' reactions when they did not meet their own expectation. Underachieving students were more likely to be vulnerable in the face of failure.

Table 44. *Composite Textural Theme 3: Sub-themes, Frequency of Responses, and Example Responses*

		Achieving Group *n* = 11 T. Number of Responses[a] = 39		Underachieving Group *n* = 4 T. Number of Responses[a] = 14
Subtheme	Freq. (%)[b]	Example Response	Freq. (%)[b]	Example Response
Personal expectation of academic excellence and anxiety	14 (35.89%)	"I'm addicted to the highest achievement." "I may have perfectionist characteristics, but a little perfectionism is a good motivator."	7 (50%)	"Competitive edge [to my achievement] made me feel really good and comfortable, but also kept me in the mindset like I need to succeed. I need to do well"
Volition as acts of will power	11 (28.20%)	"I strive to find new ways to solve problems. If I don't do my best, I feel that I have cheated myself." "I learned I can't get solid grades like A or A plus without effort in high school. I must actually work hard for the first time and worked through challenging classes."	3 (21.42%)	"I became depressed and confused about my ability. I lost my motivation" "Tell me what I have to do to pass this class, and I'll do it.
Mixed influence of introversion and extroversion	8 (20.51%)	"I have a fear but less fear than most people. That was a great characteristic that influenced academic development." "I prefer studying alone because I can't focus when I am with other students."	2 (14.28%)	"I'm more of a social, outspoken person, so my intellect comes out of that." "I felt drained by people."
Self-management as a measure of success	6 (15.38%)	"I can't go to this event, this weekend, or tonight because I have to study"	2 (14.28%)	"When somebody calls, I didn't say no. I didn't have control over my life."

[a]Total number of responses per group, [b]Percentage of responses = $\frac{\text{a total number of responses per subtheme}}{\text{a total number of response per group}}$

Four responses from the underachieving students described their motivation to meet personal standards for academic excellence. Jackie explained that the "competitive edge [to my achievement] made me feel really good and comfortable, but also kept me in the mindset, like, I need to succeed. I need to do well" (Personal communication, October 3, 2017). Billy was reminded of his remarkable achievement in math competitions. It made him set a high personal standard for academic performance. John Lee and Sophia stated that they had a desire to show their personal best in the university and the honors college. Three of these students stated that they experienced anxiety, which affected their ability to begin work or to maintain concentration. Billy realized that he would not reach the same level of achievement in the university as he did in high school. He said:

> A time when I was very confident was when I helped my friends in math classes. Being able to be the best forced me to work, keep studying, or keep doing homework even though I got unmotivated. I could probably do university if I wanted to. But there's something like grades or placement [that] involved my parents' money. I feel anxiety and want to make sure that I'm doing the best that I can be, the best person. (Personal communication, July 22, 2017)

John Lee felt anxiety about success and had a fear of failure as well. He realized that he could not achieve the same level of achievement as he had before, because he was also trying to meet the ROTC program requirements. Often, he was satisfied with neither his academic achievement nor his progress in the ROTC program. He said:

> I got a C on my final exam. I asked myself, what if I drop out, or if I will be kicked out from ROTC. It seemed like an emotional roller coaster. I couldn't

> handle anything, although I had an internship deadline. (Personal communication, August 31, 2017)

Similarly, repeated unanticipated lower achievements that did not meet her expectations negatively affected Silvia's motivation. She wanted to do better but was too "frozen" to work effectively. She emphasized that it was a temporary issue and said, "I'm not just lazy. Just, my brain doesn't want to do things that are unpleasant" (Personal communication, November 2, 2017).

Subtheme 2: Volition as acts of will power. Volition refers to the degree of motivation or the effort students are willing to put into their talent development (Gagné, 2009). These self-management and self-discipline strategies enabled the participants to plan the steps necessary to achieve their goals and to have confidence that they would successfully complete the task. Both groups of students acknowledged the need for effort and for self-discipline strategies in accomplishing academic success, but underachieving students did not demonstrate this belief in coursework. Fourteen responses (26.41%) were identified for this subtheme, among the 53 identified responses under composite textural theme 3. Phrases used for this theme were "do it myself," "manage time," "dedication," and "being introverted."

Achieving group. Eleven responses supported this subtheme described repeatedly as one of the most important intrapersonal catalysts. All achieving students expressed a belief in a self-imposed focus or drive that enables them to pursue their talents and work towards their achievements. Eight responses indicated that a passion for learning promoted the participants' devotion of time and effort to their studies. Ajex did not need anyone to encourage him to complete tasks on time. He said, "I know what to do next. I will do it" (Personal communication, April 15, 2017). When Alexandra set up a goal, she focused on tasks and completed them,

whether she liked or disliked them. For her, success was more important than her interest level. Similarly, Sophia "will only stay for a minute and then, I will do it myself" (Personal communication, September 1, 2017). Darek recalled his adolescent aspirations that made him focus his attention on learning more. For him, this was essential to his academic talent development. He described it as follows:

> What I'm involved in takes a lot of time and a lot of energy, for the bioengineering team. When I was president of that team, that was like a whole other part-time job on top of everything else I was doing during the semester. I didn't have to be involved with that team, but it was something that I wanted to do, and so I got involved with it, and I did it. (Personal communication, April 20, 2017)

Similarly, Maya did her best in every course and was willing to put in the extra effort when she was challenged. She acknowledged that advanced classes require a deeper level of understanding and commitment. For her, it was opportunity to show that she is capable of advanced learning. Leanne, Lob, and Louis, who graduated from selective high schools, had similar experiences regarding their commitment to tasks when they were challenged. Leanne often formed a study group and took leadership roles in academic projects. She said, "I strive to find new ways to solve problems. If I don't do my best, I feel that I have cheated myself" (Personal communication, April 22, 2017). While Louis said that in high school "I am prepared to put in a lot of effort and time to succeed. I don't always rely on teachers to teach me things; if something interested me, I would go find out about it" (Personal communication, May 3, 2017). Lob discovered the importance of motivation in college:

> I learned I can't get solid grades like A or A+ without effort [like] in high school. I must actually work hard for the first time and worked through challenging classes. [In the honors college and university] I put myself to work on a weak area. I don't get tired of putting in effort. (Personal communication, September 1, 2017)

Underachieving group. Three responses were classified into this subtheme. Among the underachieving group, this was the second most common response to the effects of intrapersonal catalysts. Underachieving students were aware of the importance of effort and time commitment, but they did not make it the point to put their knowledge into practice. Compared to achieving students, Silvia had "a strong desire to achieve certain goals" but was not good at compartmentalizing her emotions when she confronted challenges in class. Billy was easily distracted by his friends after he experienced challenges and difficulties in coursework. He stated, "[After I failed exams] I became depressed and confused about my ability. I lost my motivation" (Personal communication, July 22, 2017).

One response indicated that students may lose their perseverance due to involvements outside the honors college. John Lee was trying to settle into the ROTC program, so he did not put his best efforts in academics. He said:

> This is my junior year. I'm preparing to be an officer in the Army. Sophomore year, maybe both semesters, I struggled with grades. Freshman year I did well. Several times a week, I have to get to campus by 6:00 a.m. It was a challenge. I was in a questionable condition. [In class, I thought] tell me what I have to do to pass this class, and I'll do it. (Personal communication, August 31, 2017)

Subtheme 3. Mixed influence of introversion and extroversion. The third subtheme represents two types of personality. Achieving and underachieving students cited introversion as

a personality trait associated with disengaging from social activities and a greater need for privacy, while extroversion was described as having outgoing, fearless, or sociable tendencies. Ten responses (18.86%) supported this subtheme among the 53 responses (see Table 44). Key phrases for this subtheme include “enjoy knowing,” “quiet,” “study alone,” “social and outgoing,” and “active participation.”

Achieving group. Four responses indicated that characteristics of extroversion are associated with academic talent development. Darek did not say very much on this subject but explained that his social and outgoing personality enabled him work effectively. Leanne and Emily mentioned their active participation in classes and projects. Ajex selected curiosity and fearlessness as positive motivators for his academic talent development:

> I like to know everything, I do enjoy knowing everything. [In the] honors engineering, everyone seems so smart, they can all do these crazy things, coding, and all of this kind of thing. People are kind of scared to ask questions because they feel like it’s kind of a dumb question and maybe they should know the answer… Obviously I have a fear, but less fear than most people. That was a great characteristic that influenced academic development. (Personal communication, April 15, 2017)

Four responses indicated that the positive and negative influences of introversion on developing academic talent in the university and honors college. Harley said her introverted personality fostered her attention to academic development. However, she found it difficult to find time to be alone in college: “I love being in the honors college, but there’s not a lot of opportunity to be alone, and I think that’s just true with college. I was stressed about making friends. It was kind of a setback for me” (Personal communication, June 11, 2017). Maya said, “I

prefer studying alone because I can't focus when I am with other students. I need to be alone." However, she had to take many discussion-based classes and needed to participate in group projects. She "scheduled a study time for each exam in advance" and "blocked time in her calendar each day for studying alone" (Personal communication, April 24, 2017). Louis also perceived socialization as a stressful but necessary learning process. Alexandra intentionally acted more extroverted after she realized her introverted personality prevented her from accessing some opportunities. She said:

> Going back to being more introverted, that has hindered some things. I'm working right now to get research, reaching out to professors, and other things. But I was like really quiet or unapproachable. I felt people who are more outgoing or more personable are more likely to get certain opportunities. (Personal communication, May 5, 2017)

Underachieving group. Two responses included the effects of introversion and extroversion. Like the achieving students, the underachieving students experienced their personality types as having both positive and negative influences on their academic talent development in the university. Jackie described herself as "social" and a "leader." She struggled with finding a balance between her social life and her academic commitments. However, her extroverted personality helped her overcome this difficulty and maintain hope for eventual success. Compared to Jackie's outgoing personality, Silvia, who is introverted, felt drained by people. She expressed a need for a room where she could study alone and concentrate intensely.

Subtheme 4. Self-management as a measure of success. Self-management provides "structure and efficiency to the talent development process, and to other activities" (Gagne, 2000, p. 2). Students selected self-management skills as the last of the important intrapersonal

catalysts. Eight responses described how their self-management skills aid them in developing their academic talents. Key phrases included “say no,” “married to my calendar,” “push back,” and “hesitate to say no.”

Achieving group. Six (15.38%) out of 39 responses from the achieving student group were classified into this subtheme. They indicate that students used self-management strategies to develop plans, achieve their short-term goals, and promote self-confidence in problem solving. Louis used “independent” to describe how his self-management strategies acted as an intrapersonal catalyst. He said, “I’m very independent. I love going and talking with friends, but I don’t mind sequestering myself in my room, reading books for a weekend” (Personal communication, May 3, 2017). Emily is also comfortable with being alone, which allowed her to find out what she could and couldn’t handle. Emily is social person, but this self-management skill allowed her to say, “I can’t go to this event, this weekend or tonight, because I have to study” (Personal communication, May 3, 2017). Harley emphasized self-management as the key factor that determines academic success and stated:

> I was definitely a procrastinator before I came to university. Being an honors student has made me overcome that so much. I am married to my planner, being able to plan everything out and make sure that I am on top of things. That was not me before university. I’ve been able to commit myself to a lot more; that has really strengthened my ability. (Personal communication, June 11, 2017)

For Maya, self-management means getting adequate sleep and physical activity every day, which increases productivity and efficiency in learning. Leanne explained the effects of time-management as follows:

> I do have a lot going on with my program courses, honors requirements, and clubs, but I'm really organized. I love writing in my calendar. That has really helped me. I've been able to fit more in to 24 hours in a day. And then, just being disciplined. I don't procrastinate. If I have something to do, I will definitely do it. I don't wait around. (communication, April 24, 2017)

Sophia thought proper time management is an essential element in being successful in the university and honors college. It allowed her "to schedule, prioritize, and use a more holistic approach" (Personal communication, September 1, 2017).

Underachieving group. Two responses (14.28%) indicated that students may not know how to effectively use their ability to manage themselves and their time. Jackie experienced an academic setback in sophomore year because of a lack of self-management. She said:

> Sophomore year, it escalates. It was mixed with the difficulty of the classes and my motivation. I know who my friends are, I like my friends. I want to hang out with my friends. It was a social time, so academics took like a second seat, which was not a good idea because the classes were harder. My attention was kind of gone and I enjoyed the freedom that comes with college. (Personal communication, October 3, 2017)

Billy also was not able to effectively use self-discipline to accomplish his tasks. "When somebody called, I didn't say no. I didn't have control over my life. If I stand up for myself and let my passions and desires overcome their attempts to step on me, I'm certain that those kids will eventually just become a distant memory (Personal communication, July 22, 2017)."

Composite textural theme 4: Intellectual gifts as evidence of achievement. Interviews began with a question about the students' experiences of gifted programs in their K-12

education. Then, participants were asked to share the moments when they discovered their intellectual gifts in their K-12 education and honors college experiences. The interview focused on the intellectual gifts domain in DMGT.

Thirty-one responses supported the first composite textural theme. Twenty-one responses (67.74%) emerged from the achieving student group and ten responses (32.25%) emerged from the underachieving student group. The three most frequent categories that surfaced in fifteen interviews were the following: (a) early discovery of intellectual gifts, (b) value of noncognitive elements in defining intellectual gifts, and (c) redefining intellectual gifts into specific skills. These findings gave increased meaning to how the achieving and underachieving students' perceptions of their gifts affected their academic achievement. Both groups of students described similar perceptions and experiences, which supported the statistically insignificant results of the discriminant analysis. Table 45 presents the subthemes, frequencies, and sentence examples from the first composite textural theme.

