

2010

Talented collegians: An explanatory sequential mixed methods study of the talent development process in gifted undergraduate students

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<https://dx.doi.org/doi:10.25774/w4-0wya-6279>

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TALENTED COLLEGIANS: AN EXPLANATORY SEQUENTIAL MIXED
METHODS STUDY OF THE TALENT DEVELOPMENT PROCESS IN GIFTED
UNDERGRADUATE STUDENTS

A Dissertation

Presented to

The Faculty of the School of Education
The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

by

Angela Marie Novak Lycan

August 2009

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Approved August 2009 by

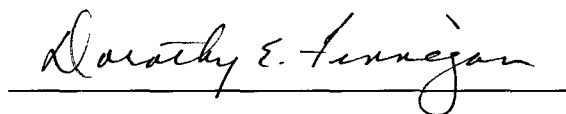


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Dedication

This dissertation is dedicated to my sister, Julia Ann Novak, for always being an inspiration to me and so many others, and to my son Thomas Julian Lycan.

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Acknowledgements

Earning my doctorate took three and a half years, but was truly a life long journey. I could not have completed this process without the support of many individuals. I would like to express my gratitude to everyone who has helped me through this process.

I would like to thank my family for all of their help and support throughout my entire life. My parents encouraged me throughout my never-ending intellectual and educational pursuits. My sister Julia not only supported me during my education, but she was truly my inspiration in my study of gifted individuals. Words cannot express my gratitude and love. My grandparents and their love of education inspired me since I was a child. My husband Russ has been a great support over the last 9 years, and I could not have done this without him! Finally, I would like to thank my extended family, my friends Alyson, Beth, Elaine, Nancy and Tiffany who never fail to encourage me.

During the last few years at William and Mary, I am grateful for the help and support of my doctoral committee and fellow students. Carol Tieso supported my long-time interest in gifted collegians, graciously accepting every paper I submitted about this talented group. Joyce VanTassel-Baska challenged me in classes and encouraged my growth throughout the program. Dot Finnegan welcomed me into higher education courses, patiently explaining aspects of the field that were new to this K-12 educator. The students in my gifted cohort were incredibly supportive during my time here, and I would especially like to thank Katie and Valija for their friendship and intellectual stimulation. I would also like to thank Dr. Gagné, who graciously looked over my proposal and offered suggestions.

To all of you, and the many more that I did not individually mention, I wish to express my deepest thanks.

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ABSTRACT

The purpose of this study was to gain a deeper understanding of talented students' perceptions of the means by which their college program and experiences have impacted their talent development in order to contribute to the body of literature on understanding talented collegians so that honors administrators, faculty and parents can better help to support students in their talent development. This study took place at a small selective liberal arts college in the southeastern United States.

This study used Gagné's (1985, 2009) Differentiated Model of Giftedness and Talent as a lens in an explanatory sequential mixed methods design. Quantitative data was collected through a survey pertaining to participants' perceptions of the four main constructs of the DMGT: gifts, intrapersonal catalysts, environmental catalysts and developmental process. These data was analyzed and used to select participants for the phenomenological interview phase of the study.

It was concluded gifted collegians are impacted by their gifts, such as intellectual, creative, and social gifts, intrapersonal catalysts, such as motivation and drive, environmental catalysts, such as peers and professors, and the culture of the college and developmental process, such as coursework, research opportunities and extra-curricular activities. Further study is needed to generalize the findings to a broader audience and to investigate themes that emerged as significant for gifted collegians, such as the role of faith, the increased impact of peers and the decreased impact of parents, the role of

student affairs and administration, research opportunities and personal investment on the talent development process of gifted collegians.

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CHAPTER I

INTRODUCTION

All of us do not have equal talent, but all of us should have an equal opportunity to develop our talent.” --John F. Kennedy

Public Law 91-230 Section 806(c) states that gifted students have outstanding abilities and the potential for high performance, as recognized by a professionally qualified person. High potential can be actualized in general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts or psychomotor ability. According to the Marland Report presented to Congress in 1972, the gifted “require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society” (Piiro, 2007, p. 8).

In higher education, Rinn and Plucker (2004) stipulate that gifted college students are generally defined as those who participate in an honors program or honors college. With the lack of standardized assessments in higher education, gifted identification falls to measures such as the Scholastic Aptitude Test (SAT) or similar tests (Rinn, 2007), as well as high school achievement, high school activities, age of entrance, and recommendations from high school faculty (Rinn). Beyond placement in the honors program, accommodations for gifted collegians include completing college at a faster pace through heavier course loads, enrichment (such as a universities-without-walls approach), special curricular programs (such as interdisciplinary majors or the opportunity to design a new major), peer group experiences designed to provide help to

each other, and even study skills clinics. Just as in elementary and secondary education, however, the need for special services to follow identification sometimes falls short.

During a meeting with a group of first-rate honors undergraduates in a large private institution in the East I asked, 'When were you selected for the honors program?' One girl answered, 'In the second semester of my junior year.' I asked what had happened then. She promptly replied, 'Nothing happened. We were told we were superior and we just sat there being superior.' (Cohen, 1966, p. 4)

Moreover, not all gifted students participate in these programs, nor do all gifted students attend college.

Honors programs can be useful as a way of identifying gifted students, but are not the only place where talented collegians are found. The selectivity of some colleges may attract gifted high school students, regardless of whether or not the college has an existing honors program or college. When the concept of providing special services for the gifted collegian began to spread across the country in the 1920s, some of the more prestigious colleges and universities did not feel the push (Dressel, 1971) because, in their faculty's opinion, the programs were not needed at their selective institutions. Because of the high standards for acceptance and retention for the college as a whole, these institutions rejected the idea that their students lacked challenges from their standard, demanding curriculum. This mentality exists today as well, and is a disservice to gifted collegians.

Over time, support for research on giftedness has waxed and waned in both K-12 and higher education. In recent years, a greater shift has occurred in research from giftedness to talent development (Bloom, 1985; Csikszentmihalyi, Rathunde, & Whalen,

1993; Gagné, 1995) due to disillusionment with the label of gifted, a reaction against IQ testing, a need to shift from a focus on identification to programming, and the idea of merging the concepts of achievement and potential (J. VanTassel-Baska, personal communication, February 5, 2007). Throughout the historical development of honors programs, differentiated curriculum was a greater emphasis than the process of talent development. However, this focus supports only the curricular aspects of talent, rather than the developmental process of talent.

Several themes exist across the talent development literature. First, most researchers agree that there needs to be a threshold of intelligence or general ability in order to develop talent in a field (Csikszentmihalyi et al., 1997; Gagné, 1985, 2009). Without this base in general ability, talent in a specific area will not be developed. Researchers also agree about the importance of practice and effort in the talent development process: while ability is a foundational element, talent will not develop through ability alone (see Bloom, Csikszentmihalyi et al., & Gagné). Intrinsic characteristics are also essential to the talent development process. The desire to put forth the effort and remain motivated are elements that contribute to the accomplishments in practice, along with the ability to self-manage and persevere under less than optimal circumstances (see Bloom; Csikszentmihalyi et al.; Gagné; Tannenbaum, 1983). Finally, people are important to the talent development process. These people can vary greatly during the stages of life, but generally involve parents, teachers and mentors (Bloom, 1985; Csikszentmihalyi et al.; Gagné; Tannenbaum, 1983).

Although some research studies exist on the topic of gifted collegians and honors students, limited information exists regarding the talent development of exceptional

students in higher education settings. Gifted students in college do not always have their needs met, yet there is limited research on the best ways to develop their talents. This study seeks to examine superior students at a small, selective liberal arts college in the southeastern United States (referred to in this study by the pseudonym, Southern University) in order to better understand facets of the talent development process, thus contributing to the scant literature and offering support for which facets can be fostered in higher education settings.

Problem of the Study

This study will examine college junior' and seniors' perceptions of their college experiences in order to understand their talent development process. The problem of this study is to utilize Gagné's (1985, 2009) Differentiated Model of Giftedness and Talent to gain a deeper understanding of talented students' perceptions of the means by which their college program and experiences have impacted their talent development. According to Gagné's definition, talented persons compose the top 10% of the students who have innate gifts, and are identified through high performance in fields such as academics, arts, technology, social action, business, leisure, and sports. Students who are performing at high levels in the academic field, the first of the talent fields suggested by Gagné, will serve as the unit of analysis in this study.

I have chosen to use explanatory sequential mixed methods as the study design (Creswell & Plano Clark, 2007). First, I will collect quantitative data through a survey administered online from gifted collegians at Southern University. This data will explain how Gagné's components (gifts, intrapersonal and environmental catalysts, and development processes) influenced the participants' talent development processes. I will

analyze the data in order to answer my first two research questions, and then use the results to select participants for qualitative data collection in the form of interviews. The second, qualitative phase will be used to explain the results of the quantitative results in greater depth. I will select students using extreme case sampling, selecting the outliers from the quantitative data in order to understand the talent development process that talented undergraduates perceive that they undergo. I will analyze the interview data for emergent themes that contribute to the research questions. The explanatory sequential mixed methods design is appropriate for this study, as the purpose is to collect quantitative data, and use the data to inform the search for qualitative participants and to explain the data in more depth (Creswell & Plano Clark).

In the field of gifted education, many names are used to classify students, ranging from gifted (see Albert, 1994; Bonner, 2001; Gagné, 2009; Hammond, McBee, & Hébert, 2007; Hébert, 2006; Kem, & Navan, 2006; Reis, 2006; Rinn, 2007; Robbins, 2005), talented (Bloom, 1985; Csikszentmihalyi, Rathunde & Whalen, 1993; Gagné, 1995; Noble, Subotnik, & Arnold, 1999; Piiro, 2007; Reis, 2006), high-ability (see Piiro, 2007; Reis, 2006), and superior (see Cohen, 1966). The varying terminology in the literature tends to refer to similar individuals: students who have above average or superior ability in a domain generally intellectual or cognitive in nature. It is this confusion in terminology that Gagné addresses in his original 1985 presentation of the DMGT, distinguishing clearly between those who are gifted and those who are talented. In the context of this study, the students will be termed gifted, as they are working along the talent development process towards talented. According to Gagné (2009), a gifted individual has and uses “outstanding *natural* abilities, called aptitudes, in at least one

ability *domain*, to a degree that places an individual at least among the top 10% of age peers” (p. 1), while a talented individual demonstrates “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)

Significance of the Study

An examination of the talent development process of talented college undergraduates will help collegiate administrators, both general and honors, in meeting the needs of talented students, so that students do not merely sit in class, being talented. I will share the report with the administrators of the honors program at Southern University as well as the offices that work with the students on a regular basis in order to provide them with an in-depth understanding of talented students and their developmental process. The findings should assist the administrators of these programs in better meeting the needs of talented college students at a local level.

At a national level, the field of honors education is burgeoning; the National Collegiate Honors Council publishes a peer-reviewed research journal for the field (see Campbell, 2005; Carnicom & Clump, 2004) and articles on collegiate giftedness are seen in peer-reviewed gifted journals, such as *Gifted Child Quarterly* (see Hébert & McBee, 2007; Hébert, 2006) and *Roeper Review* (see Grant, 2000; Hammond, McBee, & Hébert, 2007). Honors education and gifted education are become more entwined; the field of gifted education will benefit from further research into collegiate giftedness, exploring the nature of giftedness in a broader, K-16 setting.

College-aged talent development is especially relevant, because it is neither retrospective nor fully prospective; it captures the process of talent development as it is happening. Moreover the choice of gifted collegians as an age group to study is an important one. According to Albert (1994), the late adolescent and young adult period of gifted students' lives represents an internal amalgamation of new identities, expressive creativity, and career choice. This is a critical time in a gifted individual's life, and essential decisions are made during this time. Csikszentmihalyi et al. (1997) concur with Albert's placement of importance on the teenage years, stating that it is when gifted students make critical choices about whether or not they will follow through with their talents and continue to develop their skills. This study will further the research base on this age group of gifted students, and enable practitioners to better meet their needs.

Research Questions

The research study seeks to understand the talent development process of talented collegians through the lens of Gagné's (2009) Differentiated Model of Giftedness and Talent in order to contribute to the body of literature on understanding talented collegians so that honors administrators, faculty and parents can better help to support students in their talent development journey. The overarching research question for this study is: What are factors in the talent development process for gifted undergraduate students?

1. To what extent do gifted collegians perceive their innate gifts as affecting their talent development process?
2. To what extent do gifted collegians perceive intrapersonal and environmental catalysts as affecting their talent development process?

3. To what extent do gifted collegians perceive the development process as affecting their talent development process?

4. What do gifted collegians perceive as important factors in their talent development process?

Limitations and Delimitations

Limitations, according to Rudestam and Newton (2007), “refer to restrictions in the study over which you have no control” (p. 105). As an explanatory sequential mixed methods design, there is a give and take with generalizability; qualitative studies are not concerned with generalizability but seek an in-depth understanding, whereas quantitative research has a goal of generalizability. In this mixed method design, the quantitative results, can be generalized back to the population from which the sample was drawn, as long as the return rate is reasonable. The extent of that generalizability, however, is limited to other highly selective colleges, due to the nature of Southern University.

Survey research has several weaknesses by its nature. First, the sample is not truly random: it is comprised of people willing to take the time to fill out the survey. This may not be representative of the broader gifted collegian population, only those who consent to fill out the survey. Return rate is another potential limitation in survey research, a goal of over 60% surveys returned is generally considered satisfactory (Drew, Hardman & Hosp, 2008), though this number is not constant by all researchers. I attempted to control for this limitation by offering the survey online, which might have appealed to this generation of college students, as well as sending reminder emails, and offering an incentive for completion. Finally, surveys can be leading or biased. In order

to ensure that questions are clear and objective, I took measures to ensure content validation as well as conducted a pilot study.

An additional limitation was the timing of the interviews in the scope of the students' lives. Participants were in the middle of their talent development process; this study was neither truly prospective or retrospective in terms of the time in the individuals journey of talent development. Because the nature of the study required students to self-select into research and scholarships in order to be identified as a participant, an additional limitation was that potentially talented students who did not pursue those activities were overlooked for participation.

Although the researcher cannot control limitations, delimitations "imply limitations on the research design that you have imposed deliberately" (Rudestam & Newton, 2007, p. 105). A delimitation of this study was the small potential sample of students who were able to participate in the initial quantitative survey; there were approximately 150 students working on departmental honors, though the goal was to gain more participants through professor recommendation, awards and research scholarships.

The study was further delimited to juniors and seniors who have been identified as being talented through awards, honors designation, scholarships and professor recommendation. Gagné's model describes the talented student as being in the top 10% of the population with similar gifts. I designed the selection process to sample to skim the top of the talented pool of students at Southern University, in terms of achievements. Juniors and seniors were selected to allow for a greater amount of time in college for their collegiate experiences to have affected their talent development.

In order to limit the scope of the study, only academic departments were contacted for recommendations; this did not preclude those students who are talented in music, dance, drama, and art, as there are academic departments in the performing and visual arts on campus that may choose to recommend their students. The choice of using only one institution, and that Southern University is a highly selective liberal arts university, was also a delimitation. The university selected was a convenience sample, due to its proximity to the researcher. Because Southern University is highly selective, the sample of potential participants does not vary greatly from the larger student body population, in terms of entrance requirements into the university.

An additional delimitation in this study was the bias of the researcher. While positivistic research strives to maintain an objective nature for the researcher, in qualitative data collection, it is not necessary to remain objective. Rather, it is assumed that researchers have some kind of bias; the standard, then, is to acknowledge that bias. My personal bias for this study was grounded in my background in gifted programming as an elementary school student, and in my professional career interest in honors programs. Details about these biases are included in the Researcher's Bias Statement in Appendix D.

Qualitative research has slightly different measures of validity and reliability: trustworthiness and authenticity. Trustworthiness "is judged by two interrelated sets of standards: the study's ability to conform to standards for acceptable and competent practice and its ability to meet standards for ethical conduct" (Rossman & Rallis, 2003, p. 63). Authenticity requires that the study measures what it is supposed to measure (Schwandt, 2001). To meet the standards of acceptable and competent practice, the study

must be credible, transferable, confirmable, and dependable (Rossman & Rallis).

Authenticity includes consideration fairness, ontological, educative, catalytic and tactical authenticities (Schwandt).

Credibility refers to how well the findings match the perception of the participants (Rossman & Rallis, 2003). In order to ensure credibility, I used member checking during the interview process and acknowledged researcher bias (see Appendix D) in order to address credibility. Transferability takes place when findings can apply to other participants or context. Sample selection, setting, lack of description of participants all served as threats to transferability (Rossman & Rallis). In order to ensure transferability, I compiled a rich thick, written description of the interviews and themes. These descriptions allow the reader to determine if the results are applicable to their situations and settings. Additionally, to address transferability I have reviewed literature relevant to the college student development and gifted collegians (see Chapter 2) in order to create a background of empirical data that provided a context for more accurately understanding the perspectives of the students in general.

Confirmability seeks to establish whether the data and their interpretations can be traced primarily to the focus of the inquiry rather than to the researchers' beliefs and expectations (Rossman & Rallis, 2003). I ensured conformability through my statement of researcher's bias since this can serve to explicate my prior sentiments and attitudes. In addition, I provided a thick, rich description of the data, which serves to allow the reader more insight into the research process. Dependability requires that the study be consistent in its findings (Rossman & Rallis). Member-checking served as a method for ensuring dependability and helped triangulate data throughout the course of the study.

I took measures to ensure authenticity throughout this study. Fairness occurs when the voices of all participants are heard throughout the study (Schwandt, 2001). Ontological authenticity is defined as how the participants' understanding of themselves and their contexts grow by participating in the study (Schwandt), and educative authenticity asks the question, do the participants' understanding of others' perspectives and constructions grow as a result of participating in the study (Schwandt)? Catalytic authenticity focuses on the participants' decisions and actions facilitated by participating in the research study (Schwandt), and tactical authenticity seeks to find out if the participants are empowered to act as a result of participating in the study (Schwandt). To address authenticity, I conducted member checks at two points, and asked follow-up questions to ensure fairness of the interpretations. In addition, I distributed copies of research results to each participant, and discussed the results following the study as a method to facilitate catalytic and tactical authenticity.