Fourteen (93.3%) out of fifteen students participated in gifted and talented programs (e.g., pull-out gifted programs or honors classes) in their K-12 education. Lob did not have any experience with gifted programs but graduated from a prestigious private high school in his home country. Only middle school students who scored in the top 10% on entrance exams and had stellar extracurricular performance records could enter this school. Thirteen students, all excepting Harley and Lob, took Advanced Placement (AP) courses, dual credit classes, or honors classes in math, chemistry, biology or other subjects. Two students (13.3%), John Lee and Maya, accelerated grades in their K-12 education, and two students (13.3%), Ajex and Sophia were accelerated and expected to graduate early from university. Participants discussed when they

recognized their intellectual gifts and how they defined them, as well as how the gifts affected their talent development.

Subtheme 1: Early discovery of intellectual gifts. This first theme indicates that students recognized their intellectual gifts as traits of academic excellence during their K-12 experiences. Thirteen responses out of 31 responses (41.93%) described this theme. Key phrases include "first one," "fast," or receiving "extra work."

Achieving group. Nine responses stated that students recognized their intellectual gifts during their K-12 experiences. They described intellectual gifts as their abilities to learn more quickly, deeply, and creatively.

Ajex participated in pull-out gifted programs in elementary school, and honors math, biology, and physics classes and AP classes in high school. He described intellectual gifts as high achievement in even advanced classes, which gave him opportunities to explore new interests.

Alexandra was identified for a high-ability program in first grade and remained in this program until she graduated from high school. She said:

> I first realized it in first grade. I worked on a fifth-grade math workbook over the summer. I would do a few pages of work each day. One day, our family went to my sister's soccer game. I did a workbook there. I remember people asked me why I did it and I said it was because I had to. (Alexandra, Personal communication, May 5, 2017).

Darek was in gifted classes in elementary school and participated in honors and AP classes in high school. From his experience, having intellectual gifts "made learning easier. I didn't have to try to learn things [and] understand things" (Personal communication, April 20, 2017).

Emily was in a Gifted and Talented Education (GATE) program and participated in various academic competition teams such as Spell Bowl and Math Counts. For her, intellectual gifts are defined by academic achievement. She said, “I’ve always looked at grades for intellectual gifts. When teachers announce that the test average was a 73% and I got like an 84% or something, I tend to assume I’m more gifted in the subject” (Personal communication, May 3, 2017). Harley described herself as a “teacher’s pet.” She was homeschooled throughout high school age and took a lot of dual credits with professors. “I had college professors tell me how good of a student I was. So that was kind of something that clued me into my intellectual abilities…I had a psychiatrist that actually performed an IQ test on me. That reaffirmation made me accept that I was a gifted student” (Personal communication, June 11, 2017).

Although Lob did not participate in gifted programs, he won several math competitions in his school district. He realized he had a special ability in math and visual arts when he automatically understood advanced concepts in these subjects in middle school. Leanne was identified for the afterschool enrichment program in elementary school and went to a science- and math-focused magnet school. She realized her intellectual gifts when she was put in the accelerated program in the magnet school. She said, “It was a different experience to get into fast-tracked mathematics because I was selected from among other students with high-abilities” (Personal communication, April 22, 2017).

Maya described intellectual gifts as learning some content earlier and faster than her peers. She explained, “I was identified as being gifted ever since I was in kindergarten. I used to attend a class for gifted students for an hour every day. I remember I was the first one who finished the worksheets in class” (Personal communication, April 24, 2017).

Sophia discovered her intellectual gifts in first grade. Her teacher suggested to her mother that she get tested and Sophia started pull-out programs. She said, “There was no certain point [when] I realized but I felt I’m gifted because I had different spelling lists, different multiplication tests, I read different books than other people” (Personal communication, September 1, 2017).

Underachieving group. All four underachieving students had similar to achieving students’ perceptions and experiences about their intellectual gifts in their K-12 experience. Jackie could read earlier than others in kindergarten and was identified for the regional gifted center program. She said:

> Homework with everybody else for me was very easy. My teacher gave me extra homework and taught me extra on top of the stuff. I realized that I’m just a little bit ahead of most other student. I was in the honors program, and then all throughout high school I was top of my class. So, ever since second grade whenever it was pointed out to me, that I was different.” (Personal communication, October 3, 2017)

Billy grew up in public school gifted programs. He experienced ability grouping, specialized instructions, and advanced content classes throughout the gifted programs he attended. He said:

> The first time I realized I was smarter in kindergarten was when I was one of the first kids that was able to read, and we always had like reading tests and stuff, so I'd be able to read more difficult books versus other kids. (Personal communication, July 22, 2017)

Table 45. *Composite Textural Theme 4: Sub-themes, Frequency of Responses, and Example Responses*

		Achieving Group *n* = 11 T. Number of Responses[a] = 21		Underachieving Group *n* = 4 T. Number of Responses[a] = 10
Subtheme	Freq. (%)[b]	Example Response	Freq. (%)[b]	Example Response
Early discovery of intellectual gifts	9 (42.85%)	"I was identified as being gifted ever since I was in kindergarten. I used to attend a class for gifted students for an hour every day. I remember I was the first one who finished the worksheets in class"	4 (40%)	My teacher gave me extra homework and taught me extra on top of the stuff. I realized that I'm just a little bit ahead of most other student.
Value of noncognitive elements in defining intellectual gifts	6 (28.57%)	"Simply getting in to the honors college was influenced by my giftedness, and my success within the college, both academically and relationally, has been due both to my own hard work as well as intellectual giftedness."	3 (30%)	"I've always been sixty percent ability, forty percent effort. I think it's more towards intellectual ability, but I think a strong effort can offset the ability"
Redefining intellectual gifts into specific skills	6 (28.57%)	Intellectual gifts helped her "better conceptualize a certain idea, translate it onto paper in the form of an equation in STEM-major courses"	3 (30%)	Intellectual gifts were the "ability to think critically to see problems a little differently and make understanding hard concepts easier in upper level classes"

[a]Total number of responses per group,

[b]Percentage of responses = $\frac{\text{a total number of responses per subtheme}}{\text{a total number of response per group}}$

John Lee moved grades at a more rapid rate than his peers; this kept him more interested in school and able to perform at higher levels on achievement tests. According to his own definition, intellectual gifts are the "ability and development" that provided him with a brighter future (Personal communication, August 31, 2017).

Silvia took honors and AP classes in middle and high schools. She explained:

> I recognized my intellectual giftedness when I observed that I get higher grades than my peers on assignments and standardized tests. I am able to read books faster and know the meaning of more words than they do. I also seem to know more facts about many different matters than they do. (Personal communication, November 2, 2017)

Subtheme 2. Value of noncognitive elements in defining intellectual gifts. Participants were asked to define their intellectual gifts in their own words. Nine responses out of 31responses (29.03%) indicated that students are aware of the value of effort and other noncognitive elements in developing their intellectual gifts. Key phrases included, "work harder," "effort," and "being curious."

Achieving group. Six responses indicated that students perceived non-cognitive elements as parts of the intellectual gifts. Sophia used "persistence" to describe her intellectual gifts. She said:

> Even after a bad grade on a test, I worked even harder to become better. It means that I have better knowledge of what to do when I am academically challenged, such as attend SI sessions and do more practice problems. It means I am able to complete certain tasks quicker. (Personal communication, September 1, 2017)

Alexandra defined her intellectual gifts as a "predictor" for her achievement and said, "I was born with it a little and I don't want to take credit for [it]. I try to utilize it and do what I can with it" (Personal communication, May 5, 2017). For Leanne, intellectual gifts meant having the "responsibility" to exert every possible effort in carrying out tasks (Personal communication, April 22, 2017). Darek emphasized that "being curious" and "ready to take risks" were essential components of intellectual gifts (Personal communication, April 20, 2017). Harley, a film major, defined her intellectual gifts as "creative thinking" regarding the problems in her life and an empathetic understanding of them (Personal communication, June 11, 2017). Maya said:

Being a gifted student doesn't mean I don't have to work hard, but it makes consistently performing at a high level easier. Simply getting in to the honors college was influenced by my giftedness, and my success within the college, both academically and relationally, has been due both to my own hard work as well as intellectual giftedness. (Personal communication, April 24, 2017)

Underachieving group. Three responses indicated that underachieving students were aware of the importance of effort in the definition of the intellectual gifts, similar to their achieving peers' perceptions.

For Billy, intellectual gifts are defined by "level of effort and ability" because the school system required certain amount of effort as well as ability to succeed (Personal communication, July 22, 2017). John Lee said, "I've always been sixty percent ability, forty percent effort. I think it's more towards intellectual ability, but I think a strong effort can offset the ability" (Personal communication, August 31, 2017). Silvia stated, "it's a combination of ability and effort for me. I know our giftedness isn't what ultimately determines who becomes truly successful" (Personal communication, November 2, 2017).

Subtheme 3. Redefining intellectual gifts into specific skills. Students discussed whether they had a chance to better understand and hone their intellectual gifts in the honors college curriculum. Nine responses out of 31 responses (29.03%) indicated that students used specific skills to define their intellectual skills in the honors college.

Achieving group. Five responses indicated that students have applied their intellectual gifts to specific skills. Ajex described his intellectual gifts as a type of analytical thinking skill to see holistic systems. He had had research experience with an honors class teacher in high school. He said:

> I did it with a couple of other kids in the honors class. I was able to more systematically sort of isolate each variable and look at how each thing might be affecting whole while other kids felt very overwhelmed… [In the honors college] I've done lots of group writing projects. I found out my strengths in writing comes from the analytic thinking to be systematic. I was able to address one thing and then address the next and not let them hurt one another. (Personal communication, April 15, 2017)

Similarly, Alexandra discovered her intellectual gifts in communication and discussion skills. She said, "I have a different way to express the topic to make things a bit more fair and make sense" (Personal communication, May 5, 2017). Emily described her intellectual gifts as "being able to hold critical conversation with a professor, being able to have those opportunities and not be too self-conscious" (Personal communication, May 3, 2017). Darek identified himself as "conceptual learner," which enabled him to "pick up the languages of different disciplines and be successful in the honors college" (Personal communication, April 20, 2017). For Ava, quantitative skills represent her intellectual gifts, as they helped her "better conceptualize a

certain idea, translate it onto paper in the form of an equation in STEM-major courses" (Personal communication, June 6, 2017).

Underachieving group. Three responses indicated students had been able to identify their intellectual gifts as specific skills. These students had also been able to apply these skills to honors coursework.

Jackie found leadership skills to be an expression of her intellectual gifts in the honors college. She stated:

> Regardless of scenario, I can take charge and I can lead people. I'm more of a social, outspoken person, so my intellect comes out of that. I tell people what to do, how to do it, and then whenever I tell them, they see that it's the best way to go about it, or the smartest way to go about it. So, when I'm telling them - and giving them tasks or a to-do list, things like that, they can see that all of the thought processes already happened in my head. (Personal communication, October 3, 2017)

Silvia selected "ability to think critically to see problems a little differently and make understanding hard concepts easier in upper level classes" (Personal communication, November 2, 2017). John Lee found his intellectual gifts to be in writing and debate skills in the honors college. He said:

> I had the formulation of arguments. This university is nationally known for its diversity. My favorite part [in the honors college] is coming up with arguments, understanding the opponent's side of things, and understanding what they're talking about without having to necessarily accept it. (Personal communication, August 31, 2017)

Composite Structured Themes from Student Interviews

The composite textural themes describe experiences shared by three or more participants and pertained to "what" happened in relation to the phenomenon under investigation. The following section discusses the composite structural themes that highlighted "how" honors students experienced academic talent development, according to their beliefs and values. A total of 76 key statements or phrases belonged to this theme (Table 46).

Table 46. *Frequency of Student Participant Responses by Structural Themes*

	Composite Structural Theme			
	Theme # 1	Theme # 2	Theme # 3	Theme #4
Ajex	2	1	1	0
Alexandra	3	2	1	1
Ava	3	1	1	0
Billy	3	1	1	1
Darek	2	1	1	1
Emily	2	1	1	0
Harley	2	1	1	0
Jackie	3	1	1	1
John Lee	3	1	1	1
Leanne	2	1	1	1
Lob	2	1	1	0
Louis	2	1	1	0
Maya	2	1	1	0
Sophia	3	2	1	1
Silvia	2	1	1	0
Total	**36**	**17**	**15**	**8**

Four composite structural themes emerged: (1) empowering value-driven environments, (2) comprehensive talent development, (3) dynamic and mixed goal orientations, and (4) critical awareness of academic talents (Table 47).

Composite structural theme 1. Empowering and value-driven environments. Based on the composite textural theme 2, underachieving students are characterized by "pressures" and "anxiety" when they were faced with unreachable expectations from parents and professors.

In addition, they were concerned about their peer relationships and the effect of their peers. The following structural theme describes 'how' honors students were encouraged or discouraged by family, peers, and staff in developing their academic talents.

Subtheme 1: Generation Z and their parents' involvement. Responses indicated that parents tended to protect their children from mistakes and were actively involved in the honors students' decisions, from declaring a major to selecting coursework.

Achieving group. Ajex, Harley, Ava, Darek, Maya, Louis, and Sophia discussed their academic majors and future careers with their parents. Ajex described his parents as "knowledgeable" and Ava explained that her family is "really close and supportive" of her decision to major in biology and go to medical school. Harley believed that her parents' guidance helped her know when she was headed in the "right direction."

Darek decided to follow his father's career because he wanted to be like his father, and his father had already provided much information about how to succeed in that field. Sophia described her mother's contributions to her choices of a university and a major: "She is social and has constructed ideas about being an engineer, doctor, pharmacist, and their salaries. She searched for information and explained the paths of that career" (Personal communication, September 1, 2017).