Definition of Terms

Departmental Honors: an honors program offered by individual departments at Southern University. A minimum GPA is required to attain departmental honors at commencement, in addition to an honors thesis. Depending on the department, the honors thesis can be judged as Honors, or at either the Honors or Highest Honors distinction (J. Schwartz, personal communication, March 21, 2008).

Differentiated Model of Giftedness and Talent (DMGT): a model of talent development created by Francoys Gagné in which gifts develop into talents through learning, training and practice, while intrapersonal and environmental catalysts act upon the individual through chance (Gagné, 1995, 2005).

Giftedness (as used in DMGT): “designates the possession and use of outstanding *natural* abilities, called aptitudes, in at least one ability *domain*, to a degree that places an individual at least among the top 10% of age peers” (Gagné, 2009, p. 1).

Honors: “a planned set of arrangements, including curriculum differentiation and close faculty-student relationships, to meet the needs of a college or university’s most able students” (Rinn, 2008, p. 98). At the university used in this study, two types of honors program exist: departmental honors and freshman honors (J. Schwartz, personal communication, March 21, 2008).

Honors Housing: having different housing offered to students who participate in honors programs; these students have roommates that are also honors students; honors housing can be an entire dormitory, or wings or floor within otherwise heterogeneous dormitories (Sederberg, 2005). At Southern University, honors housing is provided on designated floors of one freshman dormitory and it is not mandatory (J. Schwartz, personal communication, March 21, 2008).

Freshman Honors (pseudonym): for Southern University, the Freshman Honors program identifies students in two ways. The majority of the students are recruited from the applicant pool to the college. The top 10% are offered the designation of Freshman Honors prior to entering Southern University. At the end of their freshman year, students who have a minimum of a 3.75 GPA are invited to apply for any of the remaining slots in the program. Incentives for Freshman Honors students include: living in the designated honors dormitory their freshman year with a roommate who is also a Freshman Honors student; the Freshman Honors lunch series, in which visiting and resident professors and researchers present informal sessions on a variety of research interests; a \$3000 dollar

research grant to be used for an approved project during the summer session; and the opportunity to apply for an additional \$1000 grant for research (J. Schwartz, personal communication, March 21, 2008).

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.” (Gagné, 2009, p. 1)

Talent Development: process through which a person develops his/her gifts through learning training and practice into talents in specific domains. This process is helped or hindered through internal and environmental catalysts (Gagné, 1995, 2005).

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, I present literature relevant to a study of the talent development process of gifted collegians. First, I describe the research behind the talent development process in general. Then, I present literature relative to the population in the study: gifted collegians. Finally, I discuss the research on programmatic options for the collegiate gifted. As I synthesize the literature for the conclusion, I make an argument for the need for an in-depth study of the talented development process of gifted collegians.

Talent Development

Popular and governmental support for gifted education exists on a pendulum: support rises during times of national crisis and concern (Tannenbaum, 1993). For example, consider the Soviet launching of Sputnik in 1957 and the subsequent passage of the National Defense Education Act of 1958, which demanded that the schools contribute more to the development of the American society. The Act included a provision to identify gifted children and provided fiscal resources for programs in mathematics, science and foreign languages (Tannebaum). Another upswing on the pendulum occurred in 1970 when Congress required gifted education provisions be added to the Elementary and Secondary Educational Amendments of 1969. This led to the publication of the Marland Report in 1972, which provided national definition for giftedness, “Marland saw the gifted as a deprived group whose talents were in danger of serious impairment unless appropriate intervention strategies were planned” (Tannebaum, p. 19). In recent years, a greater shift has occurred in research from giftedness to talent

development (Bloom,1985; Csikszentmihalyi, Rathunde, & Whalen, 1997; Gagné, 1995). This section discusses in detail the influential and landmark studies in talent development as well as key models and conceptions of talent.

Bloom: Developing Talent in Young People

In 1985, Benjamin Bloom edited the publication of a four year long research study his research team conducted called *Developing Talent in Young People*. Bloom and his team conducted the Development of Talent Research Project in order to understand the process by which accomplished individuals in varying fields attained their high level of success. For the purpose of the study, Bloom defined talent as “an unusually high level of demonstrated ability, achievement, or skill in some special field of study or interest. This is in contrast with earlier definitions, which equate talent with natural gifts or aptitudes” (p. 5). The researchers interviewed over 120 talented individuals under the age of 40 in three different fields: athletics, (specifically, swimmers and tennis players); aesthetics (specifically, concert pianists and sculptors); and cognitive or intellectual, (specifically, research mathematicians and research neurologists). In order to gain a more complete picture of the talent development process, the researchers also interviewed participants’ parents and teachers or coaches when able.

Bloom (1985) and his team drew generalizations from the numerous interviews about the talent development process. First, talent develops in three stages throughout the individuals’ lives: as young children, talent development is recreational; the activity later transitions to time-consuming work in a series of learning activities; finally, the talented individuals’ devotion to the activity is solidified by learning experiences, and play and work begin to balance each other (Bloom). Only a few participants in the study

were considered to be child prodigies in their fields, some winning in age-group competitions, though none whose work could compare with talented adults in their fields (Bloom).

Akin to the three stages, the talented individuals had three noted kinds of teachers throughout their talent development process (Bloom, 1985). First, talented children had a teacher, most likely in a local area, that encouraged the children's love for the domain; they were enthusiastic and offered a great deal of praise for their young charges. Once the individuals' talents grew to a high level, they required a more advanced teacher, one more likely to be out of their local area and who had a reputation for talent in the field and a history of helping children to develop their talents. These teachers emphasized more technical skills and held high expectations for their talented students. Finally, the talented individuals' skills grew to the level where a new teacher, a master teacher, was required. Again, students most often had to look more broadly for their teachers, as the level of teacher made their numbers scarcer. These teachers helped their students to refine and perfect their skills; they served as guides and shared strategies so their students could find ways to express their talents (Bloom).

In addition to the stages and teachers in the talent development process, Bloom (1985) noted generalizations about the role of parents in the participants' early lives. First, a theme of a positive supportive home environment emerged (Bloom). Parents established a positive work ethic through role modeling and holding high expectations for their children. They consistently emphasized the importance of always doing one's best at home, school, and in their talent activities. Additionally, Bloom asserted that parents' encouragement of their children in a talent field was influential, however this

encouragement was field specific: “Each group of parents strongly encouraged their children’s development in a particularly highly approved talent field and gave much less support to other possible talent fields and activities” (p. 508). While the importance of families was constant throughout the individuals’ talent development process, the family’s role evolved over time. In the earlier years, parents provided approval and encouragement, were instrumental in establishing schedules and routines for practice, and actively monitored their children’s’ practice and development. This role diminished as the talented individuals became more committed to their field and were motivated both intrinsically and by their expert teachers, but the parental role in transportation and the financing of the lessons increased.

Chance and time in field were also crucial elements in the talent development process (Bloom, 1985). Bloom acknowledged that some elements of the talent development process occurred by chance, such as finding the right teacher at the right time, the selection of their specific talent in a field, and the support of a benefactor or sponsor (Bloom). Additionally, talented individuals in the study demonstrated significant achievements and contributions after at least ten years in their given field. “Clear evidence of achievement and progress over more than a decade of increasingly complex and difficult types of learning was necessary to maintain commitment to a particular talent field” (p. 509).

Finally, Bloom (1985) drew generalizations about overall qualities of the talented participants. Each of the talent fields had specific qualities that were noted as essential for the specific field, such as endurance and strength in athletics, sensitivity to sound and good pitch discrimination in music, sensitivity to line, color, form and texture in art and

academic aptitude and achievement in the cognitive fields. In addition, Bloom noted three general qualities that were constant throughout all fields of talent development. Talented individuals had a “strong interest and emotional commitment to a particular talent field, desire to reach a high level of attainment... and willingness to put in the great amounts of time and effort needed to reach very high levels of achievement” (p. 544).

Bloom (1985) and his research staff spent four years conducting in depth interviews with 120 talented individuals, their parents and teachers. The retrospective nature of the study required individuals to depend on their memories, but Bloom triangulated this data with interviews from both teachers and parents when available. The semi-structured interview protocol was tested using talented persons not chosen for the study. Qualitative research does not commonly have as its goal generalizability, however the extensive sample and deliberate selection of specific talents within the broader field give credence to the applicability of the results of the study to a much wider audience. While Bloom was in the process of conducting his study another researcher, Abraham Tannenbaum, published a conception of giftedness that echoed many of the generalizations that emerged from Bloom’s study.

Tannenbaum: Translating Gifts into Adult Achievements

Jeffrey Calderon, Rena Subotnik, Steven Knotek, Kristin Rayhack and Jason Gorgia (2007), credit Abraham Tannenbaum (1983) as one of the initial researchers to document the process of talent development. His conception used the term giftedness, stating talent was a construct identified in adults. Instead he focused his model on children, defining giftedness as “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” (Tannebaum, 2003, p. 45). In his original 1983 conception, Tannenbaum identified five elements that contribute to the translation of childhood gifts into adult talent: general ability, special ability, nonintellective factors, environmental factors and chance factors.

Tannenbaum (1983) identified the first required element as general ability, or *g*. Tannenbaum noted that a static threshold for IQ or general intellectual ability was not appropriate for all areas of talent. Rather, certain talent domains require a higher threshold, such as academics; the threshold was lower for others, such as performing arts. The second element Tannenbaum identified was special abilities. Later termed special aptitudes, this element refers to skills in the core domain. The child must express both general and special abilities to excel in their field. In order for the individual to be truly gifted however, the final three elements must also be a part of the individual’s life.

The third element of Tannenbaum’s (1983) conception of giftedness is nonintellective factors, or personality traits. Motivation and creativity are two examples of the psychosocial traits that energize the children’s general and special abilities towards giftedness. The fourth element is environmental factors. These factors include supportive parents, teachers and peers as well as the school and community. The final element that acts in conjunction with the other four in transforming childhood gifts into demonstrated achievements is chance: being in the right place at the right time. In his 2003 revision, Tannenbaum noted “chance factors should never be trivialized or neglected in the study of giftedness, especially given that so many eminent people emphasize unpredictable events that helped them reach the top” (p. 55).

Many of the elements that Tannenbaum emphasized in his conception of giftedness were noted as themes in Bloom's (1985) study. Gagné (2004) acknowledges the importance of Tannenbaum's chance element in influencing his Differentiated Model of Giftedness and Talent (1985). Gagné's catalysts also have elements in common with Tannenbaum's nonintellective and environmental factors such as the importance of motivation and supportive parents and teachers; these concepts also appear in Bloom's themes from his landmark talent development study. Shortly after Tannenbaum published his study, Robert Sternberg published his conception of intelligence.

Sternberg: Intelligence, Wisdom, and Giftedness

Robert Sternberg published his triarchic theory of intelligence in 1985, in his seminal work, *Beyond IQ*. Sternberg states that the triarchic theory:

Seeks to specify the loci of human intelligence and to specify how these loci operate in generating intelligent behavior. ...[it] is a theory of individuals and their relations to their internal worlds, their external worlds, and their experiences as mediators of the individuals' internal and external worlds. (1985, p. 317)

The theory is composed of three sub-theories of intelligence, creative, analytical and practical, and emphasizes the process instead of different domains of intelligence. More recently, Sternberg has focused on the concept of wisdom, and the WICS Model of Giftedness (2005). WICS stands for wisdom, intelligence, creativity, synthesized; the model can be used to identify gifted individuals. Sternberg posits that the three attributes, wisdom, intelligence, and creativity, when synthesized, identify individuals as having potential to be great contributors to society.

Sternberg (2005) based the intelligence component of the WICS model on his theory of successful intelligence, which acknowledges that intelligence has different meanings based on the individual's personal context and that people have patterns of abilities and do not excel in all areas. Successful intelligence requires the ability to adapt to one's environment and use the three triarchic abilities: analytical, which requires individuals to use their intelligence to analyze or evaluate; creative, which requires individuals to use their intelligence to create a unique product in a domain such as writing or art; and practical, which requires individuals to use their intelligence to solve problems typical in day to day life (Sternberg).

Sternberg's (2005) second component of the WICS model is creativity; he describes creativity as a decisions, based on his investment theory of creativity (Sternberg & Lupert, 1996) in which creative individuals buy low, but then sell high:

The creative person buys low by presenting a unique idea and then attempting to convince other people of its value. After convincing others that the idea is valuable, which increases the perceived value of the investment, the creative person sells high by leaving the idea to others and moving on to another idea.
(Sternberg, p. 330)

Creativity, like intelligence, requires an individual to balance the triarchic skills, analytical, creative and practical.

The final component of Sternberg's WICS theory (2005) is wisdom; it is based on his balance theory of wisdom (Sternberg, 1998). A wise individual, according to Sternberg, applies their creativity and intelligence to a problem in order to achieve the common good; this requires balance among "(a) intrapersonal, (b) interpersonal and (c)

extrapersonal interests, over the (a) short- and (b) long-terms to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments” (Sternberg, 2005, p. 334). Wisdom requires the balance of interests and time while reacting to the environment; Sternberg describes wisdom as the most important attribute for a gifted individual to have (2005).

Sternberg has conducted extensive research on the three aspects of the WICS model, through his triarchic theory of intelligence (Sternberg, 1985), investment theory of creativity (Sternberg & Lupert, 1996) and balance theory of wisdom (Sternberg, 1998). It is in the synthesis of these attributes that a gifted individual can become truly talented, a great contributor to the world. As Sternberg coined new language in intelligence, Gardner described several intelligences in his 1983 work *Frames of Mind*.

Gardner: Multiple Intelligences

Howard Gardner published his multiple intelligences (MI) theory in 1983 in his work *Frames of Mind*. Through an extensive review of empirical studies, Gardner identified seven intelligences. He defines intelligence as “a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture” (Gardner, 1999, p. 33-34). It is a capacity for rather than a style of learning. Gardner identified seven intelligences in his 1983 work, and more recently added an eighth and speculated about two other potential intelligences. These intelligences work together for individuals to be successful in a field; a Broadway performer needs musical intelligence, as well as bodily-kinesthetic, linguistic, and spatial intelligences.

Gardner's original seven intelligences include two that Gardner notes are typically valued in school settings (1999), linguistic and logical mathematical. Linguistic intelligence involves the capacity for using language, both spoken and written, in order to achieve goals; examples of individuals with a high capacity for linguistic intelligence include lawyers and writers. Logical mathematical intelligence involves the capacity to use scientific investigation, logic reasoning skills, and mathematical operations in order to solve problems; examples of individuals with a high capacity for logical-mathematical intelligence include scientists and mathematicians.

Beyond the intelligences popular in schools, Gardner's original 1983 MI theory identified 3 intelligences most commonly found in the arts. Bodily-kinesthetic intelligence is the capacity for individuals to use their bodies in order to achieve goals, such as a dancer whole body or a surgeon's dexterous hands. An individual with a capacity for special intelligence can manipulate patterns in space; pilots and architects are likely to have high levels of spatial intelligence. Musical intelligence involves the capacity for intelligence in musical patterns including composition and performance.

Finally, Gardner (1983) identified the final two original intelligences as personal intelligences. Interpersonal intelligence is the capacity to understand oneself in order to solve problems. Intrapersonal intelligence is the capacity to understand and work with others, such as a teacher. Gardner (1999) later added an eighth intelligence, naturalist. This intelligence involves the capacity to understand the natural world. Gardner has also identified two other potential intelligences: spiritual, the capacity for understanding spiritual or religious aspects of life, and existential, the capacity for asking the cosmic or ultimate questions in life. These two potential capacities, however, do not meet all of

Gardner's (1983) prerequisites for an intelligence, thus he completes his list at the eighth intelligence, naturalist.

While popular among schools, Gardner's 1983 MI theory has its share of critics. One such critique of MI theory is that the application of the theory to school settings has been unsuccessful (Klein, 1998). Gardner himself recognizes that administrators' and teachers' push to apply MI theory in educational contexts occasionally ill-constructed and poorly maintained (Gardner, 1995, 1998). He states that MI theory does not indicate "whether to teach one or more intelligences; whether to teach strengths or weaknesses; whether to focus on pedagogy or assessment. Rather, once one has made such decisions, one can then draw on the theory for possible practices or lessons" (Gardner, 1998, p. 101).

According to VanTassel-Baska (1998), while the shift from gifted education to talent development did not originate with Howard Gardner, the publication of his work on multiple intelligences was a one of the precipitating events. While Sternberg (1985) and Gardner (1985) constructed new definitions in intelligence, François Gagné challenged the terminology of the gifted field, distinguishing between gifts and talents, with his Differentiated Model of Giftedness and Talent (1985).

Gagné: Differentiated Model of Giftedness and Talent

Gagné's Differentiated Model of Giftedness and Talent (1985, 2009; DMGT) is a comprehensive model of talent development that stemmed from the lack of a uniform definition for giftedness and talent. It is divided into four components that act together in order to develop talent, with an underlying emphasis on the role of chance that can help or hinder the process (see Figure 1).