Two students considered changing their major and career path and negotiated the decisions with their parents. Their parents actively participated in the discussions and provided guidance to help their children make reasonable decisions for their future. Lob explained his experience of negotiating his career:

> When I first told my parents that I want to change my major, it was computer science, they [parents] supported it. But when I wanted to change my major again,

> it was special education. My father said, "At least get a minor in some kind of engineering or science." I looked for resources to discuss this issue, professors, advisors. [Those discussions] reminded me of what I wanted to do in the first place. So, I decided to go to a Special Education major. (Personal communication, September 1, 2017)

Lob and his parents still debated his choice of major. This process encouraged him to do his best to validate his decision to his parents. Alexandra also tried to explore other majors to find a career that would fit her perfectly. Pre-pharmacy was her mother's choice, rather than her dream job. She said, "I initially thought that I would follow in my mom's guidance but starting in the pre-pharmacy last year, that has all changed" (Personal communication, May 5). She heard that pharmacists were overworked and feared losing her job in the future. Her mother, however, had different opinions and recommended that she continue to prepare to apply for a pharmacy program.

Underachieving group. The four responses from all the underachieving students showed that these students had discussed their majors and careers with their parents. Like the achieving students, these parents wanted their children to attain acclaimed and stable careers, such as doctor, lawyer, and engineer. Billy stated:

> When I went to the engineering program orientation, I was uneasy about it. Then, a local college offered an interactive media major, so I told my parents that even though the engineering program seemed promising, I would choose to become an interactive media major. My parents talked about the society I will be in. If you are in a pre-med program, if you are in engineering programs, if you are in pharmacy program, there are

Table 47. *Composite Structural Themes and frequency of responses*

	Achieving Group *n* = 11 T. Number of Responses[a] = 53		Underachieving Group *n* = 4 T. Number of Responses[a] = 23	
Subtheme	Freq. (%)[b]	Example Response	Freq. (%)[b]	Example Response
Empowering and value-driven environments	25 (47.16%)	"She [mom] is social and has constructed ideas about being an engineer, doctor, pharmacist, and their salaries. She searched for information and explained the paths of that career."	11 (47.82%)	"My parents talked about society I will be in. If you are a pre-med program, if you are in engineering programs, if you are in pharmacy program, there are student societies for you and more opportunities to develop your career."
Comprehensive talent development	13 (24.52%)	"It is a package of opportunities to meet great people." "[Honors college] challenged me intellectually and pushed me to work harder."	4 (17.39%)	"The honors college provides opportunity to grow." "I don't think this challenge is equally important to my GPA."
Dynamic and mixed goal orientations	11 (20.75%)	"I'm creative and enjoyed exploring various topics for film. In my classwork, I got some B's and I did see it as a failure."	4 (17.39%)	"My goal of this semester is getting an A on most quizzes and tests."
Critical awareness of academic identities	4 (7.54%)	"I just assumed that I was smarter than other kids. It's always kind of been there with me. But now that I'm in college I realize that like, I am not smart or, I don't know if I'm gifted, but definitely being part of the honors college, showed me that I'm not as smart as I thought."	4 (17.39%)	"Because of these fancy titles [honors and AP classes] I assumed that I was smarter than other kids. I'm realizing, I am not smart, or I don't know if I'm gifted."

[a]Total number of responses per group, [b]Percentage of responses = $\frac{\text{a total number of responses per subtheme}}{\text{a total number of response per group}}$

student societies for you and more opportunities to develop your career. (Personal communication, July 22, 2017)

Two students extended the discussion of their parents' involvement to their parents' expectations about the students' future careers. Differences between two groups were found in the students' reactions to their parents' expectations about academic achievement and careers. John Lee's father had strongly pushed him to obtain a stable and honorable job in the United States. John Lee felt the responsibility to live up to his parents' expectations and follow his father's guidance. Similarly, after careful consideration, Jackie decided to stay with engineering and with the honors college because of her father's expectations. "My father has seven siblings and extended family members he should support. My father values education like I do. But I was overwhelmed with how much books cost and the entire cost of school." Although her father did not have many of the resources that others had, he supported her. She thus had the "desire to succeed" and to accomplish her and her father's goals (Personal communication, October 3).

Subtheme 2: Expectations for faculty and advisors Both achieving and underachieving students evaluated the honors professors as providing quality content and having an open mind in non-classroom discussions. Differences were found, however, in quality interactions with faculty and in the helpfulness of meeting with honors advisors, based on the composite textural theme 3. The following composite structural theme describes why honors students desired different levels of instruction, interaction and counseling.

Achieving group. Eleven responses indicated that honors students have different levels of expectations when it comes to instruction and advising by honors faculty and advisors. One of the honors program's benefits is higher quality of interaction with faculty. Six students said that one of the reasons they accepted the honors college invitation was the opportunity to receive

personal advising and mentorship from faculty members. Emily accepted because “my mother explained I will get more opportunities to work with faculty members. I become close to two faculty members. They’ve been instrumental in helping me with life advice” (Personal communication, May 3, 2017). Louis, Ajex, Sophia, Maya, and Ava indicated that they joined the honors college, because the small classes allowed for a more personal connection with faculty and friends. Louis said, “My mom said that I was born shy. I never get personal attention from teachers. I knew I would get more opportunities to see faculty members in the honors college” (Personal communication, May 3, 2017).

According to composite textural theme 2, experiences with honors advisors differed dramatically for both the achieving and the underachieving students. Six responses from Ava, Emily, Darek, Louis, Lob, and Leanne indicated that students would like to receive more detailed direction from their interactions with advisors/staff. Ava, Louis, and Leanne mentioned that their parents had more resources and could provide more detailed guidance than the honors staff. Ava said, “My mom has more resources than my advisor.” When she wanted to apply for awards and internships, her advisor sent her a link and told her to read the instructions, but her mother explained the details of how to apply, specific benefits, and discussed how she could use that award in the future (Personal communication, June 6, 2017). Emily, Darek, and Lob stated that they would like to meet advisors who were more knowledgeable in their fields of study. Darek said, “My advisor seems like he is not familiar with engineering program” (Personal communication, April 20, 2017).

Underachieving group. Similarly, three underachieving students, Billy, Jackie, and Silvia, expressed unmet expectations about their interactions with faculty members. Four students explained that their advisors did not understand the issues that led to gifted students’

underachievement. John Lee said, “I don’t have any serious personal issues like smoking, drugs.” He felt that the advisor did not try to understand the reasons for his honors college experiences and his opinions about it (Personal communication, August 31, 2017). Billy felt that the advisors and tutors in the academic success center were not able to help him increase his GPA. He stated, “Tutoring services are designed for students who need academic service for general class levels. I need someone who can teach advanced levels.” He wanted to meet “a master teacher” who could help him achieve his potential (Personal communication, July 22, 2017).

Subtheme 3: Peer effects: Social groups focused on academic success. The underachieving students were more concerned about the lack of diversity in the honors college, while both achieving and underachieving honors students agreed about their experience of intellectual engagement with honors peers. College is an important time in developing students’ personal and social identities as adults. The following composite structural theme describes how achieving and underachieving students differently perceived the roles of their honors peers during their development at college.

Achieving group. Seven responses indicated that the students’ social development facilitated their personal and academic development in the honors college. These students perceived their honors college peers as an important step in the whole of their human development, rather than just as an elite group of students focused on academic success. They developed their friendships and academic abilities simultaneously through honors classes, projects, and honors residence hall life. Alexandria met her boyfriend as she was discussing the questions of “Who am I? What kind of talent do I want to develop?” during classes and projects. They found that they had the same interests and friends. She learned how to view education as a

fun activity with him and with her friends. Similarly, Maya and Ava said that their study group meetings often turned into counseling sessions or parties. Although they knew it was not productive, they perceived these times as another way to release the pressure of university life. Darek described his honors peers as a "football team" and said, "I played a football in high school. We are the largest group of volunteers in every community action day. We are taking the same classes and working on group projects. We are also in the same living-learning community. It all comes together to make it feel like a team" (Personal communication, April 20, 2017). For Harley, the honors college was a new environment where she met her first friends and core groups of friends in the university. Because she was homeschooled during high school, the honors college provided opportunities to learn collaboration, friendship, and social life. Similarly, Sophia and Emily stated that honors peers created a small community where everyone felt connected.

Underachieving group. Compared to achieving students, three underachieving students perceived that that their honors college experience was mainly focused on their academic development. John Lee view his honors peers as highly motivated and academically engaged. However, he did not connect with them. Instead, he formed a wide network with his peers in the ROTC and his academic program. Billy lived off-campus and was not socially engaged in the honors college. Instead, he had many friends in his university newspaper club and was able to meet and enjoy working with diverse students through the club. He emphasized that honor students should actively participate in activities outside of the honors college. Silvia saw her honors peers as people who you want to work with, rather than as a source of friendships. She explained:

> I'm just in the generic physics class. If you see that someone in your lab or in your lecture or recitation is an honors student, you are much more inclined to work with them, because you know they have a higher standard than perhaps someone else might. Which isn't necessarily true for everyone, but that implication is there. (Personal communication, November 2, 2017)

Composite structural theme 2. Comprehensive talent development. According to composite textural theme 1, underachieving students had fewer experiences with appropriate challenges in their honors class and were more involved in extracurricular activities outside the honors college. The following structural theme describes reasons for why students felt that the time and energy expended on the honors degree are rewarded or not, and their perspectives on the value of the honors degree in their talent development. Honors students need to complete 24 credit hours of honors courses, along with a thesis or scholarly project, to earn their honors diploma. Although the curriculum requirements vary from major to major, about 20% of students' coursework is completed within the honors program. During discussions on the influence of honors curriculum on their talent development, students described their beliefs, perceptions, and experiences of both their honors courses and general courses.

Achieving group. The primary reason students invested time and energy into the honors college was to meet the intellectual challenges, as found in composite textural theme 1. The other purpose of investing time and effort was the opportunity to grow. These responses indicated that achieving students valued their commitment to the honors college and saw diverse opportunities to develop their talents. Thirteen responses were identified as describing the benefits of research opportunities, because this gave them an opportunity to have a hands-on experience in the creation of experiments and research designs. Alexandria, Ava, Darek, Emily, Harley, Sophia,

Lob, and Maya all mentioned this, and Ava explained the effort she put into finding research opportunities:

> When I decided to join the honors college, I expected having more research opportunities to be honest. I was accustomed to finding research assistantship individually, but many other students got help from their professors. I used my peers to bounce ideas off each other and become more knowledgeable to how to proceed with my research. (Personal communication, June 6, 2017)

Likewise, Sophia described the reason for her investment in research opportunities as looking for practical experience. She stated that her honors college participation allowed her to use the knowledge given and apply it in the real world." (Personal communication, September 1, 2017).

Darek and Ajex described the opportunities to meet various people and grow personally. Honors students tend to have more opportunities to meet with faculty members, staff, and peers in casual environments. Darek found that his peers and the honors staff influenced his development. His peers were "very supportive of his intellectual development" and encouraged him to reach his potential (Personal communication, April 20, 2017). Ajex said, "It is a package of opportunities to meet great people. We converse among each other and create a support group filled with intelligent people who we know will always be with us no matter what." (Personal communication, April 15, 2017).

Harley, Alexandra, and Maya described the internships and scholarship opportunities that supported their long-term academic goals and aligned with their academic needs. Harley explained how her internship and scholarship helped her parents financially and helped her to prepare for graduate school. These opportunities similarly helped Alexandra to prepare for her desired graduate school and helped Maya realize her dream to study abroad.

Underachieving group. Like the achieving students, the underachieving students perceived the honors college as providing opportunities for growth. Even if students did not attain the 3.5 GPA, the honors college was slow in addressing students' underachievement issues, so underachieving students could retain their honors standing for at least two semesters. Jackie and Silvia frequently mentioned that participation in the honors program represented a substantial commitment of time and effort. In return for their effort, Jackie described the opportunity for relationships that encouraged success when she confronted academic difficulties. She also believed that a summer research opportunity or internship through the honors college would aid her academic career. In contrast, Billy and John Lee simply stated that they did not find many opportunities in the honors college. As follow up, I asked Billy what motivated him to spend time and effort on talent development. Billy selected getting a stable job in an engineering field and going to graduate school to study journalism as motivations. John Lee was motivated by his clear vision for his future as an officer and engineer.

Composite structural theme 3. Dynamic and mixed goal orientations. In the second composite structural theme, both group of students understood the roles and importance of intrapersonal catalysts such as time and effort, commitment, self-management, and personality. Differences were found in how students applied their understanding to the learning process. The second structural theme described the cognitive representations of the goals the students pursued, as these goals explained the student's motivations for succeeding academically in the honors college and at the university.

Achieving group. Eight out of eleven achieving students (72.72%) showed multiple goal orientations. That is, these students were motivated to do well both because they wanted a better grade and also because they were focused on the process of learning. For Darek, Lob, Louis,

Maya, and Ava, achievement was a process. Darek was always willing to explore new concepts, Ava and Lob focused on understanding new material, and Louis did not hesitate to dig into materials to master learning. Maya said, "because I follow my passion, it drives me to work harder and develop my academic talents." (Personal communication, April 24, 2017).

These students also indicated that they avoided appearing incompetent because their achievements directly affected their future careers and scholarship goals. Darek perceived that a grade of B meant a there was room for improvement in his goal to be a professional in an engineering field. Lob wanted his parents to see that he was capable of success in the field of special education. Thus, he studied hard to get internships, awards, and research opportunities. Louis stated that "achievement in the honors college [and in high school] gave me an edge in a competitive world" (Personal communication, May 3, 2017). For Ava, achievement in the honors college means she was one step closer to the medical school she wanted to go to:

> My next plan is getting into medical school to be a doctor. Academic success, grades, are paramount because especially as a pre-med student if you don't have the correct GPA, they don't look at you. I'd like to stay in my room all day and never leave to study if I need. (Personal communication, June 6, 2017)

Similarly, Ajex, Emily, Leanne, and Harley had multiple goals that encouraged them to pursue their achievements. For example, Harley was an interdisciplinary film major in the College of Liberal Arts. She enjoyed trying out a lot of new strategies when doing projects, but she was performance-oriented during exams. Harley stated:

> I've written, directed, produced, and edited a film this semester for a mentor project. That will be forty to fifty minutes. And I'm doing my honors thesis project. I'm

> creative and enjoyed exploring various topics for film… In my classwork, I got some Bs and I did see it as a failure. (Personal communication, June 11, 2017)

Underachieving group. Whereas approximately 70% of achieving students showed multiple goal-orientations, all four underachieving students emphasized their achievement goal orientation. Two students, Jackie and Silvia, expressed a strong focus on reversing their underachievement and two other students, Billy and John Lee, were focused on completing their courses. Silvia was interested in the field of biology, which she felt was "often described by students as one that males should naturally comprehend" (Personal communication, November 2, 2017). In her sophomore year, she had lost motivation and performed poorly when she realized her "classmates [knew] way more than her and scheduled more time for side projects to do well in class and labs" (Personal communication, November 2, 2017). Additionally, she said, "my goal of this semester is getting an A on most quizzes and tests" as a "B is room for improvement" (Personal communication, November 2, 2017). Jackie also attempted to bring her grades back up, to fulfill her short-term goal of excelling. John Lee opted for easier tasks for which success was guaranteed, because he had additional responsibilities in the ROTC program. For Billy, motivation for achievement was deeply related to his parents' finances. He saw how his parents worked hard to make money. Thus, he was focused on getting his GPA back to the level where it would aid him in applying to a stable job.