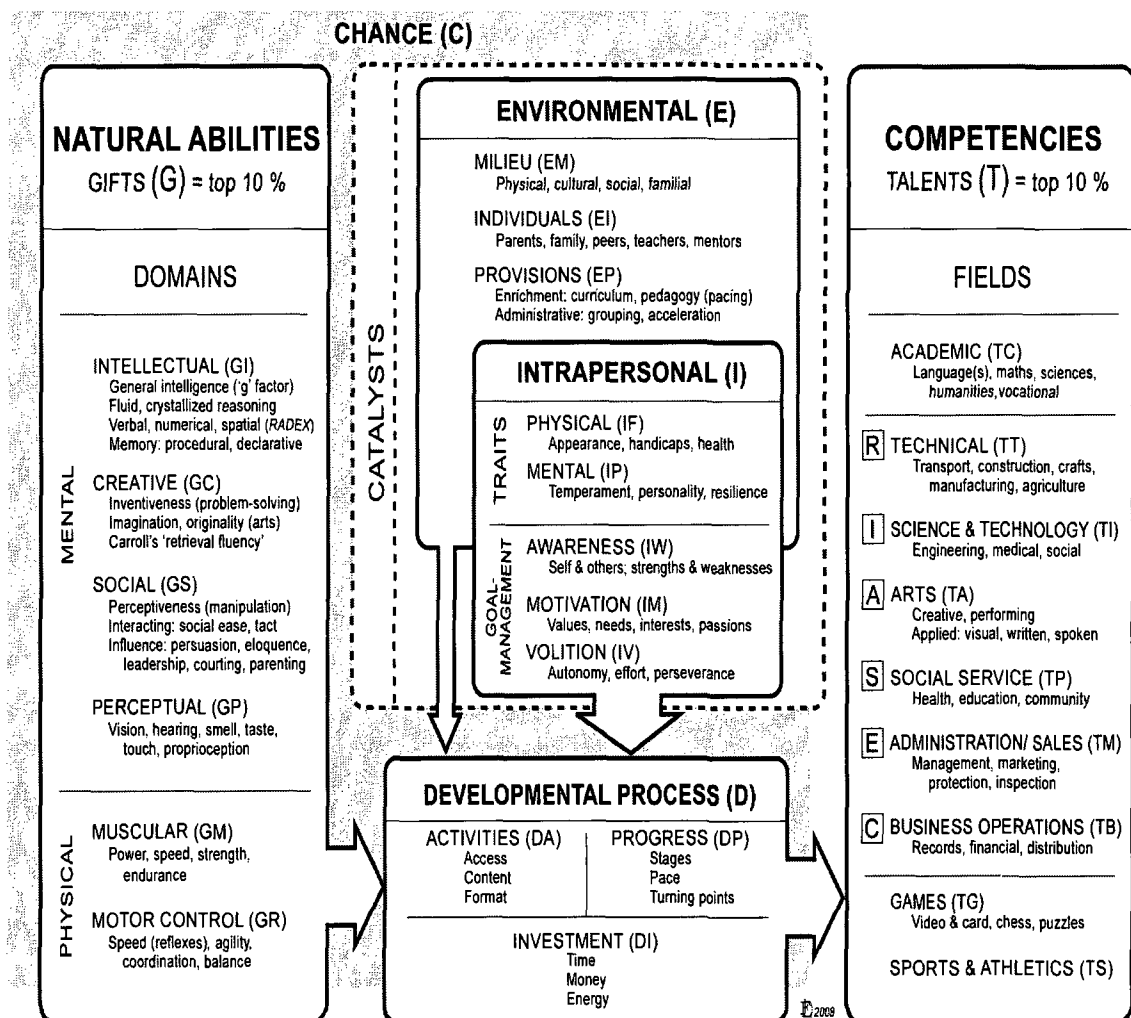
Gagné's (1985, 2009) DMGT begins by defining gifts as natural abilities that occur within people in different aptitude domains. These domains are divided into two groups: mental domains include intellectual, creative, social and perceptual abilities, while physical domains include muscular and motor control abilities. These gifts then develop through learning and practice, termed developmental process, which is comprised of activities in the gifted domain, the progress or timing of these activities, and the amount of personal investment, including time, money, and energy that is devoted to the activities. While these aptitudes are developed, intrapersonal and environmental catalysts act upon the person, according to Gagné (1985, 2009). Intrapersonal catalysts include goal-management behaviors such as motivation, volition, and self management ability and traits, such as personality and physical characteristics. The environmental catalysts include the person's surroundings, provisions offered to the individual, and other people, such as teachers, mentors, family and peers. Finally, chance acknowledges the lack of control over the individual's gifts, environmental and intrapersonal catalysts, and developmental process. The gifts can eventually transform into systematically developed skills, or talents, in specific fields. The mental domains produce talents in the academic, arts, science and technology, social service, business, administration and technical fields. Gifts in the physical domain produce talents in games, sports and athletics (Gagné). It is in the overall combination of all of the components of the DMGT (Gagné) that the talent is developed.

Several aspects of Gagné's model are recurring themes in the talent development process. Intrapersonal catalysts, especially motivation, volition and personality characteristics, are seen in both Bloom's (1985) landmark study and Tannenbaum's

(1983) concept of giftedness. A theme also exists across Bloom and Tannenbaum with regard to the importance of people (parents and teachers) in the talent development process. Finally Gagné's notes that he was influenced by Tannenbaum's ideas of the importance of chance when creating his model (1995); this element also emerged in Bloom's study.

Figure 1. *Differentiated Model of Giftedness and Talent (Gagné, 2009, p.*

3)



Several studies offer research support to Gagné's (1985, 2009) DMGT. Michael

Piechowski (1998) investigated historical and contemporary cases of talented individuals

in order to assess the role of a supportive environment in the context of talent development. Piechowski found several commonalities in his biographical study to the DMGT. First, Piechowski highlighted the importance of personality characteristics as strengths in the talent development process; these were of a greater influence than the environment, similar to Gagné's notion of intrapersonal catalysts. Piechowski also found reliance on will, described as a conscious and unrelenting effort to succeed in the face of obstacles, which is similar to Gagné's characteristics of volition and self-management. Piechowski echoed the importance of chance, finding that a characteristic of talented individuals was the role of chance, and the importance of seizing opportunities, to make that chance work in the individual's favor. Finally, Piechowski's study offered support for the presence of the environmental catalyst of people, in terms of family support. About half of the sample had supportive and accepting families that served as a stanchion in the talent development process. The other half, however, had families that were not supportive, and sometimes even destructive. Piechowski found that the supportive family environment was not a prerequisite for talent development and success in life.

Laura Burton, Jaci VanHeest, Sharon Rallis, and Sally Reis (2006) qualitatively studied a limited sample of talented female Olympic athletes, finding support for the characteristics of motivation, perseverance and resilience. Burton et al. found that one factor that pushed talented women to succeed was the support of others, especially family members and mentors or coaches. The qualitative nature of the study and delimitation to female athletes greatly affected the generalizability of the study, though the in-depth information was valuable in supporting Gagné's themes.

François Gagné and François St. Père (2001) conducted an empirical study at an all girls' high school, investigating whether motivation predicted achievement even when intelligence was controlled. In the DMGT, intellectual aptitude is a facet of talent development, and Gagné and St. Père showed that the strength of cognitive abilities did act as a predictor for achievement. However, the study also showed that gifted students were not more or less motivated than the general school population. Their finding appears to contradict the importance of motivation as an intrapersonal catalyst in the DMGT (Gagné, 1995, 2005), though it should be noted that there were methodological problems with the study, as it took place in a single-sex, selective, private high school during school hours, which impacted the generalizability and external validity of the study.

Jeffrey Calderon et al. (2007) studied eminent scholars, rising stars in the field, and high-achieving high school students in science and music, creating a program that brought all three together based on their model of development called scholarly productivity/artistry (sp/a). One participant's remarks illustrated the importance of psychosocial skills in talent development, and the importance of intellectual peers and mentors:

I met kids who chose to work and study, whether in music or mathematics or psychology, for love of these disciplines themselves. Intellectual passion is a heartening thing, regardless of where it is applied. There was more to what my mentors (and fellow mentees) taught me. Rejection at some point, failure at some point, that was a foregone conclusion—like scraping up one's knees while learning to ride a bicycle. It was the first time, really, that someone just said it to

me, right out, and it was the first time such wasn't treated as something to worry about, or even to be bothered with. It's hard to explain why it was so comforting. (p. 361)

Calderon et al. cited Gagné's (1985, 2009) model in their research on sp/a, and offered support for aspects of the DMGT, finding characteristics such as intrinsic motivation, parental support, self-management and persistence, important in transforming abilities into competencies and those competencies into expertise.

Gagné's DMGT is a comprehensive model of talent development that reiterated themes in Bloom's (1985) research study, as well as Tannenbaum's (1983). Gagné frequently updates his model in response to further research in the field; his original 1985 conception is quite different visually from his current model, though the essentials remain constant. Gagné and other researchers have empirically tested aspects of the model and it continues to evolve. Other researchers have also experientially tested the general construct of talent development.

Beyond Terman: Longitudinal Studies

In 1994, Rena Subotnik and Karen Arnold published a volume of longitudinal studies of giftedness and talent entitled *Beyond Terman*. Acknowledging that many previous studies of talent development were retrospective in nature (e.g., Bloom, 1985) Subotnik and Arnold sought studies that collected current data from individuals over time, hence the longitudinal designs represented in their publication. The studies presented in this section cover various aspects of talent development and use an assortment of methodological tools, but are all linked by using multiple data points over time to collect the data.

Karen Arnold (1994) conducted the Illinois Valedictorian Project, studying 35 male high school valedictorians and salutatorians in order to discover what led to their academic and career achievements. She collected data in the form of interviews, previously validated questionnaires on student lifestyles and values, gender role expectations, and achievement motivation, and college entrance examination scores annually from 1981 to 1985, and then again in 1990. Several patterns emerged from this study. First, the talented sample was not achieving at high levels of what Arnold described as early career attainment: only 20 percent pursued graduate study, of those 3 were in PhD programs, and one desired an academic career. Second, the majority had graduated from college and was employed in positions commensurate with their degrees, in concrete career paths. In terms of the relationship between the participants' ability and their achievements, Arnold noted:

The first decade of the Illinois Valedictorian Project demonstrated a strong connection between top academic achievement in high school and outstanding academic performance in college. The years after high school graduate also demonstrated that these former valedictorians were apparently not headed for stellar career achievements. Early adult achievements of this group of high school valedictorians reflected the influences of gender and social context rather than the ability and academic performance. (p. 47)

The strengths of the study's design lie in using the same sample throughout the study, rather than a cross-sectional design in order to assure continuity of information. Additionally, the questionnaire instruments were both reliable and valid, based on previous research. As with many longitudinal studies, however, attrition and

experimental mortality were weaknesses, and the investment of resources in preventing attrition can be cumbersome. Delimiting the study to only males made it difficult to generalize to a broader audience, however attempts were made to vary the sample by socio-economic status (SES), culture, religion and ethnicity to provide an extensive sample of males.

Rena Subotnik and Cynthia Steiner (1994) carried out a longitudinal study of adult manifestations of academic talent in science. They administered two mailed questionnaires and conducted telephone and personal interviews of 98 Westinghouse Science Talent Search winners from 1983. Collecting data in 1983, 1984, 1988 and 1990, Subotnik and Steiner sought to understand the variable associated with attrition and retention of science talent. The majority of the participants remained in the science field. Both males and females who left the field cited their reasons for leaving as lifestyle required of a scientist was undesirable, poor guidance by schools and parents, a deficiency of mentors, and poor science instruction. The retention of talented individuals in the science field was credited to persistence against obstacles, the presence of mentors and an understanding of the politics and values necessary for a career in scientific research. Like Arnold (1994), Subotnik and Steiner cited attrition as a pitfall of longitudinal research. Unlike Arnold's quantitative instruments, the researchers did not cite any validation or reliable studies for their surveys; in fact little attention in the article was paid to the instruments, as the focus was more on the qualitative interview component of the research study.

David Lubinski and Camilla Benbow (1994) began an extensive longitudinal study in 1972 of 5000 mathematically precocious students. The participants all scored

highly on the math portion of the SAT and were part of the Study of Mathematically Precocious Youth (SMPY). Participants were 12-14 years old at the time of the initial data collection of the study. The researchers have collected and will continue to collect data from each of the five cohorts at age 13, 18, and 23; two cohorts have finished their data collection, while at the time of publication the final three cohorts were in various stages of data collection. SAT scores, psychological and ability tests, questionnaires and some interviews were used to study the determinants of the participants' math and science achievements. The researchers presented an analysis of the data from the first two cohorts compared by gender. While both males and females were equally likely to seek and attain advanced degrees, males were more prevalent in the engineering, math, and physical science fields by eight times. Lubinski and Benbow state that the scientific nature of the physical sciences is not the prime deterrent of females, as they are prevalent in biology and medicine. Based on their interest and values according to their profiles, it is the inorganic nature of the physical sciences that is undesirable: working with things rather than people. Unlike Arnold (1994) and Subotnik and Steiner (1994), Lubinski and Benbow did not refer to a difficulty with attrition in their longitudinal study. The researchers' questionnaires also appear to be self-constructed, like Subotnik and Steiner's, as reliability and validity data were not provided. The considerable size of this study is a strength, as is the use of multiple cohorts with common data collection points. As the study was only in its third of five planned decades at the time of publication, complete results across the five cohorts are not yet available.

Robert Albert (1994) exclusively studied twelve year old boys with demonstrated high IQs and giftedness in mathematics in his study of gifted boys and their families.

Albert conducted his study in order to understand the effects of several factors on career choice and adult eminence: family, cognitive, personality, and creative factors. Starting in 1977, Albert collected data again in 1982 and 1986, using interviews, a test battery, IQ scores and mathematics tests scores. At the time of publication, an additional data collection point was planned, at the point where the participants' projected eminent careers were blossoming. Albert discussed themes from the first three data collections points, including the positive relationship between participants' creative potential, ego development and personality with their parents' same three qualities. The late teenager and early twenties period of the participants' lives was reflective of a melding of creativity, identity and career choice, and essential decisions were made during this time. Furthermore, "the degree of intrafamily stress, the presence of parental differences, and the quality of father-son relationships are important in potentiating these boys' creative and educational potential.... Families are not only launching pads but can fuel their sons' later creativeness" (p. 309). Along with sharing the significant results of the study, Arnold presented strengths and limitations of the study design. All instruments used by the researcher in this study had high levels of validity and reliability. Albert acknowledged a bias in sampling, due to the volunteering aspect of the sample. The researcher attempted to stave off attrition by maintaining personal contact with the participants throughout the study.

The studies presented from *Beyond Terman* share consistent themes with Bloom (1985), Tannenbaum (1983) and Gagné (1985) in the talent development process. Researchers noted the influence of parents and mentors, the importance of personality characteristics and the role of motivation and a desire to persevere in the field.

Longitudinal studies have an advantage over retrospective studies in that they collect data at multiple points in a person's life, thus getting a real time perspective rather than a retrospective one. All of the studies presented were mixed methods of some kind, combining quantitative data analysis for generalizability with interviews to investigate the concepts in greater depth.

Longitudinal studies are not without their problems, however, especially in terms of attrition, or experimental mortality in which participants drop out over the course of the study. Longitudinal studies are known for having smaller samples (Subotnik & Arnold, 1994) which can affect generalizability; however several of the studies cited here did have substantial sample sizes (See Lubinski & Benbow, 1994; Subotnik & Steiner, 1994). Finally, history can have an effect on longitudinal studies: consider the change in the American landscape, for example 9/11 and the subsequent war on terror and the recent election of the first African American president, which has occurred over the course of Lubinski and Benbow's 50-year study. Despite the challenges with validity, longitudinal research, "because of its sweeping chronological reach, can offer meaningful insights into the outcomes of earlier educational policies and help us plan interventions that more clearly fulfill societal and individual needs" (Subotnik & Arnold, p. 16). In addition to their work on longitudinal studies, Arnold and Subotnik, along with Kathleen Noble, compiled research on talented women and created a model of female talent development in *Remarkable Women*.

Noble, Subotnik & Arnold's Model of Female Talent Development

Noble, Subotnik and Arnold (1996) edited *Remarkable Women*, in which different authors contributed chapters about talented women in various domains. By amalgamating

the themes brought forth throughout the research of over 20 scholars on talent development in women, Noble et al. synthesized a model of female talent development. Later published in *Gifted Child Quarterly* (Noble, Subotnik & Arnold, 1999), the model includes three stages: foundations, filters and spheres of influence.

The foundations stage describes various demographic factors, the distance of the individual from her society's mainstream and individual factors such as personality traits, family background and support, and psychological resilience (Noble et al., 1996, 1999). The foundation stage lays the groundwork for the talented woman's journey through the talent development process. The second stage takes the individual and demographic characteristics of the talented person and filters them through opportunities and the issues involved in their talent domain, in order for them to realize their adult gifted behaviors. These filters include opportunities and obstacles in the talent domains. Within the opportunities filter, women must vigorously pursue prospects, which require certain amounts of motivation, risk taking, and confidence; these behaviors manifest in creative productivity (Noble et al., 1996, 1999). During this second stage, the talented female takes advantage of opportunities and overcomes threats in order to continue through the talent development process.

The final stage occurs when women realize their potential in a sphere of influence. There are three spheres of influence, or domains, in which women make contributions. First, in the personal domain, women attain self-actualization through creative contributions in primary relationships, raising their children, or homemaking. The second sphere, the leadership sphere of influence, is extremely challenging to achieve, requiring skills such as leadership, communication, charisma, imagination and

forethought, but it does not require a significant change in the domain's content. The third sphere, the eminent sphere of influence in the public domain, requires some change in the course of the domain. Historically, pioneers who master the field break the male-dominated mold and allow future generations of women a foundation on which to build their talent (Noble et al., 1996, 1999). Noble et al. state, "women of rare talent and exceptional commitment can bring their united perspectives and experiences to bear on the course of a field or discipline" (1996, p. 434). After laying the foundation and working through opportunities and threats, the talented female achieves her potential in the final stage, in any of the three spheres of influence.

While research on Arnold et al.'s model have not published following the 1996 book and 1999 article, two studies have cited the model, and qualitatively researched aspects of the model. Reis (2006) studied women who achieved eminence, and Burton, VanHeest, Rallis, & Reis (2006) studied talented female Olympic athletes. Reis found personality factors in her research that corroborate Arnold et al.'s foundations and filters: task commitment, resilience, determination, individualism, openness to the exploration of a wide range of interests, creativity and risk-taking. Burton et al. also found support for the characteristics of motivation, perseverance and resilience. Moreover, Reis and Burton et al. found that a factor that pushed talented women to succeed was the support of others, especially family members and mentors or coaches. Reis furthered supported for the need for talented women to overcome barriers, an aspect of Noble et al.'s filters stage. Barriers identified by both researchers include isolation, unrealistic expectations, self-sabotage, lack of support, the choice between family and work, and the sexual dynamics of the workplace.

Despite the studies by Reis (2006) and Burton et al. (2006), Noble et al.'s (1996, 1999) model does not have a significant amount of research to support its use to study the talent development process of gifted collegians. However, because Noble et al.'s model focuses on talented adults, this model may be a better fit for understanding gifted collegians than a model designed for children as college students are often beginning their adulthood years at the onset of their collegiate experience. One other drawback of Noble et al.'s model is that it is delimited to females, and the goal of the research study was to study gifted college students in general, not limited by gender. Piirto's Pyramid of Talent Development, discussed in the next section, applies to both talented males and females, and thus may be a better fit for college students.