Composite structural theme 4. Critical awareness of academic identities. Students encounter a broader social context when they enter university. They construct a sense of self and others through interactions with more competitive norms and expectations (Torres, Jones, & Renn, 2009). According to the first composite textural theme, both groups of students recognized their intellectual gifts as traits at an early age, perceived those gifts as specific skills in the

university and honors college, and understood the value of non-cognitive elements. In the following structural themes, students' responses indicated how they understood what it means to be gifted in the environment of the honors college and the university. Both groups of students indicated similar perceptions of their intellectual gifts as important parts of their identities. They also had in common the challenge of maintaining academic self-confidence when faced with competitive peers.

Achieving group. Seven responses indicated that students perceived their intellectual gifts as being an essential part of their identities. They were recognized as "gifted," "smart," "best," "bright," and "honors" students in school prior to higher education. In the honors college and university, however, they realized that their intellectual gifts did not guarantee academic achievement. Alexandra first realized that she may not be gifted in university classes. She described her feelings about the "unexpected hurdles" when she was challenged to compete with peers who knew more than she did in her honors courses (Personal communication, May 5, 2017).

Darek found that "everyone in my engineering program was as bright as I am. I felt overwhelmed about everything on my plate" (Personal communication, April 20, 2017). He also met "many gifted high school students who were astounded by the amount of effort it takes to get As in university." (Personal communication, April 20, 2017).

Sophia described her experiences with competitive peers:

> In middle school, I was actually put in a separate type of learning environment because I was smarter than other kids… because of these fancy title names, I just assumed that I was smarter than other kids. It's always kind of been there with me. But now that I'm in college I realize that like, I am not smart or, I don't know

> if I'm gifted. But definitely being part of the honors college showed me that I'm not as smart as I thought. (Personal communication, September 1, 2017)

Similarly, Leanne discussed her reflections on IQ and academic success. She described herself as "gifted" and felt comfortable with this identity in high school. Her invitation to the honors college confirmed her intellectual gifts. However, she emphasized that even gifted students should be aware of their strengths and weaknesses. Leanne stated:

> You must understand your limits academically as a student, so you don't end up competing in fields in which it is not probable for success. You must be blatantly honest to yourself and choose fields that you are going to excel at. It doesn't matter what you are stats are if you don't understand the subject you choose. (Personal communication, April 22, 2017)

Underachieving group. Underachieving students also saw themselves as "smart," "gifted," and "intelligent" students. Jackie said, "I would say before college, it [giftedness] meant a lot to me, because it was one of the main things that people knew me as. They knew me as the smart one, the capable one, the gifted one" (Personal communication, October 3, 2017). Three responses indicated that underachieving students also had rethought their intellectual gifts when they entered a more competitive academic environment. Billy said:

> Because of these fancy titles [honors and AP classes] I assumed that I was smarter than other kids. It's always been with me. I didn't realize how hard college was going to be. In high school, "I'm top of my class, I have an over 4.0 GPA. I'll be fine for college." And then, I started the honors engineering program with all the smartest kids from all over the world. I got terrible grades first semester on all my

> first exams, and I'm still doing pretty bad. I'm realizing, I am not smart, or I don't know if I'm gifted. (Personal communication, July 22, 2017)

Similarly, Silvia found an abundance of gifted peers and realized that she would not receive frequent recognition for her ability in the university and the honors college. John Lee said, "I had a 4.7 GPA in my small high school. No one was going to look at my high-school grade anymore. I found I'm average in the rest of the world. I stopped being gifted" (Personal communication, August 31, 2017). In fact, most honors students meet many highly intelligent students from around the world in this selective and research-focused university. As the participants noted, this means they may cease to be noted for their intellectual abilities. This situation led the achieving and underachieving honors students to reconstruct their senses of identity and ability.

Composite Textural from Staff/ Advisors' Interviews

The qualitative data from the staff/advisor interviews were analyzed using Creswell's (2007) simplified version of Moustakas' (1994, p.121 – 122) revision of the Stevick (1971)-Colaizzi (1973)-Keen (1975) Method for Analysis of Phenomenological Data. Two advisors and one director of student engagement in the honors college participated in in-depth interviews in 2017. This section presents four composite textural themes with six subthemes and four structural themes that occurred in these interview (Table 48).

A total of 26 phrases or sentences were identified as belong to four composite textural themes (see Table 49). The composite textural theme 1, which covers the influence of intrapersonal catalysts, had the most responses (n = 12). Theme 4 concerning intellectual gifts had the fewest responses (n = 4). Additionally, these participants expressed concerns about the challenges they faced; these responses were categorized into a fifth theme unrelated to the components of the DMGT.

Table 48. *Components of DMGT, Composite Textural and Structural Themes*

Components	Composite Textural Themes	Composite Structural Themes
Intrapersonal Catalysts	1. Motivation and Anxiety • They are motivated • They want to be perfect	Driven by Internal Rewards but Focused on Extrinsic Rewards
Environmental Catalysts	2. Expectations and Pressure • They are influenced by peers • They face high expectations	Appreciated Benefits or Did Not Value Benefits
Developmental Catalysts	3. Engagement and Challenges • They are engaged in academic and extracurricular activities • They meet life challenges	Engaged but with Different Areas of Focus
Perceptions of gifts	4. Intellectual gifts as Potentials to Achieve	High Potential but Varied Levels of College Preparedness

Table 49. *Frequency of Participant Responses by Theme*

	Composite Textural Theme			
Pseudonym	Theme #1	Theme #2	Theme #3	Theme #4
Eric	4	2	2	1
Sarah	3	1	2	1
Julie	5	2	1	2
Total	**12**	**5**	**5**	**4**

Composite textural theme 1: Motivation and anxiety. Among the 26 responses, 12 responses (46.15%) supported the first composite textural theme. The participants discussed the influences of intrapersonal catalysts on the honors students' academic talent development. According to these responses, honors students tend to value learning itself, as well as high academic performance. Subthemes were: (a) they are motivated and (b) they want to be perfect.

Subtheme 1: They are motivated. Eight of the 12 responses (66.67%) under the composite textural theme 1 supported this subtheme. All participants noted that the honors students were interested in and passionate about learning. They used phrases such as

"conscientious," "self-motivated," and "driven" to describe the students. Eric had met honors students who liked to learn, sought academic challenges, and who were not necessarily motivated by external factors. Sarah thought the students were also motivated by observing each other's learning in their classes, projects, and residence hall experiences within the honors college. Julie, however, had met some honors students who do not want to be identified as different and therefore hid their motivation in their classes.

Both advisors described the honors students they had met as focused on their achievements and grades. Eric described them as self-motivated, and added:

> But the secret rule is, no one wants to get a B in their coursework. I often found the motivation does not work positively. Many students work to get the minimum GPA required to get accepted into their desired college. I try to help them focus on learning rather than grades. (Personal communication, November 31, 2017)

Julie stated that the honors students are accustomed to being around the top of their class. Thus, when the encountered competitive peers in their honors courses, they increased their attention to their grades. In meetings, students were typically interested in learning about workloads, grading criteria, and exams.

All three participants agreed that many honors students have academic and career goals, though a few do not. Sarah said that many students in their leadership programs demonstrate their dedication to their career goals through internships and working at labs. These students carefully plan out their academic and work hours. Eric had many students in his student cohort who were preparing for graduate schools, pharmacy programs, law school, or medical schools. He found that "They know how to manage their time and energy" (Personal communication, November 31, 2017). The students selected classes in accordance with their goals; many students

in his student cohort wanted to take upper-level classes such as chemistry to help them get into graduate schools, while others wanted to take general courses to get an 'A.' Sarah thought that early registration helped students to schedule their classes and academic activities. She also suggested that some of the honors students needed to develop time management skills. "[Some of the honors students] are different from what I expected. They are the stereotypical lackadaisical teens, underprepared" (Sarah, personal communication, November 15, 2017).

Subtheme 2: They want to be perfect. Consistent with the focus on grades, the second subtheme in terms of intrapersonal catalysts was perfectionism. Four of the 12 responses (33.33%) in the first textural theme described students' anxiety about success. All three participants named perfectionism when they listed the internal catalysts of the honors students. They used phrases such as "right," "intensified," and "anxious." Students tended to place pressure on themselves and compared themselves to their peers. Consequently, Sarah believed that they tended to perceive failures differently than their peers. Sarah observed that "many students among the honors ambassadors panicked when they get a B, because they are so used to getting straight A's" (Personal communication, November 15, 2017). Eric stated that many honors students have high anxiety, which then leads to bad performances. However, many students in his student cohort were quiet and thus did not share these issues in meetings. Julie, who just started her career in higher education, said, "I was expecting a more enthusiastic and talkative group of honors students, but it was the complete opposite, and it took me quite a while to get them to start talking." (Julie, personal communication, September 17, 2017). Eric had some students who had decided to leave the honors college when they earned lower grades than they expected. As he did not know about these issues in advance, he believed that "honors

students pay close attention to faculty and advisor and communicative" in sharing their issues (Personal communication, November 31, 2017).

Composite textural theme 2: Expectations and pressure. Among the 26 responses, five responses (19.23%) described the environmental factors' influences on honors students' academic talent development. Two subthemes were (a) they are influenced by peers and (b) they face high expectations.

Subtheme 1: They are influenced by peers. All three participants selected peers as one of the important environmental catalysts. Phrases used to describe peer effects were "intense," "group work," and "respectful." Sarah described how honors students' involvement in academic and extracurricular activities, such as community service, student organizations, and Greek life, had a heavy influence from their peer relationships. In addition to these opportunities, "students had a lot of interactions with peers in the program that helped them feel comfortable at the university" (Personal communication, November 15, 2017). Julie believed that honors students were encouraged by their honors peers who were responsible, concerned about their grades, and shared a similar mindset. Eric touched on the situation of the students who do not form these strong relationships within the honors college:

> I have some students whose core friend group is outside of the honors college. In this case, many students have struggles to adjust to the honors college. Peer pressure appears to be one of the leading factors in students' academic decisions as well as their performance. (Personal communication, November 31, 2017).

Subtheme 2: They face high expectations. Two responses described the high expectations facing students in honors courses. In speaking of these environmental catalysts, two participants used the phrases "rigorous coursework," "more risk," and "challenge." As honors advisors, Eric

and Julie described honors courses as employing rigorous grading and requiring higher levels of thinking. Eric stated, “honors courses contribute to developing students’ academic talent. These courses provide more in-depth coverage of the subjects and demand a higher level of thinking from the students” (Personal communication, November 31, 2017). Julie felt that her student cohort enjoyed the honors seminar because it discussed complicated social issues. These advisors shared that professors have different expectations for honors classes and research projects than they do for typical undergraduate classes. The said that professors used more collaborative and experiential learning approaches in the honors courses.

Composite textural theme 3: Engagement and challenges. Among the 26 responses, five responses (19.23%) belonged to this theme, which described the effects of time and effort investment on students’ academic talent development.

Subtheme 1: They are engaged in academic and extracurricular activities. Three responses supported this subtheme. When the three staff/advisor participants discussed their experiences with the student’s developmental processes, their responses included “outside of the box,” “grow,” and “supportive.” Eric described honors students as seeking resources and opportunities that would serve them well in their career goals. He stated that many students sought out opportunities to improve their writing and research skills. Julie felt that, “watching the students grow and develop was a very rewarding experience for me” (Julie, Personal communication, September 17, 2017). Sarah also saw that “students in community programs wanted to develop their leadership skills for their future careers” (Personal communication, November 15, 2017). But as with other areas, Eric mentioned that there are a variety of students in the honors college, and some of these students are not interested in activities related to personal or academic development.

Subtheme 2: They meet life challenges. Eric and Sarah both mentioned the challenges that students face while developing their talents, both inside and outside the honors college. Eric gave the challenges facing sophomores as an example: he explained that many students need to move out of the honors residence halls, declare their major, and prepare for internships in this year. Eric also listed a broad variety of other challenges, such as scholarships, marriage, friends, and family issues, but he did not provide specific examples. Sarah felt that students became more involved in leadership programs and took on leadership roles in their sophomore year, and that this caused some students to lose the balance between their academic and social lives.

Composite textural theme 4: Intellectual gifts as potentials to achieve. As the staff discussed the intellectual gifts of the honors students, the importance of this theme became evident. Participants shared their experiences of how they saw honors students' intellectual gifts contributing to their academic talent developments. Four responses out of 26 responses (15.38%) supported this theme.

All three participants stated that most of the honors students participated in gifted programs during K-12. Two participants described honors students as having outstanding intelligence. Sarah explained that they, "are bright and have great memory skills" (Personal communication, November 15, 2017). Eric explained that he had worked with the same student cohort for the last four years and said, "We both knew that [honors] students are gifted and talented. My approach to advising is helping them navigate honors coursework, experiences, and other program requirements rather than giving directions" (Personal communication, November 31, 2017).

Although Julie agreed that honors students are gifted, she thought that their intellectual gifts implied the potential for academic excellence and found that some students "are less

prepared to do the honors level work and also have less patience with the learning process. Some students graduated in top 5% or 10% but did not have writing skills for college classes" (Personal communication, September 17, 2017). In addition, she noted that many non-honors students are also bright and have the learning behaviors necessary to do well in the honors level.

Unrelated theme: The professionals need more training. In interviews, participants also described the challenges they faced in their positions. Although this topic was not related to the students' academic talent development, I asked about it because their responses provide insights into their lived experiences with honors students. They used "experts," "quiet," and "diversity," to describe their challenges. This research university has well-known and nationally ranked engineering and pharmacy programs. Many students in Eric's student group were in these programs. He stated that many of the students were advanced in their field of study and thus he found that he was limited in his ability to provide effective advice in technical subject areas. Additionally, he had difficulty helping the students open up and share their difficulties and challenges with the group. Julie and Sarah both recognized the diverse characteristics of the students in the honors college and felt the need to learn more about who honors students are and how to effectively support them. Sarah was especially aware that she worked with culturally and ethnically diverse students, and she felt that she needed to acquire a better understanding of their differences and unique characteristics to be able to effectively assist them.

Composite Structural Themes from Staff/Advisors' Interviews

The composite structural themes highlight participants' feelings toward honors students' developments, after getting a chance to work with them. Eleven key sentences or phrases were identified for the structural theme analysis, and these responses were classified into four themes. The composite structural themes are: (a) driven by internal rewards but focused on extrinsic

rewards, (b) appreciated or did not value the benefits, (c) engaged but with different areas of focus, and (d) high potential but varied levels of college preparedness.

Composite structural theme 1: Driven by internal rewards but focused on extrinsic rewards. Three responses out of the 11 responses (27.27%) belonged to this theme. Sarah found that honors students have both intrinsic and extrinsic motives. They might desire evidence of leadership through their honors college participation, but at the same time, they may genuinely enjoy their involvement. She has worked with honors students for four years in several leadership development programs at the honors college. She has taken a facilitator role in these programs. Like the advisors, she focused on teaching collaboration, citizenship skills, and ethical leadership to these future leaders. She said that the position meant opportunities to work with students who are engaged, interested, and energetic. She knew that students were often motivated by their need for a leadership development profile for internships and job interviews. Every January, she received many recommendation letter requests. She has found that these programs encouraged honors students to seek out opportunities for personal and academic growth.

During the meeting time, students frequently asked Julie about the benefits of the honors diploma and course requirements. Although Julie attempted to discuss students, learning behaviors or personal challenges, she realized that the honors students were focused on the information about academic achievement. Eric found that many honors students enjoy their learning, but at the same time, have anxiety before and after tests and projects because of their achievement-based motivation. Students in First-Year Engineering Program need high grades to apply for the more competitive engineering programs such as a biomedical engineering. After their first year, many students develop career plans that include graduate school or medical school and require certain levels of academic achievement. Thus, when he met with honors

students, they were generally focused on whether they could get an ‘A’ in their classes. This focus on extrinsic goals led to perfectionism among the honors students. His students were mostly positively motivated by their goals; they wanted to improve their learning skills and learn more. He heard that these students would even challenge their professors in class. Many of these driven students in his student cohort worked on campus as teaching assistants or research assistants. They had learned to organize and prioritize their tasks. Although some students struggled with time management, most of them had developed good management skills by their senior year. In meetings, however, he saw that some students’ strong desire for perfection did not allow them to enjoy learning. He suggested that these students did not permit themselves to receive a B, and thus they might have a higher risk for depression.

Composite structural theme 2: Appreciated benefits or did not value benefits. As with the first structural theme, three responses (27.27%) theme supported the second composite structural theme. Eric explained the course requirements of the honors college. Some professors had more rigorous grading standards, required more work from the honors students, and provided opportunities to develop critical thinking. Students could also participate in research projects with faculty members. The “honors college curriculum provided them an outlet to practice and explore topics more in-depth” (Personal communication, November 31, 2017). He explained that these honors courses and opportunities were valuable for the students who wanted to enter specific programs or academic careers. However, some students decide to quit the honors college and to focus instead on applying for law school or medical school. They thought that participating in the honors college did not adequately reward them in achieving their career goals. Julie pointed out how interactions with faculty and staff were important to academic talent development. Not only was she familiar with other honors faculty members that have interacted

with honors students outside their office hours, she has spent her own personal time to mentor students as well. She stated, “in order to motivate students to utilize critical thinking and to give honors students a class that is not only hard but unique, the faculty hold high standards for their students” (Personal communication, September 17, 2017). She thought that while students recognized this benefit of the honors college, they might not have realized its full value. Thus, in meeting with the students, she tried to discuss how to develop time management skills, organize tasks, and interact with faculty.

In Sarah’s programs, students entered more advanced leadership roles in their sophomore year. Most of the students appreciated this opportunity for personal and academic development. She thought these students valued these roles because they “desired to step aside from the mainstream and be challenged in order to develop themselves even further” (Personal communication, November 15, 2017). She believed that the community benefited the honors students, because “when you get honors students in programs, you may feel different attitudes and passions. Students embraced each other’s differences. They valued each other’s opinions and cooperated well in all aspects of the program” (Personal communication, November 15, 2017). Their attitudes did not change when interacting with non-honors students. The students cultivated relationships with students not in the honors college through either living with each other or reaching out to increase their social connections outside of their own classrooms. She explained that students tried to find a core group of friends in their sophomore year. In the honors environment, students participated in many projects and classes together, so they often found lifelong friends. She observed that honors students were encouraged by their peers and received emotional support from them. However, the presence of their competitive peers could also cause tension or lead them to doubt their abilities. While these relationships gave the

students the benefit of close peer support, they could also decrease students' academic self-confidence.

Composite structural theme 3: Engaged but with different areas of focus. Three responses out of the 11 responses (27.27%) belonged to this theme. From Sarah's experiences, many students became involved in multiple student organizations or academic activities in their freshman year. The students' patterns of involvement changed when they found areas of interests, identified career goals, and made a core group of friends. Many students in her programs were active and engaged in their learning. Some students sought out opportunities for personal growth and participated in community service during breaks or vacation. Other students participated in study abroad programs to expand their worldviews. However, some students were over-committed to activities inside and outside the honors college, and they struggled with finding a balance among their many activities. Julie was also concerned about some of her students who were similarly over-involved. They had various interests and wanted to be in many projects or activities for their career development. She was planning to help them increase the quality of their involvement, instead of focusing on quantity. Eric observed that students who did not find value in the honors college were typically involved in more activities that were outside of the honors college.

They were engaged but had chosen other areas in which to develop and achieve their career goals. He was concerned that many students did not share their struggles with competing activities with him before they made decisions. One of his students had earned nearly a 2.0 GPA the last semester due to personal issues, but she would not share her issues in their meetings. He had had similar cases before and had been able to work with students to overcome these

challenges. He cited Austin's words, "the key to academic advising for honors students is constant encouragement to explore the limits of their potential" (Austin, 1988, p. 88).

Composite structural theme 4: High potential but varied levels of college preparedness. Two responses out of the 11 responses (18.18%) supported this theme. Eric had worked with honors students at this university for six years and appeared to feel proud of his work with intelligent students. His advising approach was to make the advising a collaborative process. He believed that advisors help students explore their interests and develop their academic careers. He also believed that while the honors students had the potential for academic excellence, some of his students were still at risk for underachievement. In his cohorts, many students were in engineering and pharmacy programs. These students were engaged in their learning and very interested in academic activities. They had demonstrated their commitment to education through grade skipping, academic accelerations, AP classes and dual credit programs. Thus, he defined honors students as "bright and motivated students." However, despite these promising indicators, he had met some students who could not demonstrate their abilities in high-stakes testing, and other students who needed assistance to be able to demonstrate their abilities (Personal communication, November 31, 2017).

Likewise, Julie discovered that most of the honors students had been enrolled in gifted education pre-college. But from her experiences with the students, Julie thought that students from different high schools entered the university with varying degrees of preparedness. Though the incoming honors students may have had similar academic profiles, the honors students' needs are varied. She thought the intellectual abilities of most honors students were enough to grant them the "potential to succeed in the program," but did not guarantee their success (Personal communication, September 17, 2017).

Conclusion: Integration of Quantitative and Qualitative Results

The following is a summary and integration of the quantitative findings with the qualitative findings, based on the five research questions. The four quantitative research questions support the one qualitative research question. Thus, the four quantitative research questions and findings are presented in order. I include the qualitative findings under the related quantitative findings. A total of 174 honors students, with 143 achieving students (82.2%) and 31 underachieving students (17.7%), participated in the quantitative phase. Qualitative interviews with 11 achieving (73.33%) and four underachieving (26.67%) students were used for data analyses. Additionally, three staff and advisors provided their perceptions and experiences in in-depth interviews.

Research question 1. *To redevelop an instrument of the academic talent development factors, two questions guiding the validation process are:*

a) *Can a reliable measure of the honors students' perceptions and experiences of the four components of the DMGT be developed for this study?*
b) *Do the items in the instrument adequately reflect the content dimensions of academic talent?*

The Academic Talent Development Factor Questionnaire (TDQ) was redeveloped from Lycan's original version (2009). Initially, the questionnaire included 39 items with four subscales: (1) intellectual gifts, (2) developmental process, (3) intrapersonal catalysts, and (4) environmental catalysts. The questions were answered on a scale from 1 (strongly disagree) to 5 (strongly agree). After content validation by two expert groups in gifted education and higher education, 35 items were selected, based on the Content Validity Index (CVI), for this study.

The results of the Confirmatory factor analysis (CFA) provided marginally acceptable model fit, with indices as follows: Chi-Square = 1817.96 ($p < 0.001$), RMSEA = .079, SRMR = .073, CFI = .84, NFI = .80, and NNFI = .79. Factor loadings ranged from .32 to .65. I removed 11 items with factor loadings under .50 and performed the analysis again. The second model with 24 items provided an improved model fit, with indices as follows: Chi-Square = 1238.11 ($p < 0.001$), RMSEA = .068, SRMR = .067, CFI = .87, NFI = .81, and NNFI = .80.

This instrument had several limitations in item development. The four constructs of DMGT cover broad areas in psychology. Thus, the subscales need to be further broken down to more measurable scopes. Finally, items could be revised to ensure that they consistently measure the correct subscale in future studies.

Research questions 2. *Is there a difference in the pre-college characteristics of achieving and underachieving honors students?*

The results of discriminant analysis indicated that there were no significant differences between achieving and underachieving student groups in terms of their gender, ethnicity, and SAT/ACT scores (*Wilks'* $\lambda = .974$, $\chi^2 = 2.716$, $df = 4$, p = .606). This result is not unexpected, as students are invited into the honors college based on their high school GPA, SAT/ACT scores, and profile of aptitude for interdisciplinary learning in the honors college. Thus, students in both the achieving and the underachieving group earned high grades and test scores.

Although there was no significant difference in the quantitative findings, the qualitative findings did provide details on how the variables of gender and ethnicity could affect their academic talent development. For gender, female students reported that they confronted unique challenges in male-dominant programs. They had to extend effort to overcome gender

stereotypes in their programs. Male students also described their experience with gender stereotypes when selecting their major and future careers.

In terms of ethnicity, students used the term "Asian parenting style" to describe an effort-focused parenting style. They strongly reported that they wanted to meet their parents' expectations and help their parents.

Research question 3. *To what extent do underachieving honors students differ from achieving honors students in terms of their perceptions of intellectual gifts, intrapersonal and environmental catalysts, and developmental process?*

The results of discriminant analysis indicated that there were significant differences between the achieving and underachieving student groups in terms of their perceptions of and experiences with three of the four components of the DMGT (*Wilks' λ* = .826, χ^2 = 32.480, *df* = 4, *p* <.001). Developmental process (*Wilks' λ* = .890, $F_{1, 172}$ = 21.158, *p* <.001), intrapersonal catalysts (*Wilks' λ* = .994, $F_{1, 172}$ = 1.039, *p* = .310), and environmental catalysts (*Wilks' λ* = .959, $F_{1, 172}$ = 7.361, *p* = .007) were contributors in differentiating the two groups. The qualitative findings supported these quantitative findings.

Effects of the variable of gifts. According to the fourth composite textural theme from the student interviews, achieving and underachieving students commonly perceived their intellectual gifts as the abilities to learn new concepts quickly, creatively, and effectively. Among the 31 responses in this textural theme, nine responses (42.85%) from the achieving student group and four responses (40.00%) from the underachieving group indicated that these students recognized their intellectual gifts with the help of parents and teachers during their K-12 experiences. In the second subtheme, six responses (28.57%) from the achieving student group and three responses (30.00%) from the underachieving group recognized the effects of non-

cognitive elements such as creativity in developing their academic talents. In the third subtheme, six responses (28.57%) from the achieving student group and three responses (30.00%) from the underachieving student group indicated that these students began to identify their intellectual gifts as specific skills in the university and honors college. According to the composite structural theme 4 from the student interviews, four responses (7.54%) from the achieving student group and four responses (17.39%) from the underachieving student group indicated that these students redefined their intellectual gifts when they met competitive peers in the university and honors college. This process provided opportunities for them to better understand the relationships between their intellectual gifts and other factors such as effort and education. In this theme, a greater percentage of the underachieving students described their college experience as redefining their intellectual identities.

Results of the advisor/staff interviews confirmed these findings from the discriminant analysis and the student interviews. According to the composite structural theme 4, four out of the 26 responses (15.38%) indicated that the advisors and staff considered the honors students as gifted, and that many honors students studied in honors programs through their K-12 experience. An important finding from the advisor and staff interviews was that there was a wide range of college preparedness levels among the honors students. In the composite structural theme 4, two out of 11 responses (18.18%) stated that advisors and staff tended to define honors students' intellectual gifts as the potential to achieve academic success; this success is not guaranteed when they enter the university's competitive environment, because honors programs and students' outstanding achievements in high school can vary between various states and regions.