Piirto's Pyramid of Talent Development

Piirto's Pyramid of Talent Development (Piirto, 1994, 2004) is, like Noble et al.'s model, a synthesis of existing research. Rather than fusing the research presented in a single volume, Piirto developed her model after "reading almost all of the research extant about talented, gifted, and creative children and adults" (2004, p. 135). The model has four layers of a pyramid representing the individual person that culminate in an apex of talent, as well as five suns which are environmental aspects of the talent development process. Several assumptions underlie the Piirto Pyramid: creativity is dependent on domains and can be developed; talent is a genetic predisposition and can be developed; and domains of talents have established rules known to the experts in the fields in which talent is developed (Piirto).

The base of Piirto's (1994, 2004) pyramid is the genetic heritage that all individuals bring to the table. This is the base of talent development, as talent is an innate

propensity. The second, and largest, layer of the pyramid concerns the emotional aspect of personality. These affective characteristics are what an individual needs in order to succeed (Piiro), and include aspects such as drive, passion, curiosity, imagination, volition, resilience, risk-taking, and persistence. These personality characteristics are similar to those noted by Noble et al. (1996, 1999) in their discussion of foundations and filters in talent development. The third layer of the pyramid is the cognitive aspect of talent development. According to Piiro, a minimum level of intellectual competence in a given domain is consistent theme across talent development research. The top layer of the pyramid is the aspect of talent in the domains. Individuals need to be recognized for the talent, and be given opportunities to develop it. These four layers of Piiro's pyramid represent the individual person.

There are five suns in the Piiro Pyramid of Talent Development (1994, 2004): suns of home, school, community and culture, gender and chance. When present in the individual's life, these suns can have a positive influence on the talent development process; however, they can also be hidden by clouds, and not be as prevalent in the individual's life which causes talent development to atrophy. The suns of home, school, and community and culture are the most important suns, as they ensure that a child has an environment that is positive, nurturing, and supportive for the talent development process, much like the foundations stage, especially family background and support, in Noble et al.'s (1996, 1999) model of talent development. The suns of gender and chance are smaller, and refer to the differences in personality attributes of different genders, and the role of chance in talent development (Piiro). Working with the four layers of the pyramid, along with the suns, is the thorn, or call to the development of talent. Piiro

asserts that “talent is not enough for the realization of a life of commitment” (2004, p. 144), but that a calling, passion, or inspiration for the area of talent is necessary for the commitment to the talent and its development over time.

Piirto (2004) offers support for her theory from hundreds of biographical studies conducted by her creativity students; these overwhelmingly support the aspects of the model, especially the emphasis on personality attributes. In addition, Piechowski (1998) investigated historic and contemporary cases of talented individuals in order to assess the role of a supportive environment in the context of four models of talent development; Piirto’s (1994, 2004) model was one of the models under consideration. Piechowski found several commonalities in his biographical study to Piirto’s model, as well as one substantial difference. First, Piechowski highlighted the importance of personality characteristics as strengths in the talent development process; these were of a greater influence than the environment, much as Piirto’s personal attributes compose the greatest bulk of the pyramid. Piechowski also found reliance on will, described as a conscious and unrelenting effort to succeed in the face of obstacles, which is similar to Piirto’s thorn, or calling. Finally, Piechowski echoed Piirto’s sun of chance, finding that a characteristic of talented individuals was the role of chance, and the importance of seizing opportunities, to make that chance work in the individual’s favor. In addition to the support Piechowski provided for Piirto’s model, one difference was revealed, in terms of the family support. About half of the sample had supportive and accepting families that served as a stanchion in the talent development process. The other half, however, had families that were not supportive, and even destructive. Piechowski found that the supportive family environment was not a prerequisite for talent development and success in life, while

Piirto's sun of home is one of the most important suns in the model. At the same time, not all of the suns are necessary for the development of talent, according to Piirto. When clouds cover one sun, the other suns work to compensate.

Like Noble et al.'s (1996, 1999) Model of Adult Female Talent Development, Piirto's (1994, 2004) Pyramid of Talent Development has little empirical research to support the model after its creation, though both were based on themes found in existing research. Piirto's model is not delimited to either gender, unlike Noble et al.'s, but it is focused on the talent development process of children, rather than adults. Csikszentmihalyi et al. investigated talent in a specific group of gifted youngsters in their work, *Talented Teenagers*.

Csikszentmihalyi, Rathunde and Whalen: Talented Teenagers

In Talented Teenagers: The Roots of Success and Failure, Mihaly

Csikszentmihalyi, Kevin Rathunde and Samuel Whalen (1997) published the results of a longitudinal study of 208 teenagers from two suburban high schools that sought to understand why some gifted teenagers cultivate their talent and others do not, given similar environmental surroundings and similar high abilities and academic potential. The researchers selected participants based on nominations by their teachers as having potential for exceptional talent in art, mathematics, athletics, science and music (Csikszentmihalyi et al.) and studied the participants over the course of their four years of high school.

For the purposes of the study, the researchers define talent as a "social construction: It is a label of approval we place on traits that have a positive value in the particular context in which we live....In our culture...intellectual skills, especially those

that tend toward logic and quantification, are considered valuable talents”

(Csikszentmihalyi et al., 1997, p. 23). Talent has three essential components: inherited and developed individual traits, cultural domains that define what makes a performance meaningful, and social fields comprised of people or institutions who judge the value of that performance (Csikszentmihalyi et al.).

Data collection occurred in two phases. First, during the first two years of the students’ high school experiences, Csikszentmihalyi et al. (1997) collected information on the students’ perceptions and experiences of talent through the Experience Sampling Method (ESM), questionnaires and interviews. For the ESM, students wore pagers for seven days, including one weekend, and were asked to respond to a series of questions when the pager sounded; researchers set the pagers to activate approximately 60 times over the course of the seven days, between 7 am and 10 pm during the week, and up to midnight on the weekends. The questions asked about the students’ daily experiences, including who they were with, where they were, what they were doing, and so on, but also on how they were feeling, including their mood, concentration level, and how they felt about what they were doing at the time the pager activated (Csikszentmihalyi et al.). During the first period of data collection, students also completed a biographical questionnaire and two personality inventories, as well as participated in open-ended interviews with researchers. Parents were also asked to complete a questionnaire about their experiences, expectations, and parenting style (Csikszentmihalyi et al.). Two years after the first wave of data collection, researchers concentrated on the development of talent in terms of the students’ interests and accomplishments. Csikszentmihalyi et al. collected data on students’ intellectual achievement through PSAT scores, class rank,

GPA in the talent area and level of difficulty of the students' courses. Students also completed a researcher-constructed questionnaire that focused on the quality of their talent-related experiences and their commitment to continuing to pursue their talent fields (Csikszentmihalyi et al).

Through a mixed methods design including ESM, interviews, questionnaires and achievement data, Csikszentmihalyi et al. (1994) generalized several factors associated with the talent development process. These eight factors can be divided into three groups, characteristics of talented teenagers, environmental influences, and the process and experience of talent development.

The first four themes noted by Csikszentmihalyi et al. (1997) deal with the talented teenagers themselves, their abilities and skills, characteristics and habits, and feelings towards time with peers. First, in order to develop talent, the individual must first have skills that are recognized as important in the culture; natural ability alone is not sufficient, usable skills are necessary for talent. Csikszentmihalyi et al. also noted four personality traits that the talented teenagers had in common. The participants had traits favorable for concentration: achievement and endurance. They also demonstrated traits that allowed them to be open to experiences: awareness and understanding. A third finding from Csikszentmihalyi et al.'s study is that the process of talent development is smoother for those teens that learned talent cultivating habits: talented teens studied and shared hobbies with friends rather than socialized; they were able to balance their time and energy when completing different tasks; and they spent more time alone in more productive activities. Csikszentmihalyi et al. also found that talented teenagers were

conscious of the potential conflict between relationships with peers and their work, and thus more conservative in their romantic relations and sexual attitudes.

Two of the themes noted by Csikszentmihalyi et al. (1997) address the environmental influences of talented teenagers, namely parents and teachers. The fifth theme presented by the researchers was the support of families and the challenge they providing during the talent development process. Talented teens reported that their families were both flexible and cohesive; these families were characterized as supportive and challenging, harmonious and free. Csikszentmihalyi et al. also found a theme in the importance of a supportive teacher; talented teenagers responded best to teachers who demonstrated an involvement in and enjoyment of their academic field, who cared about their students, and who provided challenge and support for their students.

The final themes that Csikszentmihalyi et al. (1997) reported from their longitudinal study involved the process and experiences of talent development. Talent development is a process, according to the researchers, that requires expressive involvement and positive feelings, as well as contributes to future goals, providing instrumental rewards. "Talent development in either area required the synergistic combination of these rewards. ...Successful young artists showed some qualities that typified young scientists, and committed young scientists felt the way artists usually feel about their work" (p. 250). Finally, optimal experiences, or flow helps talent to develop. Moments of flow, intense concentration and enjoyment of work, help to motivate students to continually improve, so that they can achieve flow again.

Csikszentmihalyi et al.'s (1997) study was very unique in one methodology, the use of ESM, but it also incorporated both qualitative and quantitative features similar to

the other longitudinal studies presented from *Beyond Terman*. The generalizability is somewhat limited to a broader population of talented high school student. However, many of the themes that emerged are commensurate with the findings of the other research studies explored in this review, especially the influence of family, teachers and the importance of work and practice. Attrition was a factor, like many longitudinal studies, albeit a small one for Csikszentmihalyi et al.; 93% of original participants completed the second phase questionnaires. At this point, the focus of this literature review shifts towards research on gifted collegians; many of the themes presented in the talented development section will be seen in the following section as well.

Insert conclusion for this strand here

Gifted Collegians

Research in gifted and talented college students exist not only in the field of higher education, but also in gifted education and a burgeoning field specific to honors education. Themes exist in the literature that allow an broad view of what it means to be a gifted undergraduate student, with the provision that not all students exhibit these characteristics, much like not all gifted students in K-12 education exhibit all gifted characteristics. Gifted collegians have intellectual and social/emotional needs that are different from the general college population. It should be noted that research on these students uses a variety of terms to describe the gifted collegians: talented, high achievers, high ability students, talented, promising, and honors students; I will be using the terminology suggested by the researcher when describing the studies. The following section discusses the characteristics that differentiate these students, from the larger

student body, including the intellectual characteristics, social and emotional characteristics and environmental influences of gifted collegians.

Intellectual Characteristics

The academic structure of required introductory courses and general education requirements found in many institutions of higher education can lead to talented students' frustration with the academic offerings at the college due to lack of challenge. Often, introductory (and beyond) courses demand a lower level of intellectual functioning when gifted students could be exploring their interests at a much higher level of cognition. Lee Kem and Joy Navan (2006) conducted a study using a focus group of first-year honors students in order to understand that gifted students' perceptions of their college program, so that feedback could be provided to advisors and faculty members of honors students. Themes emerged from the focus group that suggested that gifted students prefer a class that moves at a quicker tempo, in which they do not merely learn information, but have the opportunity to employ critical thinking, and allow for a deeper understanding of more complex content (Kem & Navan). Current academic structure can cause gifted students not to realize their full potential, to achieve far less than their intellectual potential suggests that they are capable of attaining. Among underachieving first-generation college males, Richard Olenchak and Thomas Hébert (2002) found that the students did not feel supported by the university, the programs, the curricula or the faculty. Students saw the required core curriculum as uninteresting and repetitive of secondary school. In the case studies of two underachieving gifted collegians, Olenchak and Hébert found that the factors were instrumental in their underachievement and lack of success in their collegiate careers. Because of the nature of the study, the themes from the case study are

not generalizable to the broader gifted collegiate population; however the results further corroborate the themes brought forth from Kem and Navan's (2006) focus group study.

Honors students enter college at a different intellectual level than their peers, and exhibit different learning style characteristics. Cheryl Achterberg (2005) conducted a literature review in order to arrive at a definition of an honors student, stating that honors students are distinct from their peers because they are able, accelerated and advanced:

Honors students are able in that they are intellectually capable of college-level work and beyond. Honors students are accelerated in that they have moved through the high school curriculum more quickly than traditional students.

...They are advanced in terms of more in-depth courses and reading and they often start with advanced academic standing in college. (Achterberg, p. 76)

In addition to entering college at a different intellectual level, honors students exhibit different learning styles than their college-aged peers. Scott Carnicom and Michael Clump (2004) conducted a study at Marymount University, a comprehensive university in Washington D.C., in order to understand the learning style differences between honors and non-honors students. Carnicom and Clump noted that honors students had significantly higher scores in deep processing ability, which is a learning style involving organizing and evaluating information critically. At the same time, honors and non-honors students did not score significantly differently on a measure of methodical study, which challenged "the assumption that honors students demonstrate significantly more effective study skills than their peers, or that their high grades are the sole result of these study habits" (Carnicom & Clump, p. 41). The researchers suggest that the honors students' achievements reflected the processing of information into higher order concepts

rather than more focused study, though they concede that additional investigation is needed using other students and universities in order to generalize their data further (Carnicom & Clump).

Challenge is one of the greatest needs of gifted students across the K-16 educational spectrum, and that need epitomizes honors students. In addition, honors students have different learning styles than their peers, which allow them to process information deeply. In K-12 gifted literature, the social and emotional characteristics of gifted students set them apart greatly from their peers (Piirto, 2007); the same theme is seen in the research for the college-aged gifted, honors students.

Social and Emotional Characteristics

Gifted students are susceptible to the same pressures as all collegians, including assuming more responsibility, becoming independent, developing ideals and values that alter with time, focusing self-perceptions, and coping with increased competition and loneliness (Friedlander & Watkins, 1984; Grites, 1979, as cited in Ford, Webb, & Sandidge, 1994). At the same time, some issues are more common to gifted learners such as parental pressure to achieve, test anxiety, peer pressure, perfectionism, poor study habits, lack of intellectual stimulation or motivation, and fear of failure (Ford, Webb & Sandidge, 1994). These tribulations on the part of honor students can stem from two characteristics prevalent in gifted populations, including the collegiate gifted: asynchronous development and overexcitabilities.

Social and emotional difficulties for gifted collegians often occur due to their asynchronous development (Silverman, 1993; Piirto, 2007). Gifted students can develop unevenly; their cognitive and emotional development is often at a more advance level

than their physical growth (Piiro, 2007). Examples include a student having a more advanced sense of humor, greater interest in the political and world issues, and these same world issues having a stronger effect on the gifted student's emotions and daily life. Thomas Hébert and Matthew McBee (2007) conducted research using qualitative case studies in order to investigate the impact of honors programming on students. By interviewing seven graduates of honors programs in different disciplines, Hébert and McBee synthesized themes about honors students, including isolation due to asynchrony.

The isolation resulted from asynchrony between the participants and their environments in terms of interests, goals, values, and intellectual ability. All of the participants described being oriented to the larger cultural and intellectual world from an early age. For some participants, this orientation stood in such stark relief with the values of the other people in the community that it became profoundly isolating. (p. 142)

While the qualitative nature of the case studies doesn't lend itself to generalizability, the themes that emerged echoed the literature on asynchronous development in the general gifted literature (see Piiro, 2007, Silverman, 1993).

A second characteristic that is more prevalent in the honors population is a social/emotional manifestation called overexcitabilities (Hébert & McBee 2007, Kem and Navan, 2006). Overexcitabilities are seen in gifted young adults' heightened sensitivities and responses to their senses in one of five domains: psychomotor, sensual, emotional, intellectual or imaginal. Overexcitabilities by themselves do not differentiate the gifted from the average, as not all gifted or highly gifted individuals have overexcitabilities. However, there are more people with overexcitabilities in the gifted

population than in the average population (Silverman, 1993). Hébert and McBee (2007) interviewed seven past participants of an honors program at a southeastern university in order to study the impact of the honors program on their lives. In doing so, the researchers found a theme in the expression of overexcitabilities by the former students, namely, “the endless energy, the insatiable love of learning, the heightened intellectual intensity, and emotional sensitivity described as “overexcitabilities” [which are] positively related to advanced emotional development in adulthood and were evident throughout the life experiences of the seven participants” (p. 149). Kem and Navan found evidence of the overexcitabilities through focus groups that were designed to understand honors students’ perceptions of their program in order to offer suggestions for faculty members and advisors. Kem and Navan found that overexcitabilities manifest in the students’ delight when solving problems, the intensity with which they pursue their areas of talents, feelings of overwhelming empathy and a strong belief in calling or mission.

Motivation is a final characteristic that can set gifted collegians apart from their peers (Wolfensberger, 2004, Edman & Edman, 2004). Honors students have a higher level of intrinsic motivation than the general college-aged population. In order to investigate selection criteria for honors programs in the Netherlands, Marca Wolfensberger (2004) conducted a study with honors and non-honors students from the two largest Dutch universities using a self-constructed survey instrument and analyzed the results using descriptive statistics. While the study was only conducted in the Netherlands, multiple universities were used and gender and discipline were controlled using selective sampling. While the survey instrument was not validated prior to the

study, the researcher used a pilot study to test the instrument. Wolfensberger noted that the honors students in the sample typically have high levels of intrinsic motivation, rather than career orientation and extrinsic motivation, meaning that these students are generally interested in asking questions and forming new knowledge. Laird Edman and Sally Edman (2004) also found that honors students had high levels of motivation when compared to like-ability non-honors peers. Edman and Edman conducted a small study of high-ability students at a Midwestern liberal arts college using four previously published and validated self-report scales designed to measure constructs of emotional intelligence. The researchers also found that honors students were likely to have high levels of emotional intelligence, as compared to their non-honors peers; “students in honors often are not only talented intellectually but also motivated, curious, and apparently more mature than their peers....[they] often exhibit more self-discipline and self-knowledge than their peers, perhaps because of their greater emotional intelligence” (Edman & Edman, p. 21). The researchers acknowledge however, that emotional intelligence is an ambiguous construct, and accurately measuring it is difficult and that replication of the study is integral in confirming the conclusions drawn.