Effects of the variable of intrapersonal catalysts. The squared canonical correlation value indicated that 17% of the variance between the two groups was accounted for by the

combined four variables of DMGT. The qualitative findings supported this small effect size because there was no black and white distinction in the students' answers that differentiated the underachieving group from their achieving peers. There were, however, patterns that characterized the achieving and underachieving groups.

With respect to Cohen's *d* for the intrapersonal catalysts (*d* = |.69|), there was a moderate standardized mean difference between the achieving and underachieving groups. The nuances in the composite textural theme 3 and the composite structural theme 3 from the student interviews supported these quantitative findings. According to the composite textural theme 3, 14 responses (35.89%) from the achieving student group and seven responses (50%) from the underachieving student group stated that the students have high expectations for their academic performance. More of the underachieving students expressed test anxiety. In the subtheme 2, 11 responses (28.20%) from the achieving student group and three responses (21.42%) from the underachieving student group described their common will do achieve. Specifically, achieving students considered this will power as a reinforcer; whereas, underachieving students addressed it as a fear of failure. The subtheme 3 described the positive and negative influence of their introverted or extroverted personalities in developing their academic talent. Eight responses (20.51%) from the achieving student group and two responses (14.28%) from the underachieving group both explained the negative and positive effects of their personalities. In the subtheme 4, six responses (15.38%) from the achieving group and two responses (14.28%) from the underachieving group described differences between the two groups in terms of self-management skills. Although both groups of students knew the importance of self-management skills in realizing their academic potential, underachieving students may not actualize these skills in their daily lives. The composite structural theme 3 described the multiple goal orientations of

honors students. Although both groups of students mentioned multiple goal orientations driven by intrinsic and extrinsic values, underachieving students tended to feel more anxiety about test results, as they need at least a 3.5 GPA to remain eligible for their scholarships.

According to the composite textural theme 1 in the advisor/staff interviews, the advisors and staff shared had the most experiences with and opinions about the effect of the intrapersonal catalysts on students (46.15% of the responses) when they discussed the four variables of the DMGT. The first subtheme included eight responses (66.67%) that supported the existence of multiple goal-orientations for these students. Specifically, honors students actively engaged in learning for its own sake and were also focused on grades. The second subtheme contained four responses (33.33%) that discussed honors students' test anxiety and perfectionism. In the composite structural theme 1 with three (27.27%) out of 11 responses, advisors and staff found that some students perceived the pressure of academic performance as a positive motivator; whereas, others who focused on academic performance were at risk at their academic progress.

This variable had the second largest number of responses (n = 71) among the four variables. According to Cohen's d, environmental catalysts (d = |.76|) had a medium effect size in explaining the standardized mean difference between the two groups. The composite textural theme 2 provided the students' descriptions of how environmental catalysts acted both similarly and differently on achieving and underachieving students' academic talent development. In the first subtheme, 20 responses (40.81%) from the achieving students and seven responses (31.81%) from the underachieving students described their parents' enthusiasm for education. Both groups of students attempted to live up to their parents' expectations, but underachieving students emphasized the pressure created by these expectations. The second subtheme included 17 responses (34.69%) from the achieving student group and six responses (27.27%) from the

underachieving student group that described the effects of interactions with faculty, staff, and advisors. Both groups of students appreciated having more opportunities to interact with faculty in the honors college, but their experiences with faculty, staff, and advisors varied.

Underachieving students felt that advisors are not interested in students' development beyond the course requirements; whereas, achieving students described faculty or advisors who were open-minded and tried to understand students' academic and personal challenges. The third subtheme included 12 responses (24.48%) from the achieving student group and nine responses (40.09%) from the underachieving group that showed distinctions between the two groups. Underachieving students tended to have a core group of friends outside the honors college, so they had fewer connections with their honors peers. Achieving students, on the other hand, described the positive effect of their academically-focused communities in the honors college. According to the first structural theme, seven out of the 11 achieving students (63.64%) and all the underachieving students discussed their academic majors, career goals, and other issues with their parents. Differences, however, were detected in their interactions with faculty, staff, or advisors. Both groups of students expressed high levels of quality interactions with faculty, staff, or advisors, as did the professional staff. But underachieving students also criticized the lack of understanding about the gifted students' underachievement that they perceived from faculty, staff, or advisors. Finally, Jackie's story of reversing underachievement showed how a professional who understands gifted students and their underachievement is important in developing an underachieving students' academic talents.

Among the 26 responses from the staff and advisor interviews, five responses (19.23%) described the influence of peers and faculty's high expectations in developing academic talents (see the composite textural theme 2). Staff and advisors found that honors students' learning was

facilitated by their intellectual peers. The other theme stated that faculty's high expectations for honors students' academic performance contributed to developing students' academic talent. The faculty, staff, and advisors expected the students to be engaged and work at advanced levels, and they employed rigorous grading criteria.

Effects of the variable of developmental process. From the student interviews, this theme included the largest number of key statements or phrases (n = 75) and had a large effect size (d = |.93|) between the standardized group means. The first subtheme included 22 responses (41.50%) from the achieving student group and ten responses (45.45%) from the underachieving student group. These responses described the effect of rigorous coursework in developing students' academic talents. Although both groups of students understood the reasons for the high expectations in honors coursework, they had drastically different opinions when evaluating the benefits of this rigorous coursework. Achieving students stated that they are willing to take risks with challenging and additional coursework; whereas, underachieving students complained about the extra work, intense content, and high expectations. The second subtheme included 20 responses (37.73%) from the achieving student group and six responses (27.27%) from the underachieving student group that described the effects of involvement in academic and extracurricular activities. Ten out of 11 achieving students (90.90%) participated in academic and extracurricular activities within and outside the honors college, while underachieving students' involvement in the honors college was more limited. Of the underachieving students, one student felt he should focus on his ROTC requirements, two students were focused on activities not related to the honors college, and one student felt that she was involved in too many activities and programs across campus. These students spent their time and energy in developing their own careers and interests, rather than focusing on honors college participation.

Interestingly, both groups of students argued that honors students need to participate in activities and programs beyond the honors college to experience diverse cultures on campus. The third subtheme included eleven responses (20.75%) from the achieving student group and six responses (27.27%) from the underachieving group that showed diverse patterns of time and effort investment. Both groups of students commonly spent their time doing academic tasks, developing research skills, or working on specific skills to achieve their career goals. However, underachieving students focused on the external purposes of their time and effort investment, such as desired programs, rather than talent development, or they did not believe that continuing to participate in the honors program was worth the effort.

The composite structural theme 2 from the student interviews also confirmed these differences evident in the composite textural themes and the discriminant analyses. Thirteen responses (24.52%) from the achieving student group and four responses (17.39%) from the underachieving group stated that both groups of students perceived the honors college as an opportunity to grow. However, underachieving students expressed concerns with the challenges and the negative effect of the rigorous coursework on their GPA.

Results from the interviews with staff and advisors discussed the effects of investing time and effort on the students' academic talent development. Five (19.23%) out of the 26 responses described honors students' involvement in academic and extracurricular activities. Interestingly, staff and advisors emphasized the various life challenges college students encounter and their overinvolvement in extracurricular activities in their sophomore year. These can lead to students' underachievement. The composite structural theme 3 with three responses (27.27%) indicated that staff and advisors thought the honors college curriculum provided not only opportunities for

students' academic growth, but also a variety of resources for students' personal and social development as future scholars.

Research question 4. *To what extent do underachieving honors students differ from achieving honors students in their experiences with "good practices in undergraduate education" during their participation in the honors college?*

There was a significant function to differentiate the two groups (*Wilks'* λ = .938, χ^2 (3, *N* = 174) = 2, *p* = .012) in terms of the three variables of good practices in undergraduate education: good teaching and high-quality interactions with faculty, academic challenge and high expectations, and diversity interactions. According to Cohen's *d*, the variable of good teaching and high-quality interactions with faculty had a small effect size (*d* = |.44|) in explaining the standardized mean differences between the two groups, and the other two variables had a trivial effect size.

The test of group mean equality confirmed these results because only the variable of good teaching and high-quality interactions had a significant function in predicting academic status (*Wilks'* λ = .969, $F_{1, 172}$ = 5.563, *p* = .019). As we discussed in the previous section, six responses (27.27%) from the composite textural theme 2 and 11 (47.82%) responses from the structural theme 1 from the student interviews indicated that underachieving students were more likely to experience no connections with faculty or staff, had dry conversations with advisors only focused on the honors requirements, or felt that the faculty had unattainable expectations. In response to this point, in two out of the 26 responses (7.69%) from the staff/advisor interviews, the advisors argued that they were willing to discuss all type of challenges the students faced, but that the students did not want to discuss their challenges or difficulties. Additionally, according to the composite textural theme 1, all staff and advisor participants stated that honors students

were strongly focused on their academic achievement and one advisor said that students preferred to ask questions about academic topics rather than discuss other challenges.

The analysis also took into consideration the subscales under each variable. This analysis yielded a discriminant function with the combination of the three subscales in the variable of good teaching and high-quality interactions (*Wilks' λ* = .945, χ^2 = 9.677, *df = 3*, *p* = .022). Among the three subscales, the variable of academic challenge and effort (*d* = |.41|) and the variable of challenging classes and high faculty expectations (*d* = |.36|) showed a small effect size using Cohen's *d*. The test of equality of group means also confirmed these results with significant *F* test results with these two subscales: the variable of academic challenge and effort (*Wilks' λ* = .978, $F_{1, 172}$ = 3.994, *p* = .047) and the variable of challenging classes and high faculty interactions (*Wilks' λ* = .967, $F_{1, 172}$ = 4.168, *p* = .046).

Qualitative findings from the student interviews confirmed these results because 22 responses (41.50%) from the achieving group and ten responses (45.45%) from the underachieving student group described the effects of the challenging curriculum. In the first composite textural theme, the underachieving students felt disappointed with the faculty's belief that all students had a similarly high level of college readiness. Additionally, 17 responses (34.69%) from the achieving student group and six responses (27.27%) from the underachieving group showed the importance of quality interactions with professionals who understand gifted and talented students. In the first composite structural theme, Jackie described the critical role of the advisor in providing appropriate assistance for underachieving students. Results from the interviews with staff and advisors also support this discriminant function. According to the composite textural theme 2, five (19.23%) out of the 26 responses described the critical roles of student interactions with faculty and staff, and of faculty's high expectations.

In the last discriminant analysis with the variable of academic challenge and high expectations, one significant discriminant function was yielded (*Wilks' λ* = .945, χ^2 = 9.677, *df = 3, p* = .022). Among three subscales, two subscales had small effect size: academic challenge and effort (*d* = |.41|) and challenging classes and high faculty interactions (*d* = |.36|). These two variables also showed significant results of *F* tests: academic challenge and effort (*Wilks' λ* = .978, $F_{1, 172}$ = 3.994, *p* = .047) and challenging classes and high faculty interactions (*Wilks' λ* = .967, $F_{1, 172}$ = 4.168, *p* = .046). In the subscale of the academic challenge and effort, students responded to the questions about the time and effort investment. In the challenging classes and high faculty interactions, six questions were designed to examine teachers' diverse efforts to facilitate and integrate ideas in class.

Qualitative findings supported these quantitative results. According to the composite textural theme 1, 20 responses (37.73%) from the achieving student group and six responses (27.27%) from the underachieving student group stated that they spent their time and effort to develop research skills and academic competency that are related to talent development. However, one, John Lee, out of four underachieving students (25.00%) put his effort forth outside of academic area and the other student (25.00%), Jackie, did not find efficient ways to invest her time and effort. The composite structural theme 3 also indicated that 13 responses (24.52%) from the achieving student group found their reasons for time and effort investment in the honors college but four responses (17.39%) from the underachieving student group found purpose of their investment outside of the honors college. Results from the interviews with staff and advisors agreed with these distinctions in the composite textural theme 3 and the composite structural theme 3 as we previously discussed.

In respect to faculty's effort to integrate and facilitate deeper levels of learning, 22 responses (41.50%) from the achieving student group indicated that they were encouraged to take one more step for learning in class. However, underachieving students with ten responses (45.45%) expressed concerns with different levels of requirements in the honors courses, although they agreed that honors courses provided advanced levels of curriculum. Additionally, achieving students with 17 responses (34.69%) described supports by faculty and staff to find resources to find internships or research opportunities although two out of four underachieving students (50.00%) suggested that they need more directional and specified information (see the composite textural theme 2). Results from the interviews with staff and advisors confirmed effects of faculty's expectations on students' engagement for learning. Two responses out of 26 responses (7.69%) confirmed faculty's efforts to facilitate students' learning (see the composite textural theme 3) as we discussed earlier.

CHAPTER 5. DISCUSSION

The purposes of this study were (1) to examine the relationships among perceptions of gifts, intrapersonal catalysts, interpersonal catalysts, and the developmental process in talent development for underachieving honors students and achieving honors students; and (2) to investigate their perspectives and beliefs about how the dynamics of the four components in DMGT influence their academic talent development. I used Gagné's (2009) DMGT as a framework to further understand the process that facilitate or hinder academic talent development of students with gifts and talents in university.

Following the typology of Creswell and Plano-Clark (2010), I employed a sequential mixed methods design, using quantitative and qualitative procedures, to answer the five research questions. The follow-up qualitative interviews provided many examples and rich discussion, which added additional meaning to the honors participants' perceptions and experiences of the academic talent development process. I gained more insights into how achieving and underachieving honors students have different perspectives and experiences. The quantitative phase began with the content validation study of the survey I developed. I then compared achieving and underachieving honors students' answers on both their pre-college characteristics and their responses to the four constructs of the DMGT. Additionally, I used the National Survey of Student Engagement (NSSE, 2011) to determine the influence of the honors programs on the achieving and underachieving honors students' academic engagement. In the qualitative phase, I explored the honors students' perceptions and experiences of their academic talent development with the questions about the components of DMGT.

Chapter five is divided into two sections. In the first section, I synthesized the findings of quantitative and qualitative phases and discussed them. I also added recommendation for future studies. In the second section, I discussed the limitations of the study and made suggestions for future research.

Pre-College Characteristics

In this study, pre-college characteristics include gender, ethnicity, and SAT/ACT scores. These variables did not differentiate honors students by their academic status in the quantitative analysis. In in-depth interviews, participants' stories and words supported the quantitative result.

Honors students are selected by the university. Every university has selection criteria to decide whether to accept a student into their school or not, and none are indistinguishable from another. However, they do share two academic criteria: the grade point average and standardized score. Many institutions have a cut-off score that a student is required to meet in order to be considered into their honors programs. Because the minimum required score to be admitted is higher than that of an average student's, it is reasonable to conclude that those in the honors program should be achieving at similar levels. However, that is not the case, though unsurprising. The rationale behind the standardized test scores is that the numbers reflect the student's academic aptitude (Stroller, 2004). But in a program that already requires the student to have standardized scores that are much higher than average, many other factors must be considered when judging a student's level of success and potential. Due to the prerequisite of getting into the honors college being so high, most of the students in these programs have similar standardized test scores. Unlike their scores, however, the backgrounds and experiences of these students vary greatly, and is what truly makes a student stand out from the rest.

In this study, Harley was homeschooled in high school years, Louis and Leanne went to a private magnet school, and Lob graduated from the top ranked high school in his country. Other students also graduated from high schools in different regions and different norms. This indicated that not all honors students succeed in university. Rather the honors students' achievements are also dependent on the other variables, including their diverse backgrounds and norms.

The gender of students who participated in this study was not evenly divided: 64.9% female *(n* =113), 33.9% male (*n* = 59), and not 1.1% confirmed (*n* = 2). This variable was not significant in separating the two groups of honors students. The imbalance toward female students is a possible reason for the lack of significant difference. Also, because gender was only asked about in the section on background information, this question did not examine students' perceptions of or experiences with gender. Participants' responses in the interviews indicated that gender can be a factor in their academic talent development. Specifically, female students were encouraged to show their ability to overcome gender-specific stereotypes in male-dominant programs. Several male students reported that they were forced to choose a certain career or academic major because of gender stereotypes. In 2013, the National Collegiate Honors Council gathered data from 890 institutions and found that the percentage of undergraduate females in institutions as a whole averaged 56.6%, compared to 64.7% for honors programs and colleges. Though gender was not a differentiating factor in this study, previous research has found that gender can affect students' academic performance. According to the American Association of University Women (AAUW, 2002), female students that see little value in themselves are often those who are more dedicated in their studies. Sax (2008) surveyed 17,000 college students from 200 different colleges. On almost every self-rating scale from the survey, women ranked

themselves lower than men in their first year of college. The results also showed that more women attributed their intelligence to hard work instead of innate ability. This strengthened her belief that honors courses increase the level of academic engagement and sense of scholarly achievement in all of its students. However, researchers consistently argue that there still are issues with female students' engagement in the STEM fields (Correll, 2004; Delahunty-Britz, 2009). A factor of this issue could be that male students are often not aware that their female peers are more likely to meet the necessary requirements of the challenges posed by their college courses (Sadker, Sax, & Zittleman, 2009).

Although this study did not look at the influence of gender on underachieving students' perceptions of failure, Pomerantz, Altermatt, and Saxon (2002) argued that male and female honors students understand academic success and failure differently. Female students connected their failures with parents' or professors' disappointment whereas male students attributed their failures to the specific subject areas. The results of this study and previous studies indicate that honors students, regardless of their academic status, are still growing up in environments where there can be entrenched gender stereotyping and unconscious biases. This could be an agenda for future research.

Ethnicity was also not a significant variable in determining honors students' academic status. In this study, the vast majority of survey respondents were 76.4% white (n = 133). The ethnic imbalance may be the cause of the insignificant result. Although the questions did not ask about students' perceptions or experiences regarding their ethnicity, the interview responses indicated its possible influence on their academic talent development. One White student highlighted the positive influence of his White and upper middle-class privilege on his academic talent development. Asian students described their parents' enthusiasm for academic

achievement and their effort-focused family cultures. One Black student underlined the challenges she confronted as a first-generation college student. In the literature, non-White students in honors programs perceived lack of diversity to be a barrier that may prevent other non-White students from participating in honors ty (Pittman, 2001, Rigsby, Savage, & Wellmann, 2012). Thus, a potential future research agenda is to investigate the reasons why non-White students are reluctant to participate in honors and how honors educators can establish support systems for diverse students.

Factors in Academic Talent Development

Intellectual Gifts

Both the achieving and underachieving students understood the diverse components of their intellectual gifts. Discriminant analysis did not yield statistically significant results with the gifts variable between two groups. Thirteen participants (87%) participants were identified as gifted and talented students and had participated in specialized programs during their K-12 education. The survey data indicated that achieving and underachieving honors students recognized their intellectual gifts as a primary factor contributing to their academic talent development. Responses on the Academic Talent Development Survey of three items regarding intellectual gifts averaged 3.28 of the achieving group and 3.09 of the underachieving group. The results indicated that participants agree with the statements on the role of intellectual gifts in talent development by Gagné (2009) and Renzulli (1978). In in-depth interviews, honors students were confident in their intellectual gifts. Among the fifteen students, thirteen students identified themselves as gifted, and one student described himself as a high-ability student. This finding confirms the existing research that students with gifts and talents show high self-concept, even when they are underachieving. Staff and advisors also reported that intellectual ability was

one of the main factors in determining honors students' success. However, they emphasized that intellectual gifts represent potential, but do not guarantee the students' development of academic talent in university. Advisors also reported various levels of college preparedness among honors students. This finding supported previous research that has debunked the common myth that for students with gifts and talents, a "single test score or indicator tells us all we need to know about giftedness" (Worrell, 2009).

Interview responses confirmed the cognitive and non-cognitive components of the giftedness. The results provided a new insight into the mindset of the honors students. Although the honors students recognized their academic gifts, they were aware that talent alone did not bring them to where they were now. Factors such as character, work ethic, persistence and a supportive environment were brought up as essentials for the students to express their talents in competitive environments. Siegle et al. (2010) reported that honors students "do not relate high effort to high performance in the academic area" (p. 97). These findings are consistent with the existing studies about students with gifts and talents in secondary levels. Meyer (1992) found an inverse relationship between ability and effort among high school students. These students perceived that students with gifts and talents got higher grades with less effort than general students. The difference between this study's findings and previous findings may be explained by the demographics of the two participant groups. Seigle's study examined first year students' perceptions of their ability and effort. In this study, students at every point in their university career participated in the quantitative phase, and no one in their first year participated in the qualitative phase. Thus, this study may indicate that honors students' perceptions of ability and effort change throughout their academic years when they are in a competitive environment.

Intrapersonal Catalysts

The participants confirmed the influence of intrapersonal catalysts in their talent development process in this study. Regarding the difference between achieving and underachieving students, a statistically meaningful discriminant function was yielded, but the effect size was small. In individual interviews, both groups of students experienced positive and negative contributions of the intrapersonal catalysts, such as inner drive, personality, and goal-management. Additionally, findings of this study agree with the influence of environmental catalysts on intrapersonal catalysts. At the same time, findings proposed that these effects are also influenced by intrapersonal catalysts.

Mixed Patterns of Intrinsic and Extrinsic Motivation

It is unsurprising that motivation is the best supported catalyst to success, as it encourages students to constantly utilize their talents to develop them further, increasing their potential and capability to succeed when faced with more and more difficult obstacles (Gagnè, 2009). These findings can be found in the literature on students with gifts and talents and honors programming. A critical finding of this study refused a prevalent myth of connections between the underachievement of students with gifts and talents and their own laziness (Rahal, 2010). But the findings of this study suggested that underachieving students with gifts and talents might instead be struggling with unexpected difficulties. Rather than being lazy, students in the honors college tended to understand the value of effort and tried to perform at their best in competitive environments.

According to a study by Scager et al. (2012), significant characteristics that differentiate honors students from non-honors peers were their desire to learn, drive to excel, and creative thinking. Their results showed that honors students tend to have the combination of internal and

external motivators necessary for academic excellence. These findings were supported in this study. Achieving and underachieving honors students emphasized the importance of their competitive natures as a motivation tool. They showed a passion for learning and their subject areas, and they were focused on grades. Whereas Scager et al. (2012) used quantitative data from a survey, the interview responses in this study provided details about how this factor influenced achieving and underachieving groups. The types of motivators differentiated the two groups of students. Students in the achieving group stated they wanted to learn new things and enjoyed challenges, whereas students in the underachieving group expressed more pressure to excel from parents' expectations. One underachieving student reported exerting effort only when he was studying a subject that interested him.

Seven out of fifteen students had received scholarships or fellowships from their departments or the university. Students in both groups focused on their grades and expressed concern about maintaining eligibility for scholarships or fellowships. This finding confirmed that underachieving honors students also experienced a "tension between a desire to learn and a desire to get grades" (Horowitz, 2009, p. 215). Baslanti (2008) found that underachieving students in a selective university had low motivation to achieve. These students aimed to pass the course and felt anxiety when they were in competitive environments. As well as in this study, low motivation has been discussed as a primary factor leading to underachievement among students with gifts and talents (Peterson, 2000; Reis & McCoach, 2000; Rimm, 1997). In this study, however, most students in the underachieving group had high expectations of academic success and a passion for learning in their areas of interest.

Volition and Personality

Honors students in this study commonly expressed their desire for success, commitment to academic activities, and willingness to achieve future goals. They perceived honors college as a spring board to develop a comprehensive plan to reach their future goals. However, underachieving students, especially male students, stated that they would do better if they were better at self-management skills. This finding is consistent with the literature about gender differences in honors programs (Sax, 2008). Sax (2008) argued that male students were less successful than their peers, as measured by their grades, because of less-developed self-management skills. This can lead to general gender stereotypes in honors colleges. As previously mentioned, underachieving honors students tended to decide their academic paths early and sought out areas that fit their interests.

Introverted personality was mentioned as a motivator for putting forth effort toward academic success. Conversely, one student on honors probation found her ability to complete academic tasks hindered by her proactive social engagements. This finding is consistent with the findings of previous research about the sophomore slump and student involvement (Tower, Balcklock, Watson, Heffeman, & Tronoff, 2015). In the gifted education literature, gifted adolescents put on a protective mask to avoid the gifted label, as it can separate gifted students from their peers (Moefield & Chakraborti-Ghosh, 2010). In higher education, professors, advisors, and professional staff often recommend honors students for diverse and signature extracurricular programs (Noel-Levitz, 2013). These students receive more and more opportunities to get involved in various programs and demonstrate their abilities in front of their peers and educators. In sophomore year, they are asked to take on further responsibilities and their academic requirements also increase. When students do not have well-developed task-

management and self-management skills, they are not able to meet the academic expectations, due to their intensified schedules. However, there is little research that investigates the effect of personality on honors students' campus involvement and their achievements.

Environmental Catalysts

Along with intrapersonal catalysts, both achieving and underachieving honors students highlighted positive and negative effects of individuals and family cultures. Specifically, faculty, staff, and advisors who understand characteristics and challenges of honors students facilitated students' talent development. Additionally, students in this study emphasized influence of their parents on all aspects of their collegiate life.

Individuals

Quantitative and qualitative findings indicated that participants grew up with parents who are enthusiastic about child's education and future career. The honors students said that their parents' influence helped to shape their academic identity, including their perceptions of success and failure, and learning behaviors. In this study, both achieving and underachieving honors students selected their parents as the most influential individuals in their academic talent development. Students in the underachieving group emphasized the negative influence of their family cultures on their academic talent development. In previous studies of university students, the roles of parents have not been closely investigated. Current researchers argue that the "Millennial Generation" maintains close relationships with their parents in their college years (Boretz, 2012). Participants in this study belong to "Generation Z," people born in 1995 or later (Beall, 2017). This generation is also called as "Post-Millennial" by the United States Department of Health and Human Services and Pew Research (2014). Their responses reflected

the findings from Boretz's study. Underachieving students felt pressure to succeed academically from their parents, who could have rigid standards. Regardless of ethnicity, participants in this study reported the effects of parents and family culture on their academic talent development. Compared to Boretz's study, this study adds information about the effects of having immigrant parent and being a first-generation college student. This is not consistent with Gagne's assumptions. He appears to suggest that the contributions of parents, other than their original genetic contribution, may not differ substantially from the contributions of other individuals, including siblings, the larger family, teachers and trainers, peers, mentors, and even public figures (2009). However, the influence of parents may be much more fundamental to advanced development then previously realized; this influence may develop through the process of a child's attachment and subsequent social-emotional adjustments and cognitive development.

Findings of this research also supported the importance of peers in talent development. Specifically, the honors college residence hall provided a sense of community to honors students. Students perceived their peers as facilitators for learning and intellectual growth. However, some students also felt pressure in this environment, as discussed. Honors students who were not motivated to attend social activities or who had different interests from their peers felt disconnected and uncomfortable in the honors residence hall. However, Gagne's DMGT did not address socio-emotional development and psychological health. They did not appear to have a role among the environmental catalysts or in relation to achievement.

The influence of professors to the honors students, especially the importance of quality interactions with faculty, were emphasized as a strong motivator in talent development. Bloom's (1985) study described different roles of teachers in three phases: facilitating interest in a domain, encouraging to maximize students' potentials, and providing emotional support. In this

study, achieving and underachieving students commonly stated that faculty are interested in students' learning and provide advanced instructions. However, high expectations of faculty did not encourage students to focus on their learning.