Unique characteristics of honors students can stem from three general social and emotional characteristics of gifted students: honors students typify asynchronous development, embody high levels of intrinsic motivation, and demonstrate overexcitabilities. These characteristics, along with the intellectual needs of challenge and varying learning styles, can impact these students in terms of their development in college.

Environmental Influences

Environmental influences can be seen in gifted collegians in many different ways. This section will discuss the literature on how different groups of people can serve as environmental influences on gifted collegians. The people explored in the literature include intellectual peers, faculty, and mentors.

As seniors in high school leave the secondary world behind and enter college, they also leave behind, at least geographically, the supportive environment that many have had for up to 13 years. Upon entering college as freshman, gifted students must begin to create a new environment of support and friendship. The need for intellectual peers is often considered essential for the socio-emotional development of gifted children; the same holds true for gifted collegians. Daniel Hammond, Matthew McBee and Thomas Hébert (2007) qualitatively examined the experiences of six gifted high-achieving collegians and found that the opportunity to connect with students with like goals and abilities is an essential strength of many collegiate honors programs. This environmental influence provides students with a sense of security and belonging. It also assists collegians with expanding on their sense of identity, still in the process of being formed, by having the opportunity to learn from the experiences of their peers. In 1966, Thistlethwaite and Wheeler proposed their environmental press theory; they found that undergraduate males have higher performance and greater aspirations when attending a school in which their peers have similarly elevated aspirations and performance (Rinn, 2007). Although this study referred to the selectivity of an institution as a whole, it can be inferred that a peer group has similar effects.

In 2001, Fred Bonner published a phenomenological research study that investigated the factors that contributed to the success of gifted African American male collegians. He studied the phenomenon of collegiate giftedness of African American males on two campuses, one that traditionally serviced Black students, another that traditionally serviced White students. He found that the formation of meaningful relationships between students and their peers was an important factor in attrition, stability, and satisfaction among these students. Additionally, being surrounded by a positive peer group motivated higher aspirations or goals from gifted Black students (Bonner). While the study is limited in generalizability, Bonner's research further supports other researchers, such as Hammond, McBee and Hébert (2007) in acknowledging the importance and influence of peers

Sharon Fries-Britt (1998) also studied a sample of gifted Black collegians in an effort to examine the academic, social and racial experiences of students enrolled in a merit-based scholarship program at the University of Maryland College Park called the Meyerhoff Program. Through a series of interviews with twelve students, she found that academically gifted Blacks often enter college with few to no existing relationships with other gifted or high-achieving Black students (Fries-Britt). Even when their high school population was primarily Black, their honors classes were comprised of primarily White or Asian students. Students stated that they were accused of "acting White" and ridiculed for their emphasis on academic achievement by their friends from home, while within their classes, the achievement motivation was similar to their own, but the culture of the students was woefully different. Fries-Britt labeled this phenomenon as Black achiever isolation. In the Meyerhoff program, being exposed to their intellectual peers with

similar achievement orientations and similar cultures had academic and social benefits for the gifted Black student. Students were encouraged by their placement in the group to study harder and develop new expectations about their talents and potential achievement; moreover, they were able to construct a consciousness and high regard for the academic abilities of Blacks and to ebb the feeling of being the “only bright Black student in the group” (Fries-Britt, 1998, p. 569). The qualitative study of gifted Black collegians underlined the importance of not only being surrounded by gifted Black peers, but also of remaining associated with the Black community extended throughout the entire campus so that the students were seen as individuals, and had a sense of identity separate from the Meyerhoff program (Fries-Britt, 1998).

A recurring theme throughout the literature on gifted collegians is their relationship with the faculty with whom they study. The faculty creates the learning environment for the collegiate student. Lee Kem and Joy Navan (2006), conducted a qualitative focus-group study of honors students’ perceptions of their academic experiences and found that in most cases professors viewed giftedness as a positive attribute, and welcomed the students’ thoughts and contributions to class discussions. In this limited study, the professors seemed to recognize the students’ abilities to think critically. This recognition had a positive effect on the students’ continued motivation in their studies. Honors courses enable gifted students to take part in smaller, more academically stimulating coursework. Kem and Navan further highlighted some of the differences between the students’ honors courses and general courses in terms of the faculty relationship and interactions. In the honors courses, students valued the collegiality between themselves and the instructors. Students felt comfortable in voicing

opinions and making contributions to class discussions as a result of the faculty relationships. The interactions gave the students confidence in their cognitive ability and helped to motivate their achievement orientation. As a result, they preferred this environment to their general classes that lacked these collegial components, especially the freedom to share their own thoughts (Kem & Navan). In a sense, the faculty member made a significant contribution to what made the honors class more beneficial to the student; it was not purely the advanced content, but also the relationship found with the instructor.

For gifted Black male students, Fred Bonner (2001) found that the “establishment of relationships between faculty and students is an important element in the academic mix—perhaps the single most important element contributing to the student’s successful matriculation” (p. 22). In a phenomenological study, Bonner investigated four gifted Black students at historically Black and traditionally White schools. The successful faculty-student interactions found at Historically Black Colleges and Universities (HBCUs) were described as sustained, many-sided and personal. The relations help to develop a success-orientated outlook, intrinsic motivation, and are thus the precursors to academic achievement for gifted college students.

Similar to the positive effect of faculty, Thomas Hébert (2006) found a beneficial role played by male mentors in the collegiate experiences of gifted young men when conducted a case study of five gifted university males in a Greek fraternity. First, the students had peer mentors within the context of their social organization. Older fraternity brothers serve as role models; they are academically achieving, they enjoy connections on campus and provide an example of a well-rounded, academically oriented student

whose goal is self-improvement. Additionally, the fraternity has a mentor that works with the group as a whole; a university administrator, he sets high standards for the organization, especially in terms of academic excellence. The mentor works with the students on a personal level, as well; he helps students in their career endeavors, offers assistance with personal letters of recommendation, and gives graduate school advice (Hébert). The mentors serve as motivators in the lives of the gifted young men; they lead by example. The younger collegians are held to higher standards and work to meet those standards, as a result of their relationships with their mentors.

In 2007, Thomas Hébert and Matthew McBee qualitatively investigated the impact the honors program had on seven gifted university students when they were adults. The researchers found that mentoring programs had a significant effect on the psychosocial development of the students involved, operating in additional roles as advisor, friend, and intellectual peer. Through their participation in the mentor component of the honors program, the gifted collegians experienced both emotional and social advantages such as coping with romantic relationships, enabling personal growth, discussing significant issues they faced that were unique to gifted college students and searching for deeper understandings of their own spirituality. These mentors played a significant role in the students' collegiate environment, facilitating their motivation, and enabling their achievement orientation.

Gagné (1985, 2009) lists people as one of the environmental catalysts in the talent development process in the DMGT. The research presented in this section shows that intellectual peers, faculty, and mentors have a significant effect on the environment of gifted collegians. Though all of the literature presented was qualitative, thus weaker in

external validity and generalizability, the themes that emerged across the expanse of studies support the idea of people as important influences on gifted students, and suggest that this area is open for more in-depth research and understanding.

Programs for Gifted Collegians

Astin's (1985, 1999) theory of student involvement is perhaps the most well known college development theory (Moore & Upcraft, 1990). Formed from his personal research on college retention and dropouts, as well as the body of literature on college retention, Astin's involvement theory is a behavioral theory, stating that the quality and quantity of psychological and physical energy a student puts into the college academic experience (involvement) is directly proportional to the student's learning and development. This involvement comes in a variety of different forms, all meeting the general definition of the amount of psychological and physical energy that students dedicate to the general academic experience. Involvement occurs along a continuum, for example residence can range from off campus with parents, to off campus with friends, to on campus in a single, to on campus with friends and so on. Moreover, involvement can be measured quantitatively as well as qualitatively, in terms of time spent and depth or breadth of the involvement. Astin's examples of involvement include residence, extra-curricular activities, part-time on-campus employment, honors programs, research participation, Greek life, student-faculty interaction, athletic involvement and student government. This section will explore the research on programmatic options for gifted collegians, including honors programs, and honors residences, as well as other programs that are beneficial for gifted collegians, including experiential learning, study abroad, leadership opportunities and extracurricular activities.

Honors Programs

Often gifted collegians are identified as those who participate in a college honors program (Rinn & Plucker, 2004). While it is recognized that not all gifted students will participate in honors programs, or even attend college, it is the mode by which gifted and higher education researchers can easily identify talented students to observe and study. Honors students are those who participate in honors programs. Thus, these students receive some kind of special services designed to meet their intellectual needs.

Honors programs are quite diverse in terms of what services they offer to their gifted students. According to Samuel Schuman (2006), honors programs generally consist of one or more of four basic class types: honors sections of regular courses, enriched opportunities within regular courses, special courses designated as honors or honors projects, such as capstone projects or theses. Honors programs may consist of mere identification and perhaps a financial scholarship, without any intellectual support offered (Rinn, 2007). The honors program at Southern University consists of a funded original research project and optional lunch session about research topics.

The advantages of honors programs are many, including smaller classes, more advanced content presented at a higher cognitive level, higher quality interaction between professors and students, more access to professors, and the opportunity to form student friendships (Robinson, 1997), all of which help to form the students' collegiate environment. The benefit of friendships with intellectual peers is great, as was discussed in the previous section, and honors programs help to facilitate that relationship (McBee and Hébert, 2007). In addition, some honors programs allow students to engage in pre-scheduling or live in special housing. Both are features of the honors program that are

greatly appreciated by students (Robinson, 1997). The section explores the research conducted on honors programs and the effect on gifted collegians.

Thomas Hébert and Matthew McBee (2007) describe the honors curriculum as an “oasis following years of isolation in an intellectual and emotional desert” (p. 148) because students had the chance to work with intellectual peers, who possess similar goals and aspirations. The researchers investigated the perceptions of honors alumni on their experiences with the honors program while undergraduate students. The participants revealed that the community found within the honors program supported students intellectually, emotionally and socially providing for intellectual growth and stimulation, as well as academic challenge (Hébert & McBee). Gifted collegians attained academic growth through the honors courses themselves, but also by the high expectations from the professors. Honors participants describe feelings of accomplishment and motivation fostered by the challenging work involved in the advanced curriculum (Hébert & McBee).

Daniel Hammond, Matthew McBee, and Thomas Hébert (2007) interviewed six gifted high-achieving collegians in order to understand what helped them to be successful. The researchers found that honors programs had positive effects on achievement motivation in the honors students:

Honors programs can become much more effective at awakening and channeling the inner will of the students when they provide, not only academic challenge, but also an organizational culture focused on the fulfillment of potential through intense engagement and involvement with the university and community. (p. 204)

Fostering inner will is essential to achievement: motivation is directly impacted by locus of control, peer influence, and identity development; and motivation is one of the most significant proponents of academic achievement (Hammond, McBee, & Hébert).

Anne Rinn (2007) examined the effects of participation in an honors program on gifted collegians achievement, self-concept and aspirations. The quantitative study used previously researched and validated survey instruments in order to compare almost 300 students at a large Midwestern university. Rinn compared students in honors programs to their intellectual peers who chose not to participate in the honors program while controlling for variations in SAT scores. Rinn found encouraging consequences of the honors environment: gifted students in the honors program had higher academic achievement as well as higher academic self concepts than the comparison group.

Sharon Fries-Britt (1998) conducted a qualitative study of gifted Black college students enrolled in the Meyerhoff Program, a merit-based scholarship program that reaches out to minority students in math, science and engineering. She found that the program offered a supportive climate and a community similar to an extended family. The program is comprised of thirteen parts, to include study groups, scholarships, personal and academic advising, tutoring and a field-based mentoring program, all of which support the students in their academic endeavors. Personal counseling is offered in the program, though the Black community of high-achievers itself is instrumental in combating some of the counseling issues faced by gifted Black collegians, such as peer pressure to underachieve (Ford, Webb, & Sandidge, 1994) and racial identity development (Ford, Harris & Schuerger, 1993). The Meyerhoff program successfully

creates an academic-oriented honors environment in which gifted Black students are motivated to achieve.

John Cosgrove (2004) conducted a longitudinal study of high ability college students in an attempt to draw a correlation between academic performance, retention and degree completion with students enrolled in honors programs. Comparing secondary data from college research offices for students enrolled in college from 1997 through 2002 in a quantitative ex-post facto design, Cosgrove studied three groups of students from the Pennsylvania State System in the study: honors students who followed their honors program through to completion, called honors program completers, honors students who did not maintain their status in the program, called partial honors students, and students who had similar qualifications and academic achievement as the honors students who did not participate in the honors program, called high-ability students. Cosgrove found that honors program completers had the highest academic performance, took the shortest time to complete their degrees, and had the highest graduation rates compared to the other groups.

Tricia Seifert, Ernest Pascarella, Nicholas Colangelo and Susan Assouline (2007) conducted a longitudinal, pretest-posttest design study that investigated the effect of honors programs on students' cognitive development and perceptions of their experiences of good collegiate teaching practices. Good teaching practices were defined through empirical evidence from two studies, 1987 and 1991, conducted by Chickering and Gamson, and included factors such as emphasis on cooperative learning, quality of teaching, and prompt feedback from faculty to students. The researchers used existing data collected from the National Study of Student Learning (NSSL) in the 1992-1993

school year and conducted a series of analytic measures in order to ascertain the impact of honors programs on the students experiences and cognitive development. The researchers strove for empirical evidence that was more reliable and valid, using the pretest-posttest design, a large sample from multiple colleges, and regression analysis to control for factors other than the independent and dependent variables. Seifert et al. found that honors students had classes in which cooperative learning and prompt feedback were used, and the quality of teaching was high. Further, the researchers found significant positive effects of the honors programs on the students' cognitive development, on measures of critical thinking, mathematics and a composite score (Seifert, et al.).

Some honors programs, such as the one at Southern University, are vehicles for undergraduate research. At Southern, freshman honors students are given a stipend to conduct an original research project, and the honors designation is granted at graduation upon the successful defense of an honors research project. Despite the frequent pairing of honors students and research, little empirical research exists to support the practice. In 2003 and 2005, Susan Russell, Mary Hancock and James McCullough surveyed undergraduates, faculty, graduate students and postdoc mentors in order to determine the effects of undergraduate research. While this study did not use gifted collegians as the sample, Russell et al. (2007) noted that participants were demographically diverse in terms of race, but tended to all have high grade point averages and were more likely to pursue an advanced degree. The researchers found that participants in undergraduate research had greater levels of understanding of the research process, confidence in their research skills and an awareness of graduate school expectations than general

undergraduates. Participation also positively impacted the students' career choices and anticipation of graduate degrees.

Honors programs are opportunities for gifted collegians to receive challenging instruction, remain motivated, and participate in classes and activities with their high-ability peers. The research suggests that honors programs are beneficial for gifted collegians for both academic and affective reasons. A component of honors programs, honors housing, can also be beneficial for gifted collegians.

Honors Housing

Honors programs often involve more than just classes, however. Honors programs frequently offer opportunities to participate in co-curricular activities that enrich participants' collegiate experience outside of intellectual pursuits (Hébert & McBee, 2007). Because of the myriad and meaningful activities in which students participate, their individual talents can be developed in a host of ways. One example of an extra-curricular component of honors programs is honors housing. In a survey administered by the National Collegiate Honors Council (NCHC), 91.4% of colleges described some kind of honors residential component, with 74.3% stating that the housing opportunities were offered during the course of the four-year degree (Sederberg, 2005). Honors housing can benefit students in several ways. A positive relationship exists between high achievement and student success with honors housing. Also, honors housing facilitates a sense of community and a social network.

High achievement and student success is related to grouping high ability students through housing. In a review of the literature, Blimling (1993) noted that students living in honors housing demonstrated increases in their grade point average.

Where students are assigned on the basis of their academic performance, high-ability students assigned to live with other high-ability students perform better than high-ability students assigned at random, even after controlling for initial academic achievement. Such halls may create a peer culture that supports and promotes academic achievement through competition, status rewards for high performance, and perhaps information peer tutoring arrangements in area of common academic interest. (Terenzini, Pascarella, & Blimling, 2004, p. 257)

Nancy Reichert (2007) surveyed honors administrators at National Collegiate Honors Council member colleges in order to investigate their perceptions of the value of honors housing for the honors students and the college as a whole. She reported that 55% of honors administrators felt that honors housing was an important factor in student success. However, she also noted that 21% were uncertain as to how to measure this success: they felt that the honors housing programs were beneficial, but did not know how to support their assumptions empirically.

Honors housing helps students to develop a sense of community. Ninety-seven percent of NCHC institutions surveyed in 2007 overwhelmingly said honors housing is important for community-building in their honors programs (Reichert, 2007). Anne Rinn (2004) conducted a literature review in order to examine the academic and social effects of living in honors housing. She found that honors students living and learning together in a community are prone to reinforce academic achievement for each other (Rinn). Motivation and goal setting are assisted through this community; “if students with high achievement and high aspirations surround a gifted college student, the student is likely to raise his aspirations to meet those of students around him” (Rinn, 2004, p. 71).

Honors housing also offers students the opportunity to be surrounded by a social network of their intellectual peers (Rinn, 2004). In conducting a review of the literature on the academic and social effects of living in honors housing, Anne Rinn noted that for freshmen, acclimating to the new collegiate experience and making social connections can be a difficult experience. Living in honors housing helps to facilitate that experience by placing students into a peer group at the onset. Additionally, honors participation can help gifted students establish a social or group identity, as peers reinforce their intellectual identity (Rinn).

As an added component of an honors program, honors housing can be beneficial for the gifted collegian. For students, honors housing can help to establish a community of scholars, and have a positive effect on student achievement and success, as well as social networking. However, there are additional collegiate activities, beyond the honors program and housing component, which are beneficial to honors students.

Additional Collegiate Activities

Collegiate life consists of more than coursework, and many of the opportunities available outside of the classroom are as beneficial to gifted students as some of the prescribed curriculum. These activities foster an environment of talent development that increases students' motivation to achieve at college, helping students to realize that pleasurable activities can be challenging and that work is not necessarily distasteful. Without these activities, students may become lost in the larger university environment, disconnected from enrichment opportunities, and disenchanted with the collegiate world, all of which can affect their achievement motivation for the university as a whole, to include their schoolwork (Hébert, 2006).

Experiential education consists of extra-curricular activities that enable academically gifted students to stretch themselves beyond the walls of standard education. An example of experiential education exists at Antioch College in the co-operative, or co-op, which is a work-based learning program. Cheryl Keen and Adam Howard (2002) interviewed six academically gifted students at Antioch in order to ascertain the benefits experiential education had on this particular college group. Three central themes were described by the gifted students. First, the program allows the students to recognize the responsibility they hold in their own learning. The acknowledgement of responsibility serves to foster intrinsic motivation to succeed, which leads to higher achievement levels. Second, the co-op offers unique challenges not found in other university settings, such as removing students from the safe setting of the classroom and placing them in a new environment: paid employment in advanced facilities in their fields of study. These challenges help to maintain momentum and alleviate potential boredom similar to that faced in high school. Finally, the experiential program allows the students to learn from peers who were similarly engaged and at the same maturational level. Students describe this theme as critical to their collegiate experience. Keen and Howard describe experiential learning as similar to a Type III Enrichment Activity, which is part of the Schoolwide Enrichment Model (Renzulli & Reis, 1997), a service program designed to meet the academic, social, and emotional need of gifted learners. Type III Enrichment Activities provide students with opportunities to explore a topic of personal interest, gain an advanced level of knowledge about the topic and develop an authentic product using real-world learning experiences (Renzulli &

Reis). Experiential learning helps to foster social and emotional growth within a field of academic interest and an environment of high achievement.

In a different extra-curricular activity, Thomas Hébert (2006) considered gifted male students involved in a fraternity that emphasizes academic potential. He interviewed five gifted high-achieving collegians in order to understand how their experience in a fraternity influenced their achievement. Hébert found that the out-of-class experiences promoted talent development in gifted males. Participation in the fraternity fostered the development of the students' social and leadership skills; the "ATI fraternity provided the five participants in this study with experiences through which they developed mature interpersonal relationships, learned leadership skills, became involved in community service, benefited from healthy psychosocial development, and enjoyed a sense of community with their brothers" (p. 38). This supportive extra-curricular environment helped the young gifted men to find a smaller community within the larger campus in which they were able to develop their intellectual abilities. The environment helped to motivate the students to have a sense of pride in their accomplishments and to set higher standards for themselves; all of these factors influenced the students to achieve.

Out-of-class collegiate opportunities provide the students with social contacts that share their interests, and often their academic motivation. Intellectual peers and a supportive social network have also have a strong effect on gifted students' achievement in college. This is seen not only in honors programs and honors housing, but in other extra- or co-curricular activities as well.

Conclusion

The literature reviewed in this chapter was divided into three strands; talent development, gifted collegians, and collegiate programming for gifted students (see Table 2). Over the course of the review, themes have emerged within the strands, but across the strands as well.

The talent development literature presented in this chapter varies from models created to explain the talent development process to empirical studies that measure aspects of the talent development process. Despite the varying array of researchers, there are unifying themes throughout the literature presented in the talent development strand. The importance of cognitive abilities or skills as a basis of talent development was noted by Gagné (1985, 2009) in the presence of gifts, Gagné and St. Père (2001) in the relationship between cognitive ability and achievement, Arnold (1994) in the positive relationship between academic achievement in high school and college, and Csikszentmihalyi et al. (1997) in the basic skills required for talent development and the importance of talent cultivating habits of studying and thinking. Sternberg (1985, 2005) and Gardner (1983, 1999) offer definitions of intelligence that have greatly impacted the talent development literature. Another theme is the importance of practice, time, and effort, seen in Bloom's (1985) ten-year rule, Csikszentmihalyi et al.'s focus on balancing time, and Gagné's development process of learning and practice. According to VanTassel-Baska, "Contrary to popular belief, talented individuals do not make it on their own. Not only is the process of talent development lengthy and rigorous, but the need for support from others is crucial for ultimate success" (1998, p. 762). Researchers noted in the literature review also described the influential effect of certain people on the

talent development process, including parents (Albert, 1994; Bloom; Burton et al., 2006; Calderon et al., 2007; Csikszentmihalyi et al.; Gagné; Noble et al., 1999; Piechowski, 1998; Piito, 1994, 2004; Subotnik & Steiner, 1994; Tannenbaum, 1983), peers (Tannenbaum; Gagné; Csikszentmihalyi et al.), and teachers and mentors (Burton et al.; Calderon et al.; Gagné; Subotnik & Steiner; Noble et al., Piirto). Finally, the talent development literature stresses the importance of personality characteristics, such as motivation, volition, self-management, perseverance, and resilience (Bloom; Burton et al.; Calderon et al.; Csikszentmihalyi et al.; Gagné; Gagné and St Père; Noble, et al.; Piechowski; Piirto; Subotnik & Steiner; Tannenbaum).

The research strand on gifted collegians also had several themes emerge; many of these themes resonate with the talent development literature. Cognitive abilities present in gifted collegians were mentioned by several researchers: gifted collegians need academic challenge, and the opportunity to use critical thinking (Kem and Navan, 2006; Olenchak & Hébert, 2002), they have the capability of deeper processing and understanding (Carnicom and Clump, 2004; Kem and Navan , 2006) and they are academically able, accelerated and advanced (Achterberg, 2005). Research on gifted collegians does not focus on the role of parents; the focus rather has shifted in a large part to the importance of peers (Bonner, 2001; Fries-Britt, 1998; Hammond, McBee & Hébert, 2007; Hébert & McBee, 2007). Researchers also note the influence of faculty (Bonner; Kem & Navan) and mentors (Hébert, 2006; Hébert & McBee).

The research in the final strand on collegiate programming emphasizes the importance of offering honors program, honors housing and other collegiate opportunities as a method of meeting the needs of gifted collegians. A lauded benefit of honors

programming is that it offers gifted students the opportunity to have their intellectual and cognitive needs met (Cosgrove, 2007; Hammond, McBee & Hébert, 2007; Hébert & McBee, 2007; Rinn, 2007; Seifert et al.). Researchers noted academic achievements as an outcome of honors programs, such increases in GPA for students in honors housing (Blimling, 1993), and higher degree completion rate and time to completion (Cosgrove, 2004). Special collegiate programs foster the personality characteristics deemed essential in the talent development process, such as motivation and feelings of achievement (Fries-Britt, 1998; Hammond, McBee & Hébert; Hébert, 2006; Hébert & McBee, 2007; Keen & Howard, 2002) academic self-concept and sense of pride (Hébert; Rinn), and social and leadership skills (Hébert). The influence of peers was again a theme in this strand of literature; honors programs offer an environment in which gifted collegians can learn alongside of their intellectual peers which was seen as a benefit of the programs (Hébert, Hébert & McBee; Keen & Howard; Rinn, 2004).

The impact of peers, faculty and mentors, and the personality characteristics of talented individuals emerge across the literature. These aspects of talent development can be explored in greater depth, adding another brick in the wall to the current literature. However, the literature base in terms of research on gifted collegians is not substantial; the overlapping of the strands left many holes that need to be filled. What influence or impact do parents have on gifted collegians, especially in the new age of involved “helicopter” parents and increased parental contact due to burgeoning technology? How does the shift in influence from parents to peers effect the talent development process? How much time and effort is spent on learning and practice? What is the impact of the general college curriculum, especially at an academically selective school that does not

offer separate honors classes? What is the role of chance in the gifted collegian's life and how does it impact talent development? As Csikszentmihalyi et al. state, "it is during adolescence and young adulthood that many individuals who seem destined for great futures in the arts or the sciences see to lose interest and settle for careers that require average skills" (p. 1). The next chapter will discuss a research study designed to investigate the talent development process of this important age group: gifted collegians

CHAPTER III

METHODOLOGY

The purpose of this study is to form an in-depth understanding of talented students' perceptions of the means by which their college program and experiences have impacted their talent development. Using Gagné's (1985, 2009) Differentiated Model of Giftedness and Talent as a conceptual framework, an explanatory sequential mixed methods design was used, consisting of an initial quantitative phase, followed by a qualitative phase. This chapter describes the design for this study, the paradigm and research strategies that were used, as well as the specific research questions that were posed, and the data collection and data analysis that were conducted to answer the questions. Considerations for trustworthiness, authenticity and ethical safeguards are also discussed.

Explanatory Sequential Mixed Methods Design

In order to better understand gifted collegians' talent development process, I have used an explanatory sequential mixed methods design (Creswell & Plano Clark, 2007). The explanatory sequential design consists of two main phases: quantitative and qualitative data collection. I have designed the study to be approximately 50% quantitative and 50% qualitative. Before beginning the data collection phases, I designed the questionnaire instrument, gathered content validation data and conducted a pilot study to test the instrument. I then transitioned into the first kind of data collection, quantitative, which consists of data collected from the researcher-designed survey. The data from the survey was then analyzed, and in-depth qualitative study follows as the second phase, based on the results of the data analysis. The explanatory design is used

when the researcher wants to use qualitative data to explain the results of quantitative data analysis or use quantitative data in order to select a sample for qualitative measures using purposeful sampling (Creswell & Plano Clark). I have chosen this mixed design method for both of these reasons. First, I analyzed the data from the survey in order to answer the first two research questions. I then used the survey data in order to choose participants for the qualitative phase of the data collection, with the express purpose of explaining the data and gaining a more in-depth understanding of the phenomenon under study, the talent development process of gifted collegians.

Conceptual Framework

The conceptual framework for this study is Gagné's (1985, 2009) Differentiated Model of Giftedness and Talent (DMGT). Gagné's model begins by defining gifts as inborn, natural abilities that occur within people in different aptitude domains, including four mental domains (intellectual, creative, social, perceptual) and two physical domains (muscular and motor control). Approximately the top 10% of the population exhibit high levels of these gifts, according to Gagné, meaning that they are considered to be gifted individuals.

Gagné (1985, 2009) explains that these gifts may develop through learning, training, and practice. While these aptitudes are being developed, two kinds of catalysts act upon the gifted individual: intrapersonal catalysts and environmental catalysts. Intrapersonal catalysts arise from within the individual and include goal management characteristics such as volition, motivation, and self-management ability, as well as traits, such as physical characteristics and personality. The environmental catalysts include individuals (such as family, mentors, peers and teachers), the person's surroundings or

milieu, and the undertakings or provisions offered to them. For students, these catalysts might include friends, professors, advisors, parents, special programming, research opportunities, and housing. These catalysts alone and in concert may help or hinder the talent development process, and the presence of these catalysts can happen greatly by chance. Chance underlies all of the components of the model that lead to the development of talents. It cannot be controlled, yet its influence is pervasive.

The addition of the developmental process of practice and learning to the intrapersonal and environmental catalysts leads to the development of talent in various fields. Gagné describes these talents as occurring in the top 10% of the population of students with mental gifts, in the fields of academics, technical (such as construction or crafts), science and technology (such as engineering or medicine), arts (creative, performing and applied), social service, administration or sales and business operations. The top 10% of individuals with physical gifts develop these talents in the fields of games (such as puzzles, chess, video and card games) and sports and athletics.

While not an aspect of the DMGT, Gagné (2009) often closes articles with a discussion he refers to as the WMD question: what makes a difference? Based on extensive literature reviews, Gagné suggests a downward hierarchy of the four components that lead to talent: gifts, intrapersonal catalysts, developmental processes and environmental processes. However, he states that the hierarchy should not replace the idea that all of the components of the DMGT play a role for most people. “In a nutshell, talent emergence results from a complex choreography between the four causal components, a choreography that is unique to each individual.” (p. 6). This study will use an explanatory mixed method design in order to understand the role these

components play in gifted collegians' talent development, and to understand what makes a difference in their lives.

Paradigm and Research Strategy

The first phase of the study is a quantitative phase, which falls under a post-positivistic paradigm in which the researcher is an outside observer, gaining an understanding of the construct of talent development process through empirical, quantitative means. According to Gall, Gall and Borg (2006), quantitative research has as its aim to study social phenomena and behavior and the relationships that exist from a mechanistic perspective. Data analysis occurs through statistical methods and the goal is to generalize findings from the data to a broader population. The data collection tool used in the first component will be a survey, and the data will be analyzed primarily using descriptive statistics. With a high response rate, the data generated from the first phase of this study can be generalized to a broader population, but that population is limited to highly able college students at selective universities. The instrument and analysis will be discussed in greater detail in the later sections of this chapter.

For this study's qualitative component, an interpretivist paradigm will be used to investigate talented college students' perceptions of their talent development process. Rossman and Rallis (2003) describe the interpretive paradigm as one that "holds status quo assumptions about the social world and subjectivist assumptions about epistemology" (p. 46). This approach attempts to understand the world through the subjectivist lens of individual experience without trying to exact change (Rossman & Rallis). In other words, interpretivist paradigm is concerned with learning information about the world through another's eyes, or a subjectivist lens. In this case of this study, I

am interested in understanding the “world” of the students’ perceptions of their talent development process, through the lens or “eyes “ of Gagné’s DMGT (2009). I chose the interpretivist paradigm because it allows for this lens; the paradigm assumes that the researcher is looking through a lens, rather than attempting to look at the world *tabula rasa*. I chose Gagné’s model because of its comprehensiveness, as well as the presence of many potential factors that relate to talent development, such as intrapersonal and environmental catalysts, chance, and learning, training and practice.

The interpretivist paradigm’s emphasis on thick, rich description and direct insight into the experiences of the individuals involved in the phenomenon is also a factor I considered when choosing the interpretivist paradigm. This description will greatly expound upon the quantitative survey data collected in the first phase of the study. I am interested in understanding the student’s perceptions of his/her talent development; at no point will I attempt to force a critical or radical change to the students’ view of their talent development. This is another component of the interpretivist paradigm: to understand, but not to change. I will not attempt to alter their perceptions of their talent development process, nor will I try to change their views about their process; my goal in this study is merely to learn more about the phenomenon of talent development through the eyes of the participants. As the goal of this investigation is simply to seek to discover the perceptions of the participants as they are presently, the research study falls solidly into the interpretivistic paradigm.

The interpretivist paradigm is the epistemological view of the study; it is concerned with the nature of knowledge (Glesne, 2006). Underneath the broad umbrella of the understanding of knowledge, a methodology, or a theoretical framework that

guides how knowledge will be obtained, is necessary (Glesne). I used phenomenological research as the methodology or research strategy, in this investigation. This is one of several possible research strategies that fall under the epistemological paradigm of interpretivism. Phenomenology “aims to identify and describe the subjective experiences of respondents. It is a matter of studying everyday experience from the participants’ point of view (Schwandt, 2001, p. 192). The goal of the qualitative portion of this research study is to study the phenomenon of college students’ talent development process through their own eyes.

A phenomenological study seeks to understand a small group of people’s experiences in-depth. Because of this, I utilized phenomenological interviews as the data collection method in order to gather in-depth information about the participant’s experiences and perceptions. The participants were chosen through the first phase of the study, the quantitative phase, and were selected because they represented the outliers, or more extreme cases. Because the focus was on the experiences and perceptions of a small, specifically defined group of people, the phenomenological strategy was a good fit. In conducting this study, I sought to understand the experiences of 5-15 juniors and seniors at a small liberal arts college in the southeast, and focused on the perceptions and experiences of the sample. This focus lends itself, by definition, to a phenomenological study.

Research Questions

College is a critical time in the talent development process; career choices are made, influenced by creativity and identity during the late teens and early twenties (Albert, 1994). In this study, research was conducted into the talent development process

of gifted undergraduates, using Gagné's (1985, 2009) model as a conceptual framework. The research study seeks to understand the talent development process of talented collegians through the lens of Gagné's (2005) Differentiated Model of Giftedness and Talent in order to contribute to the body of literature on understanding talented collegians. The overarching research question for this study was: What are factors in the talent development process for gifted undergraduate students? In order to answer the overarching question, the following specific questions are proposed:

1. To what extent do gifted collegians perceive their gifts as affecting their talent development process?
2. To what extent do gifted collegians perceive intrapersonal and environmental catalysts as affecting their talent development process?
3. To what extent do gifted collegians perceive the development process as affecting their talent development process?
4. What do gifted collegians perceive as important in their talent development process?

Data Collection and Analysis

Instrument Design and Pilot Study

In order to develop the survey instrument used in this study, I completed several tasks. The first step was developing the instrument, which is included in Appendix E. Following my own revisions, I submitted the instrument to an expert review for content validation. Finally, I conducted a pilot study on a similar population of students. This section describes this process in detail.

My first step in constructing the survey was to extensively review talent development literature, as well as research on gifted collegians. This enabled me to understand the tenets of Gagné's (1985, 2009) DMGT, and also to understand what programs for giftedness exist on the collegiate level. I used this knowledge of the literature in order to create a survey that used examples relevant to gifted collegians within the components of Gagné's model. To create the survey, I used Gagné's (2009) work as a guide, and created questions based on each component discussed in the article. The survey is a mix of Likert-style questions, open-ended questions and forced-choice questions. The majority of the survey is Likert-style, however in several cases, forced-choice and open-ended questions were more appropriate. I divided the instrument into sections that align with the components of Gagné's DMGT.

The next step in the survey design was to submit it to a panel of knowledgeable persons in the field of gifted education. This helped to validate that I was asking questions that pertain to Gagné's (1985, 2009) DMGT. I sent the instrument along with the research study proposal to Dr. Gagné, and asked for his input. Using this input, I revised the survey items for the first time. The next step in content validation (Gall, Gall & Borg, 2007) was to send the survey to several peers that are knowledgeable not only in gifted education, but in Gagné's model specifically. I asked them to respond to whether or not the questions make sense, measure what they were designed to measure, and can be understood by the target population. I used that feedback in order to adjust the survey further so that it better measures the universe of content.

The final phase of this process involved a pilot study of the revised instrument. The pilot study consisted of recent graduates of college currently enrolled in Southern

University's Master's Degree program in Higher Education. I asked them to respond to the survey and offer feedback as to whether or not they could understand the questions, whether they could respond easily to the questions without confusion, and whether they felt the questions measured what they were supposed to measure. I have not used the data from the pilot study in the analysis for the actual research study; the comments and suggestions that they give me were used to improve the survey once again.