Advisors in particular can affect honor students' performance. McIvor (2008) found significant differences between advised and not advised students in cumulative GPA and number of honors hours earned. Although the author concluded that there was a positive and significant difference between the two groups, there was no information about the quality of advising. In this study, honors students in achieving and underachieving groups did not show a significant difference in the frequency of meetings with honors advisors. However, perspectives on and expectations toward honors advisors were different between the achieving and underachieving groups and between students and advisors. Students in the achieving group felt close relationships with advisors or believed that their advisors gave them enough and appropriate resources. Underachieving students stated that their advisors checked off requirements but did not provide information that could help them reverse achievement. International students reported that their advisors did not provide the resources they need. However, advisors mentioned that honors students tend not to open up about their difficulties. One student in the underachieving group stated the importance of meeting with an advisor and faculty member who understood her and trusted her ability. One student in achieving group said he was motivated and encouraged by his meetings with his honors advisor. This indicates why it is important to investigate the students' lived experiences to be able to pinpoint the critical differences and similarities between the groups.

Developmental Process

Quantitative and qualitative findings focused on the importance of differentiated coursework, educational opportunities, and dedication to talent development. Additionally, qualitative findings provided details of different patterns of students' perceptions about why they put their time and efforts to graduate with an honors degree and why other students did not.

Advanced Pace and Content

The honors students stated that the courses they took within and outside their preferred area of study influenced their talent developed process, even though not all students agreed with the advantages of honors seminars in their talent development (Gagne, 2009). Meadow (2017) stated that honors students tend to feel fearful and confused when they meet academic challenges or unrealistic expectations. However, Robbins (2010) reported that honors students enjoyed academic challenges. The finding of this study provides information that explains the gaps between those studies. Interview responses from staff/advisors and from students in the achieving and underachieving groups revealed that honors students have various levels of college preparedness when they enter university. In this study, there were a homeschooled student, an international student who did not take any AP classes in the United States, a first-generation student, and students who enrolled in private magnet schools. Therefore, some students could enjoy the advanced pace and intensified content, while other students did not adjust to the honors coursework.

Educational Opportunities

Providing intensive coursework is not the only focus of the honors college curriculum; achieving and underachieving students acknowledged that the honors college provides various educational opportunities, such as service learning, study abroad, or research opportunities.

These involvements encouraged students to develop academic skills and focus on their career goals. However, findings suggested that over-involvement in multiple extracurricular activities may cause underachievement. Specifically, students get more involved in extracurricular activities in their sophomore year. Contrary to the common myth that honors students are ready to handle school and extracurricular activities at the same time, the finding suggests that achieving and underachieving students confront challenges to manage their time and effort in their sophomore transition.

Investment of Time and Energy

The critical finding of this study was that both achieving and underachieving students put their time and energy to develop their academic talents. In literature, underachieving students are described as less motivated and engaged in accomplishing their academic goals (Balduf, 2009; Baslanti, 2008). However, underachieving students in this study had future goals, such as getting into medical school and becoming an officer. They invested their time and energy to achieve the requirements to fulfill their goals. This is also one reason to consider terminating honors college participation, because there is a risk to be on the honors probation when they do not focus on honors requirements. Moreover, they can lose scholarships or fellowships when they are on the honors probation.

In conclusion, results of this study supported the influences of all aspects of Gagne's (2009) DMGT in talent development of achieving and underachieving honors students. However, underachieving students have different academic directions and a different interest in their academic talent development process. Both groups of students stated that gifts are essential but not the only element in academic talent development. Findings of this study also emphasized the critical roles of time, money, energy investment, and influences of parents and faculty/staff in

promoting academic success and reversing underachievement. This also indicates that educators and administrators should consider how to support students in underrepresented populations, specifically low socioeconomic status homes.

In terms of DMGT itself, I found that this model had several limitations when it came to explain the underachievement of students with gifts and talents in postsecondary institutions. First, in DMGT, intellectual gifts are natural abilities that are biologically based (Gagné, 2009). This concept does not take into consideration the non-cognitive components of Renzulli's Three Ring Giftedness model (1978). Thus, task commitment is assigned to intrapersonal catalysts. However, it is difficult to see the intellectual gifts of honors students as simply natural abilities. They worked throughout their K-12 education to develop their abilities, and these abilities include non-cognitive components. Second, DMGT is limited in its ability to apply to culturally and economically disadvantaged students. DMGT is a convenient model to explain how students' underachievement can be reversed, by improving one or all of the catalysts to further the development process. However, this model is limited in its application to students who cannot access opportunities or who are not supported by their parents. Last, students' talent development occurs within dynamic interactions among intrapersonal catalysts, environmental catalysts, and developmental processes. This model focused on the effects of intrapersonal catalysts and environmental catalysts on developmental processes. Gagné (2009) emphasized that this model does "not represent a person's total personal development" (p. 6). If so, this model should be expanded to explain how the three components work separately and together. This study provides evidence for the relevancy of Gagne's (2009) DMGT to honors students and adds onto the already existing literature about the correlation between talent development and honors students. This study also presents a loophole in Gagne's (2009) DMGT when it comes to

explaining the effect of elements such as socio-emotional development, parents' contributions before college, and honors students' definitions of talent on underachieving honors students. The findings suggest that academic talent development is a complicated process with diverse factors that motivate students to keep their focus on their development. In this study, underachieving honors students were not demotivated or less self-driven than their achieving peers. Although some of them needed academic support to follow the advanced materials and pace of honors courses, they selectively participated in honors programs based on their needs and career paths.

Implications

This study revealed several noteworthy findings that provide honors students, parents, faculty, advisors, staff, and administrators with fresh insight into honor students' academic talent development and the best practices.

Implications for Achieving and Underachieving Honors Students

One important theme from this study pertained to the students' perception of the value of their honors college participation. Quantitative and qualitative findings indicated that there was no significant difference between achieving and underachieving students in their perceptions of their intellectual gifts or their inner drive for academic excellence. Additionally, both groups of students appreciated the opportunity to participate in the honors college. However, a difference was detected how they viewed their honors college participation. Achieving students found value in the growth opportunities and academic challenges provided by the honors college; whereas, underachieving students tended to focus on academic achievement and other benefits. The honors college provided comprehensive and diverse opportunities to develop students' academic,

social, and leadership talents as future scholars, rather than focusing solely on academic achievement. Rethinking the role of honors college in their collegiate experience could potentially aid underachieving students and allow them to benefit from the full range of opportunities available to them.

Another suggestion from this study concerns the students' experience with honors advisors. Honors students shared drastically different experiences with their honors advisors. According to question 52, however, 27.9% (n = 40) of the achieving student group and 32% (n = 10) of the underachieving student group had not met with an honors advisor in the last semester. 61.5% (n = 88) of the achieving student group and 58% (n = 18) of the underachieving student group had only met one to two times with their honors advisors. In the qualitative interviews with the honors advisors, both advisors described how they were trying to reach students and were willing to meet anytime a student requested help. Although students in Generation Z may prefer to use the Internet to access resources and opportunities, honors advisors and staff have the most up-to-date resources on student academic development. Thus, finding avenues to facilitate student/adviser interactions is a potential implication that would aid achieving and underachieving students looking for resources and opportunities to improve their skills.

The last implication for achieving and underachieving students concerns their attitudes towards learning and the honors college. In this study, both achieving and underachieving students showed a strong desire to achieve academic excellence and have successful future careers. Underachieving students were characterized by pressure and anxiety about these goals for achievement. However, academic excellence is not the end goal of student development. The collegiate experience is a process of learning and growth; it would help many of the students if they were better equipped to handle academic failure. The university and the honors college

provide academic and counseling services for students who are at risk, to help students so that they need not lose their scholarships and honors status. It is essential that students become aware of these services and are able to maintain their motivation without fearing failure.

Implications for Parents

Findings of this study highlighted parents' involvement is crucial for honors students' decision-making processes. Some students said that their parents had more resources than the university staff and advisors. However, some achieving students followed their parents' guidance rather than taking the time to think their futures, and one student had struggled with his parents when they did not approve of his choice of major. Underachieving students needed more direct and specific information about research or internship opportunities. They may benefit from receiving the targeted advice that educated parents can provide. Moreover, many of the underachieving students who expressed concerns did not ask help, even though they were surrounded by people who were willing to help. This combination of benefiting from parental guidance but not taking initiative in seeking assistance demonstrates the paradoxical effects of parents' active involvement on college students' academic and personal development.

Implications for Faculty

Two important themes that are relevant to the role of faculty and their influence on honor students' talent development emerged from this study. The first theme concerning the role of faculty in this study was in curriculum development. Both achieving and underachieving students met academic challenges and underachieving students complained of the fast pace and heavy workload. One underachieving student struggled because professors sometimes assumed that honors students had already mastered unfamiliar concepts, whereas, the achieving students preferred to work with the advanced content. Advisors also pointed out the wide range of college

preparedness levels among the honors students. This finding should remind faculty that honors students should be considered as a diverse group with varying needs and the potential for academic growth, rather than as a homogenous elite group.

The next important theme was quality interactions with faculty. Supportive faculty was an important factor in developing and promoting the talent development of both achieving and underachieving students. Students felt that, in their interactions with faculty, they were encouraged to take one more step in their learning and to become members of the academic community.

To facilitate participation in coursework, one theme from the student interviews was the need for STEM-related courses in the honors college. Although this research site had strong engineering and STEM programs, there were limited honors course offerings in these majors. Additionally, the other theme regarding coursework was research opportunities. Both achieving and underachieving students wanted to work with faculty on research projects. They understood the benefits of having participated in research opportunities when applying for their desired programs and academic careers. If more research opportunities were presented to these students, there may be a higher likelihood of them developing their talents in unique ways. In this study, underachieving students expressed concerns about their future careers and wanted to participate in research projects related to their future goals. At the same time, they did not want to take on the challenges of advanced content. Research opportunities can address both these concerns and facilitate underachieving students' participation. Additionally, it is crucial that the departments and faculty should consider differentiated instructional strategies and levels of content and test within the honors students.

Implications for Advisors, Staff, and Administrators

Several themes emerged regarding the importance of the roles of advisors and staff. The case of one of the underachieving students provides an example of what effective staff assistance can do. Like the achieving students, the underachieving honors students qualify for the honors students based on their high school achievements. In this study, 93.33% (n = 14) of the fifteen students had had experiences with gifted and talented education during their K-12 experience. All four underachieving students who participated in the interviews were identified as gifted before they entered the honors college. That is, underachieving honors students may have different levels of academic assistance from their peers who need assistance for the basic levels of academic skills. As Jackie said, they need advisors and staff who understand gifted and talented students. It is critical that administrators are aware of this need and design academic services designed for underachieving honors students.

Although the honors college provides diverse activities and curriculum and has a holistic approach to developing future scholars, the themes indicated that the students perceived the honors college mainly as an academic program. Administrators could help current and future honors students to view the academic, extracurricular, and student life experiences offered by the honors college as an opportunity for comprehensive growth, rather than as an academic gold star that merely proves their intellectual abilities.

Implication for Advisors/staff/Administrators

The roles of advisors and staff have been highlighted in this study. One case of underachieving student provides many implications. Like achieving students, underachieving honors students are qualified for the honors students based on their achievement in high school. In this study, 93.33% (n = 14) of fifteen students had experiences with gifted and talented

education during their K-12 experience. All four underachieving students in the interview process were identified as gifted before they entered the honors college. That is, underachieving students have high level of comprehension skills. As Jackie said, they need advisor and staff who understand gifted and talented students. It is critical administrators are aware of this need to design academic services for underachieving honors students.

Although the honors college provides diverse activities and curriculum using holistic approach to develop future scholars, emerged themes indicated that students perceived the honors college as the only academic-focused program. Administrators should help the current and future honors students view the academic, extracurricular, and student life experiences within the honors college as comprehensive growth rather than through college rankings or cut-off scores to get invitations to the honors college.

Limitations

An explanatory sequential mixed methods design includes the limitation of generalizability when conducting a qualitative study, but the quantitative phase has the goal of generalizability. Due to the small sample size and the fact that all the students came from a single institution, generalizable findings were limited. There is a lack of participation of students who are from Black, Hispanic, and other cultural identities. This can limit the interpretation of the results as a representative sample of the honors student population. Additionally, there was a small number of underachieving students in this study. Despite a lot of effort, 31 students at the quantitative phase and four students at the qualitative phase participated in this study. This can be another bias to generalize the findings of this study.

By nature, survey-based research has its own limitations. First, survey design with multiple choice can simplify the perceptions and experiences of honors students. Since this

sample included only students who were willing to participate in this survey, the sample does not include students who are not willing to participate in the survey. A vast amount of students' ideologies may not be represented. Furthermore, underachievement is a complicated issue in diverse student populations. This questionnaire may not reflect diverse issues behind underachievement of honors students. Findings in this research indicated that honors students may not want to discuss their weaknesses and difficulties. Thus, underachieving participants may not feel comfortable to express their concerns and experiences accurately. Lastly, the return rate is lower than the general accepted rate. However, the sample reflected the target population and qualitative findings provided details of the sample and target population.

There are also several limitations in the data analyses. First, the unequal sample size reduced the discriminant power. In previous research about underachieving students, it was hard to recruit the participant in honors programs because honors students may not want to be open about their academic status when they face challenges (McIvor, 2008; Mueller, 2016). Despite of a lot of effort, it was the biggest challenge to facilitate underachieving students' participation. Second, each component of the DMGT covers a wide range of concepts. In the future studies, these components should be specified and clarified. The current ambiguity may be why there is no published instrument to measure the components of the DMGT. Third, the academic talent development questionnaire needs to be redeveloped in further studies. The model fit was improved but did not provide the best fit to decide if the hypothesized model was a good fit for the observed data. It was difficult to develop consistent items because four components of the DMGT covered such a wide range of the existing theories. In further studies, researchers should clarify and specify the domains of gifts, intrapersonal catalysts, environmental catalysts, and developmental process before conducting research.

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