Phase One: Quantitative Data Collection

Sample

This study used a criterion-referenced sample (Gall, Gall & Borg, 2007); juniors and seniors who were identified as talented through their participation in honors work and/or through receipt of awards, special honors, and scholarships and by the recommendation of college faculty. Currently, 148 seniors participate in departmental honors and with the addition of potential junior and senior participants from scholarships, awards, department websites and professor recommendation, I set a goal of 150-175 students invited to participate in the quantitative phase. As the qualitative phase consisted of in-depth interviews, a much smaller sample was needed. I set a goal of 5-15 students (Glesne, 2006) out of the same sample of undergraduates to participate in the qualitative component. I invited at least 15 students; however I did not expect all to respond and be willing to participate, especially given the time of year the study took place: the spring of some of the potential participants' final year of college. I chose juniors and seniors as the potential sample so as to allow for the greatest time for reflection on their collegiate experiences, as opposed to the earlier years of college when the students' reflections may be more centered on high school experiences. I opened the

sample up to both juniors and seniors, rather than just seniors, due to the timing of the study, the latter half of the spring semester; I was concerned that limiting the study to just seniors would not allow adequate participations, because they would be too busy with their own honors projects and graduation requirements. This is the time period where these students are in the midst of their talent development, and they could look back on their choices and support systems from the past, but also look ahead at their potential futures.

I identified potential participants for the quantitative first step of the study through a variety of methods. First, I used the home pages of the various academic departments on campus, as many of these websites highlight exemplary students in their fields and disciplines. I also used the website of the Department of Honors and Interdisciplinary Studies, which posts the names of all the students who are seeking departmental honors, as well as other scholarship and award recipients. Students were selected for these awards based on varying criteria required by the award; themes of academic excellence, motivation and leadership exist in the awards and scholarship requirements. Students who pursued departmental honors must have a demonstrated academic excellence in the field in the form of a minimum GPA, and they must have sought the sponsorship of a professor in the department for their honors research thesis. The above methods identified students who have sought and received a variety of honors in their academic departments. Some students, however, have gifted aptitudes but may not seek these accolades. The final method of participant selection I used is the recommendation of professors in the academic departments, in order to gain insight into students who exhibit many gifted behaviors, but do not seek out the awards, scholarships and honors. To

garner these recommendations, I emailed professors in the academic departments, explained the study, and requested their input in the identification of talented collegians in their department. There are approximately 150 college seniors who can be identified through the different websites cited earlier; it was my hope that professor recommendations would add additional participants to this group. These students were asked to complete a survey in order to collect data about their perceptions of their talent development process as well as select a sample for the qualitative component of the study.

Procedures

After gathering a list of potential participants, students were invited to participate in the quantitative phase of the study. In an attempt to raise the return rate, I offered potential participants an incentive in the form of a random drawing for a gift card, awarded to one student who completed the survey. The sample of participants was sent an email via the college email system, requesting their participation in the research study, along with an informed consent form for informational purposes. This email included a link to the survey, administered through Southern University's online survey system, Opinio. At the start of the online survey, the participants were asked to acknowledge agreement with the informed consent form in order to proceed. After a week, I sent a first reminder email to non-respondents, and then a second reminder email in another week, in an attempt to reach the goal of a 60% return rate for the surveys.

Instrumentation

The quantitative phase of the study utilized a survey instrument delivered online, through Southern University's online survey system called Opinio (see appendix B for

the Table of Specifications and Appendix E for the survey instrument). The survey was a mix of Likert-type items, forced choice, and open-ended questions, as discussed earlier in the instrumentation design section. The questions explored the areas of Gagné's DMGT (1985, 2009) in order to gain a better understanding of the participants' perceptions of their talent development process, as well as identify students for the second phase of the study.

Data Analysis

I conducted the first phase of data analysis in order to answer the first three research questions. I used descriptive statistics, including as means, standard deviations and frequencies, to answer each of these questions (Gravetter & Wallnau, 2008). As the survey instrument also included open-ended response items, there were several questions that I could not analyze through statistical means. I analyzed them through coding to determine themes, following a similar procedure as the interview data analysis, discussed later in this chapter.

The second reason for the quantitative data collection was to select participants for the qualitative phase of data collection. Specifically, I was looking for extreme cases (Gall, Gall & Borg, 2007), or outliers in the data. For example, a student who rated all intrapersonal catalysts very highly will be considered as a participant for the interview phase, as well as one who rated these same catalysts negatively.

Phase Two: Qualitative Data Collection

Sample

The qualitative phase of the study identified 5-15 students out of the original sample who could be considered outliers, or extreme cases. I looked for students who

showed a great deal of evidence supporting the aspects of Gagné's DMGT (1985, 2009), including measures of intrapersonal catalysts, environmental catalysts, gifts, and learning, training and practice. I also looked for students who rated these components more negatively, or absent from their talent development experience. I also took the open-ended questions, such as the question about the influence of chance, into account when selecting potential participants. I contacted via email students who were considered extreme cases on the initial survey and ask them to participate in two one-hour interview sessions, at a time and place that was convenient for them. I transmitted the second informed consent form with this initial email, so they could again read about the details and procedures of the study prior to participation. Again, an incentive in the form of a random drawing for a gift card was offered to encourage participation.

Procedures

After the list of participants was obtained through quantitative data analysis of the survey results, I sent an email requesting participant for the interview phase. I sent a second round of emails to follow-up with non-respondents. Again, an incentive in the form of a random drawing for a gift card was offered to participants to take part in the qualitative data collection phase. After receiving affirmations for participation in the study, I contacted individual participants to set up interviews at a place and time that was convenient for the interviewee.

At the time of the interviews, I explained the study and had the participants sign the informed consent form (see Appendix G). The content of the interviews was described in the following section. All interviews were recorded and transcribed. I sent the transcribed interviews to the participants for member checking. After the participants

agreed to the content of the transcribed interviews, I analyzed the data using the procedures set forth in the data analysis section. A timeline of the procedures is provided in Table 1.

Instrumentation

Interviewing was the primary method in the secondary phase used to gather descriptive data from the participants selected for the study. This process required the researcher to listen carefully, take careful notes and avoid leading questions (Glesne, 2006). According to Glesne, the researcher is a learner rather than an expert; a learner listens while an expert speaks. Each participant's response will be audio-recorded to ensure the responses of each participant are accurately captured and field notes were taken to add contextual data such as facial and body gesture and tonal emphasis (Glesne).

Phenomenology has its own form of interviewing that allows the researcher to gather in-depth information about the participant's experiences and perceptions (Rossman & Rallis, 2003). This form of interviewing requires the researcher, in the first two steps, to establish a life history that includes specific details of the experience under investigation (Rossman & Rallis). In this study, I began by establishing with the participant's their school and personal backgrounds that correlated with Gagné's (1985, 2009) gifted aptitudes. I continued with this stage by gathering information about their specific experiences in learning, training and practice, as well as details about how internal catalysts, external catalysts, and chance have impact their talent development process. The final step of the phenomenological interviewing process is to have the participants' engage in reflection on the meaning of the experiences they have shared (Rossman & Rallis). In order to allow for time for reflection, I structured the

interviewing process to consist of two interviews; the first interview established the life history and gathered the details of their experiences while the second was used to delve deeper into these experiences and reflect upon them.

During the interview process, I used an interview guide approach. This approach calls for the development of topics to discuss, which can be in the form of interview questions, but are open-ended to allow for the participants' to respond with long narratives (Rossman & Rallis, 2003); these responses should direct the general flow of the interview. Rossman and Rallis state that "the participant's perspective on the phenomenon of interest should unfold as the participant views it and not as the researcher views it. The researcher's role is to capture that unfolding" (p. 181-182). The goal of the interview guide is for the researcher to talk as little as possible; I posed open-ended questions (see Appendix F) on the topics I identified using Gagné's DMGT (1995; 2005) and used follow-up questions designed to elicit elaboration on the participants' responses (see the Table of Specifications, Table 3, Appendix C). During the interview process, I conducted member checking as a measure of confirmability (Schwandt, 2001). When member checking I did, from time to time during the course of the interview, restate what the interviewee said in my own words, to ensure that I understood the meaning of their statements. This allowed the participants the chance to clarify any statement that I may have misconstrued. Another form of member checking took place after the final interview; I sent a summary of each interview to each participant for the purpose of checking for initial interpretations, reviewing for accuracy, and allowing opportunities for participants to make any modifications.

Data Analysis

I analyzed the qualitative data collected in the second phase of the study in order to determine themes that arose during the interviewing process and answer the final research question. In order to determine these themes, I used a process of transcription, open coding, axial coding and selective coding (Glesne, 2006).

First, the data was transcribed, so that the analysis can take place with written data. Then, I analyzed the data using constant comparative analysis (Schwandt, 2001), which involved organizing data into meaningful categories, themes, and interpreting meanings and so that the data could provide meaning to others. Each unit of data, which was selected by sentences or phrases, was brought forth from each interview and was initially coded. Subsequent units were compared to the first and assessed for their similarity to the first (Strauss & Corbin, 1998). This constant comparative analysis will continue throughout the entire transcription of each interview. Next, axial coding followed, characterized by a unit reading of data and codes in order to look for emerging themes, thoughts and ideas (Rossman & Rallis, 2003). Close attention was paid to words and phrases that led to categories. The researcher looked for emerging patterns, codes and categories arising from the data. Data was coded more than once in order to expand or collapse emerging categories. Finally, the axial data was analyzed via a selective coding method, wherein broad themes among the data were identified, connections between previous coded categories were made, and models were constructed to describe the relationships between the data. Each idea and thought were coded, allowing the researcher the opportunity to look at the data from different perspectives (Strauss & Corbin).

Table 1 *Timeline*

Activity	Expected Completion Date	Materials and Support Needed
Dissertation Proposal Defense	January 28, 2009	Campus space; LCD projector; Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Revisions to the Proposal	February, 2009	Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Request approval from W&M IRB	March 2009	
Prepare letters to submit to faculty to solicit recommendations; collect information about potential participants from college websites	March 2009	Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Conduct Pilot Study of Survey Instrument	March 2009	Recent college graduates currently enrolled as Master's students in higher education; copies of the instrument; Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan

Activity	Expected Completion Date	Materials and Support Needed
Make revisions to survey instrument; construct instrument online	March 2009	Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan; Opinion system; Opinio support staff
After Receiving IRB Approval:		
Distribution of letters to professors seeking recommendations	March 2009	Campus email system
Distribution of invitations to participate in the survey	March/April 2009	Campus email system
Follow up with non-responders	One week after invitation is sent out	Campus email system
Analyze data from surveys; choose potential participants for qualitative phase	April 2009	SPSS software
Distribution of invitations to participate in the interviews	April 2009	Campus email system
Set up interview schedule with participants	April 2009	Campus email system
Conduct interviews	April/May 2009	Space on campus for interview; digital recorder;

Activity	Expected Completion Date	Materials and Support Needed
		paper for copies of interview questions and consent forms
Draw name for gift card winner from participants (two drawings)	April 2009/May 2009	\$50 gift card for each phase
Analyze qualitative data	May 2009	Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Write Chapters 4 and 5	May/June 2009	
Conduct revisions of Chapters 4 and 5	June 2009	Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Presentation of results/Final Defense	June 2009	Campus space for defense; LCD projector; Dr. VanTassel-Baska; Dr. Tieso; Dr. Finnegan
Submission of Final Manuscript	July 2009	Required paper for submission; fees at copy center for final printing

Ethical Safeguards: Privacy, Confidentiality and Informed Consent

In conducting this study, I took steps to comply with appropriate ethical standards established by the Southern University Protection of Human Subjects

Committee. I sought permission to conduct the study through the Institutional Review Board prior to the start of the study. Moreover, I assured participants prior to participation that their ethical safeguards were taken into account. All efforts were made to ensure the participant's privacy and confidentiality during the research study (Rossman & Rallis, 2003).

Student participants were asked to give informed consent (Rossman & Rallis, 2003) by signing a form prior to participation in each phase of the study that delineates the protection of their privacy and confidentiality. There will be two informed consent forms, one for each phase of the study. The first form delineated their participation in the study, ensured the confidentiality of their responses, and made the participants aware that their responses would be used in order to form the basis of the second phase of the study. Students were ensured that participation in the first phase of the study did not obligate them to participate in the second phase of the study. This form was emailed to students when requesting their participation, and it also appeared at the beginning of the online survey. Participants were asked to check a statement at the beginning of the online survey to signify their agreement to participate and that they read and understood the informed consent form.

The second form described to the participant the expectation of participation in two individual interviews, lasting no longer than one hour each, related to their perceptions of their talent development process. Participants were asked to agree that they would review summaries of the information generated during the interviews to check for accuracy. The consent form informed participants that their honesty is crucial for this study, but that they did not have to answer every question asked. The informed

consent form also described the recording of the interviews in order to ensure for accuracy, and at the completion of the study, the digital recording would be destroyed. The participants were told that they would be given a pseudonym that will enable the researcher to know their identity, and at the end of the study, the key that links the participant to the pseudonym would be destroyed. Identifying information also would be kept confidential and not included in the final report. Moreover, the informed consent form would address the risk to the participants, which is minimal (less than or equal to that encountered in daily life at school). Participants would be made aware that they may withdraw consent and discontinue participation in this study at any time, and that their decision to participate or not to participate would not affect their relationships with faculty, administration, the Education Department, or with Southern University in general.

CHAPTER IV

SOUTHERN UNIVERSITY'S GIFTED STUDENTS: AN OVERVIEW

This chapter will address the results of my investigation. First, I will describe the outcomes of the content validation and pilot study phase of the investigation. Then, I will share the results of the quantitative phase of the study, which served to identify participants for the qualitative stage. Finally, I will present the results of the qualitative phase of the study, using the four research questions as a guide. The four research questions are:

1. To what extent do gifted collegians perceive their gifts as affecting their talent development process?
2. To what extent do gifted collegians perceive intrapersonal and environmental catalysts as affecting their talent development process?
3. To what extent do gifted collegians perceive the development process as affecting their talent development process?
4. What do gifted collegians perceive as important factors in their talent development process?

Content Validation and Pilot Study

In creating the survey instrument, I used Gagné's (2009) Differentiated Model of Giftedness and Talent (DMGT) as a basis, and created survey items that addressed the main elements of the DMGT. The DMGT is an explanation of the talent development process that begins with natural abilities or gifts. According to Gagné, the top 10% of people with these gifts are considered gifted. These students go through a developmental process of learning, training and practice that varies by pace, instructional activities and

investment of time, energy and money. While undergoing the developmental process, intrapersonal and environmental catalysts act upon the individual, either helping or hindering their talent development. Intrapersonal catalysts include motivation, volition, self-management ability, and personality and physical characteristics. The environmental catalysts include the person's surroundings, provisions offered to the individual, and other people, such as teachers, mentors, family and peers. The top 10% of gifted individuals, having gone through the developmental process with the help or hindrance of the intrapersonal and environmental catalysts, can be talented in their respective domains.

The survey instrument I constructed for this study has four subscales: gifts, intrapersonal catalysts, environmental catalysts, chance, developmental process and talent; these correspond to the underlying constructs of the DMGT. I also included a question about which of the four principal elements (gifts, intrapersonal catalysts, developmental process and environmental catalysts) makes the greatest difference in terms of students' perceptions of their talent development process. My survey instrument was initially comprised of 90 open-ended, forced choice, and Likert-type items.

Content Validation

My next step was to complete a content validation of my instrument, in order to ascertain whether the items fit the subscales that I was attempting to measure. After creating the survey, I sent it to colleagues in the field of gifted education for their review. Because I used the most recent version of the DMGT, I provided an explanation of the constructs and the conceptual definitions used so that they were able to gain an understanding of the major constructs. I asked them to assist me in reviewing the content of the statements by providing a rating for each statement, telling how well they felt the

questionnaire item matched the construct. I also asked for any comments they had for each of the questions and for the survey as a whole.

Eight colleagues responded to my request and returned the survey instrument with their ratings and comments. These individuals were Master's students, Doctoral students, and practitioners with advanced degrees in gifted education. I examined the means and modes of each item. I either altered or deleted items whose mode was less than 3 and/or mean was less than 2.5, using the comments as a guide (Gall, Gall & Borg, 2007). This left me with 81 items for the pilot study.

Pilot Study

For the pilot study, I asked a group of students in the higher education Masters (MA) program at Southern University to complete the survey and to offer comments as to the wording and content of the survey. Specifically, the group of MA students included students who had recently graduated from college and had moved from their undergraduate to graduate college careers immediately. Eleven MA students responded to my request, completing the survey and offering comments as to the content and wording of the survey. I examined any survey items that had at least two comments, either deleting or rewording the item based on what was suggested by the participants in the pilot study. This process left me with a total of 66 survey items on the final instrument, which I entered into the online survey system at Southern University.

Construct Validity

I collected evidence of the construct validity of the completed survey instrument using exploratory factor analysis (EFA) using SPSS™ 16.0 with the data I collected at Southern University for the study. When running the EFA, I indicated that there were

four factors, only considering items with loadings greater than .20 (see Table 3). I identified the factors by the clusters presented by the EFA as gifts, intrapersonal catalysts, developmental process and environmental catalysts. I then established a Cronbach's alpha reliability estimate for each of the subscales. Table 2 describes sample items, the number of items, and reliability estimates for each of the four factors, which ranged from .586 to .788. While the subscales demonstrate adequate reliability for the purposes of this study, future studies should continue to revise the instrument until each subscale's reliability estimate is equal to or greater than .80.

Table 2

Factors, Sample Items, Number of Items, and Alpha Reliabilities of the DMGT Subscales

Factor	Sample Item	Number of items	Cronbach's Alpha
Gifts	I am able to solve problems when they arise	13	.648
Developmental Process	I regularly read material relating to academics outside of school assignments.	10	.586
Intrapersonal Catalysts	My strong will power helps me to succeed.	18	.788
Environmental Catalysts	My parent(s)/guardian(s) are very influential in the growth of my abilities.	12	.701

Table 3

Factor Pattern Coefficients for Each of the Four Factors on the DMGT Subscales

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
3. My observations skills are acute	.327	-	-	.487
4. I am able to understand difficult topics.	-	.428	-	-
5. I have a great memory.	-.227		-	-
6. I am able to solve problems when they arise.	-	.450	-	-
7. My imagination helps me with my school work.	.412	.429	.216	-
8. I can create original pieces of work without difficulty.	-	.324	-	.410
9. I am aware of how other people are feeling.	.222	.211	.305	.636
10. I enjoy interacting with other people.	-	.310	.213	.440
11. I am a strong leader.	-	.573	-	-

(continued)

(Table 3 continued)

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
12. I am easily understood when speaking with others.	-	.441	-	.227
13. I can clearly understand information based on what I see.	-	-	-	-
14. I can clearly understand information based on what I hear.	-	.447	-.227	-
15. I understand by being a hands-on learner.	.207	-	.403	-
16. I participate regularly during class.	.489	-	-	-
17. I complete all require coursework.	-	-	-	-.596
18. I do my work to the best of my ability.	-	-	.355	-.458
19. I participate in social clubs.	-.291	.279	-	.281
20. I participate in academic clubs.	-	.304	-	-
21. I spend time conducting research.	-	.317	-	-

(continued)

(Table 3 continued)

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
22. I have spent time working with a faculty member conducting research.	-	.347	-	-
23. I regularly read material relating to academics outside of school assignments.	.803	-	-	-
24. I regularly do academic work outside of school assignments.	.721	-	-	-
25. I am actively mentally engaged in my academics.	.263	.203	-	-.445
26. My motivation helps me develop my abilities.	.461	.346	-	-
27. My personal values have contributed to my success in school.	-	.274	.620	-
28. My strong will power helps me to succeed.	.300	.645	.296	-.253
29. My determination to develop my abilities influences my growth.	.646	.351	.289	-
37. I am aware of my strengths.	-	.500	-	-.277

(continued)

(Table 3 continued)

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
38. I am aware of my weaknesses.	.377	.551	.239	-
39. I am aware of others' feelings or emotions.	-	.551	.205	-
40. I take others' feelings or emotions into account when I strive towards a goal.	.415	.494	-	-
41. I feel that I have high self-esteem.	.262	.267	.431	-
42. I invest a great deal of effort in order to attain my goals.	.691	-	-	-
43. My friends play a large role in the development of my talent(s).	.813	-	.274	-
44. My classmates are integral in the development of my talent(s).	-	.340	-	-
45. My parent(s)/guardian(s) are very influential in the growth of my abilities.	.271	-	-	-

(continued)

(Table 3 continued)

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
46. Family members play a large part in the growth of my abilities.	-	-	.266	.715
47. My professors are integral to my success.	-	-	-	.628
48. I have a positive relationship with a mentor that contributes to my talent development.	-	.353	-	-
51. Where I grew up had an impact on the development of my talents.	.353	.436	.210	-.427
52. My family's culture has an influence on my talent development.	-	-	.509	.290
53. My family's economic situation had an impact on my talent development.	.217	-	.373	-
54. Where I have lived on campus has had an impact on the development of my talents.	-	-	.695	-

(continued)

(Table 3 continued)

Variable	Factor Pattern			
	Developmental Process	Gifts	Environmental Catalysts	Intrapersonal Catalysts
55. The suburban setting of my college has contributed to the development of my talents.	-	-	.692	-
56. I was identified gifted in K-12 education.	-	-	.304	-
57. I moved through my college curriculum at a faster pace than my peers.	.520	-	.282	.244
58. I was identified as a [freshman scholar].	-	-	.497	-
59. If you were a [freshman scholar], did you live in honors housing?	-	-	.603	-
60. I was identified as an [advanced freshman scholar].	-	-	-	.277

Quantitative Phase

Participants

In order to begin the study, I created a list of potential participants from school and department websites that referenced honors students and scholarship recipients and I contacted faculty for professor recommendations. This was a convenience sample in terms of participants volunteering for the study, as the participants were identified from the university I began the study with a total of 173 potential participants; 138 from the list of students pursuing departmental honors, 5 additional from scholarships, and 30 from professor recommendations. I could not locate four email addresses through the college system, and an additional 14 students did not receive either the survey or the reminders through the online survey system (see Table 4 for a breakdown of participants by selection type).

Table 4

Breakdown of Participants by Selection Type

Selection Type	Invited	Participated	Response Rate
Departmental Honors	124	66	53%
Faculty Recommendation	26	14	52%
Scholarship	5	3	60%
Total	155	83	54%

A total of 155 college juniors and seniors received the invitation and up to three reminders to participate in the survey. Eighty-three students participated in the survey for

a total response rate of 54%. Of those who chose to complete the survey, three participants were identified through scholarships (60% response rate), 66 through departmental honors (53% response rate) and 14 through professor recommendations (54% response rate).

I collected descriptive data on each of the participants, including their SAT scores, GPAs, college major and their identification as honors (either as a freshman or advanced freshman scholar, through participation in departmental honors research, and whether or not they lived in honors housing). The mean SAT score of participants was 1402 and the mean GPA was 3.69 (Table 6). The majority of the participants were seniors (81.9%), as were the majority of the sample who received the initial invitation to participate (Table 5). Majors included the Natural Sciences, such as biology, chemistry and math, Social Sciences, such as psychology and political science, and the Humanities, such as English, history, and the languages; 33.7% of participants had a second major, 46.3% of which had a second major in a different field (Natural Sciences, Humanities and Social Sciences). I also collected information on their achievements in their talent fields, including scholarships, participation in competitions, rewards and honor society memberships and SAT scores (see Table 5).

Table 5

Characteristics of Survey Participants

Participants'			
Characteristics			
		<i>Frequency</i>	<i>Percent</i>
Year in School	Juniors	13	15.7
	Seniors	68	81.9
Number of Majors	One Major	52	62.7
	Two Majors	28	33.7
Category of	Natural Sciences	27	32.5
Major(s)	Social Sciences	16	19.3
	Humanities	24	28.9
	Double Major in Two Areas	13	15.7
	Identified as	Identified Gifted in K-12	60
Honors	Identified as a Freshman Scholar	23	27.7
	Identified as an Advanced Freshman Scholar	3	3.6
	Lived in Honors Housing	13	15.7
	Participated in Departmental Honors	65	78.3

(continued)

Table 5, continued

Participants'		<i>Frequency</i>	<i>Percent</i>
Characteristics			
Achievements	Earned a Reward in Field	18	21.7
	Participated in Field-Related Competition	12	14.5
	Earned a Field-Based Scholarship	40	48.2
	Member of an Honor Society	51	61.4

Table 6

Means and Standard Deviations of SAT and GPA of Participants

Measure			
	<i>N</i>	<i>M</i>	<i>SD</i>
SAT	72	1402	107
GPA	75	3.69	.22

Data Analysis

In order to analyze the responses, I pulled raw data from the online survey system and entered it into SPSS. I compiled the Likert-style items designed to measure each construct of the DMGT (gifts, intrapersonal catalysts, environmental catalysts and developmental process) together to form one variable for each subscale. These items asked participants to rate each of the statements on a scale from 1-5, indicating strongly disagree to strongly agree. I then created a new variable in SPSS for each participant that represented their mean scores for each subscale.

Using these data, I ran descriptive statistics on each of the new variables, calculating the mean and standard deviation of the participants' responses for each subscale. The data are presented in Table 7 and discussed in the results section. In addition to descriptive statistics, I ran *t*-tests to determine whether students were statistically different from others in the sample on a variety of variables, such as GPA, SAT score, gender, year in school, major, honors identification, honor society membership and gifted identification in K-12 education. Finally, I calculated a PPMC in order to determine the relationship among SAT, GPA and the four subscales.

Table 7

Descriptive Statistics of DMGT Constructs

DMGT Construct	<i>N</i>	<i>M</i>	<i>SD</i>
Gifts	79	3.9739	.39853
Developmental Process	79	3.8920	.52939
Intrapersonal Catalysts	77	4.1029	.40910
Environmental Catalysts	77	3.7900	.32089

Survey Results

Gifted collegians were asked to respond to Likert-style statements that I designed to align with Gagné's (1985, 2009) DMGT components: gifts, intrapersonal catalysts, developmental catalysts and development process. Ratings ranged from 1-5, indicating strongly disagree to strongly agree. The results section is organized by the four research questions in this study.

Innate Gifts

Descriptive statistics indicate that gifted collegians “agree” that they have examples of the gifts suggested by Gagné's (1985, 2009) DMGT. The first research question asks, *To what extent do gifted collegians perceive their innate gifts as affecting their talent development process?* For the gifts subscale, students were asked to rate to what extent they manifested the natural abilities suggested by Gagné for example, “I am able to solve problems when they arise.” Responses to these items had a mean rating of 3.97 (see Table 7) indicating that in general, gifted collegians agree that they have these natural abilities, or gifts. Results of a *t*-test indicate that students identified as gifted in K-12 education had significantly higher means on the gifts subscales than students not identified as gifted $t(74)=2.322, p=.023$. These students have been labeled as gifted throughout their education and may be more likely to identify themselves as gifted or recognize their own natural abilities to a greater extent.

Intrapersonal and Environmental Catalysts

Gifted collegians in this study “agree” that intrapersonal and environmental catalysts have an impact on their talent development. These results begin to address the second research question, *To what extent do gifted collegians perceive intrapersonal and*

environmental catalysts as affecting their talent development process? Students scored highest on the intrapersonal catalysts subscale ($M=4.10$). This subscale asked students to rate the extent to which they felt various characteristics impacted their talent development, such as “I put forth a great deal of personal effort when developing my abilities.” Students scored the lowest mean score on the environmental catalysts subscale ($M=3.79$), on which I asked students to rate the extent to which individuals, surroundings and special provisions impacted their talent development, for example “My classmates are integral in the development of my talent(s).” Both of the mean scores for the catalysts indicated that on average, gifted collegians “agree” that their intrapersonal and environmental catalyst impacted their talent development process.

There were significant differences between juniors and seniors on the environmental catalysts subscale, $t(74) = -3.084, p = .003$ in this study, with seniors rating environmental catalysts higher than juniors. This indicates that juniors did not feel that people such as peers, parents and professors, their environmental surroundings or special provisions offered to them had as much of an impact on their talent development as seniors in the study. Also, there were significant differences between members and non-members of honor societies on the intrapersonal catalyst subscale $t(75) = 2.197, p = .031$, with members rating the intrapersonal catalyst subscale higher than participants who did not belong to honors societies. This indicated that gifted collegians in honors societies were more likely to feel that their intrapersonal catalysts, such as personality traits and motivation, had a greater impact on their talent development than gifted collegians who did not participate in honors societies.

Developmental Processes and Talent Development

Developmental processes refer to the learning, training and practice through which the students gain knowledge and move through the talent development process; overall, gifted collegians “agree” that they participate in the activities and put forth the investment suggested by the developmental process construct of the DMGT. The third research question asks, *To what extent do gifted collegians perceive the development process as affecting their talent development process?* Students scored the third highest on the developmental process subscale ($M=3.89$), on which I asked participants to rate statements indicating their agreement with examples of activities, pace and investment characteristic of Gagné’s DMGT, for example, “I participate regularly during class.” Overall, gifted collegians “agreed” that they were actively involved in their learning, training and practice, or their developmental process. Members of honor societies had significantly higher scores on the developmental process $t(75)=3.265$, $p=.002$ subscales than participants who did not belong to honors societies. Students selected for honors societies are likely to have high levels of achievement in coursework, as membership is based at least partially on GPA.

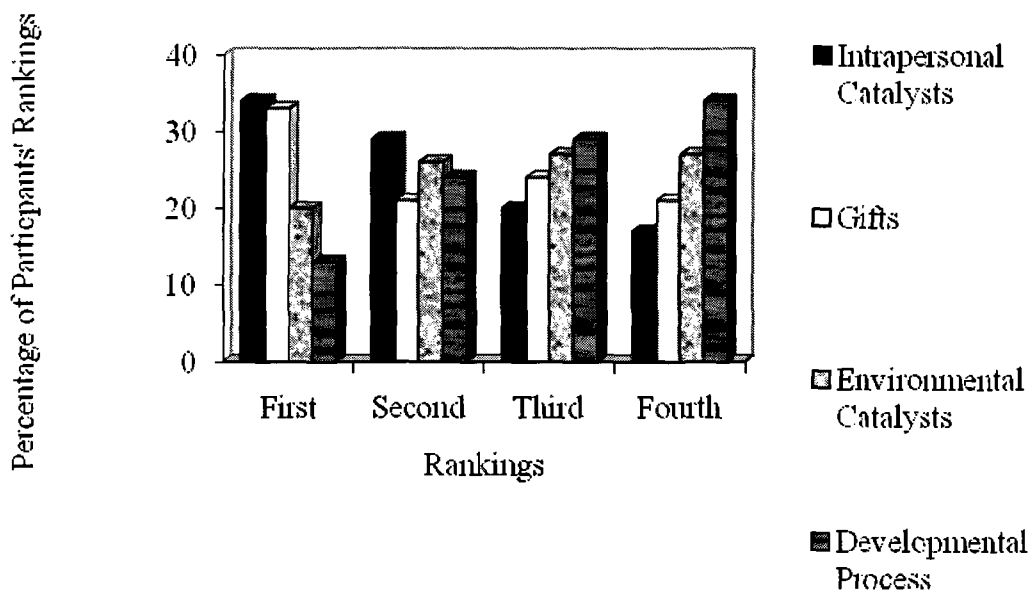
What Makes a Difference?

The final research question asked, *What do gifted collegians perceive as important factors in their talent development process?* On the survey, I asked the “What makes a difference?” that Gagné (2009) includes in his discussion on DMGT, asking participants to rank and provide reasons for their rankings of the four constructs (gifts, intrapersonal catalysts, environmental catalysts and developmental process) in terms of the relative impact they have had on the development of their strengths and talents.

When asked the question on the survey, students ranked intrapersonal catalysts as most important, followed by gifts environmental catalysts, and developmental process. Figure 2 shows each of the four subscales and how often each subscale was ranked first, second, third and fourth by participants.

Figure 2

Percentages of Students' Rankings for Each Subscale



This illustrates a perception by the gifted collegians that their intrapersonal catalysts such as motivation or drive were likely to have a large impact on their talent development. Gifted collegians feel that gifts also had a great influence on their talent development process; these innate abilities are the base on which their talents are built. Gifted collegians in this study, therefore, had the tendency to rank intrapersonal and gifts higher a greater percent of the time, while developmental process and environmental catalysts were ranked in the lower half more frequently, meaning that they feel that gifts and

intrapersonal catalysts had a greater impact on their talent development. It is important to note, however, that the questions regarding gifts and the developmental process did not ask students about the extent to which constructs influenced the gifted collegians' talent development, while the intrapersonal and environmental catalyst questions did.

Therefore, the results from the collegians' actual rankings in the final question are more reliable than just comparing the means.

On the survey, I asked gifted collegians to provide an explanation for their rankings, which were reported anonymously by the online survey system. One student supported having intrapersonal catalysts and gifts ranked highest, stating, "I think that without some type of motivation, natural gifts almost never matter. However, without natural gifts, catalysts or developmental processes can have a significant impact."

Another student concurred, saying "Above and beyond, my own perseverance has enabled me to push beyond any natural talents and creative abilities to solve any task at hand." Commenting on the importance of both gifts and intrapersonal catalysts, a gifted collegian remarked,

I think that doing well is a mixture of two factors: talent and effort. Some people have a great deal of natural talent and do really well while others don't have as much talent but try really hard. Most 'gifted' people fall somewhere between the two on the continuum.

A few students had problems ranking the items, feeling that the constructs were all equally important. One such gifted collegian stated, "The order I selected is mostly arbitrary because I think that all of them are related and cannot actually place any of them above the other."

The final statistical procedure that I performed tested the relationship among GPA, SAT and the four subscales of the DMGT using bivariate correlations. Using SPSS I calculated a *Pearson's r* for each combination of SAT, GPA and the four subscales. Significance was noted at the .05 and .01 level. A matrix of the two variables and four subscales, the *Pearson's r* for each combination, and the significance are shown in Table 8.

Table 8

Correlations of the DMGT Subscales, GPA and SAT

Subscales	GPA	SAT	Gifts	Developmental Process	Intrapersonal Catalysts	Environmental Catalysts
GPA	1	.260*	-.267*	.062	-.050	-.172
SAT	.260*	1	.021	-.047	-.177	-.155
Gifts	-.267*	.021	1	.286*	.616**	.220
Developmental Process	.062	-.047	.286*	1	.451**	.054
Intrapersonal Catalysts	-.050	-.177	.616**	.451**	1	.361**
Environmental Catalysts	-.172	-.155	.220	.054	.361**	1

There was a statistically significant positive relationship between intrapersonal catalysts and gifts, $r(78)=.616, p<.01$, developmental process, $r(78)=.451, p<.01$, and

environmental catalysts, $r(76)=.361, p<.01$. This indicates that intrapersonal catalysts are positively related with gifts, developmental process and environmental catalysts. As participants' ratings of intrapersonal catalysts increased, so did their ratings for gifts, developmental process and environmental catalysts. The greater the individuals levels of motivation and volition, the higher the other three subscales were rated, suggesting that the four subscales are greatly affected by each other, with intrapersonal catalysts having a strong effect over developmental process, perceptions of environmental catalysts and their gifts. GPA and SAT score were not found to be related with intrapersonal catalysts. When considering the gifts subscale, there was a statistically significant positive relationship between gifts and developmental process, $r(78)=.286, p<.05$, and a statistically significant negative relationship between gifts and GPA, $r(74)=-.267, p<.05$. This indicates that as ratings on the gifts subscale increased, so did their ratings on the developmental process subscale. However, as participants' ratings on the gifts subscale increased, participants' ratings on reported GPAs decreased. Finally, a Pearson correlation found a positive relationship between GPA and SAT, $r(71)=.260, p<.05$ statistically significant at the .05 level, indicating that as reported GPA increases, so do reported SAT scores. These correlational results indicate that aspects of the talent development process were significantly related, which suggests that it is the relationship of the different constructs that work together to facilitate the talent development process.

One of the purposes of this study was to gather empirical data in order to evaluate the underlying constructs of Gagné's DMGT and examine the effects of the constructs on the talent development process of gifted collegians. A second purpose of the first phase was to identify students to participate in the second phase of the study, a qualitative

interview, in which the data could be explored in greater depth. The results of the second phase of the study are presented in the following two chapters.

CHAPTER V

CONVERSATIONS WITH GIFTED COLLEGIANS:

PARTICIPANTS, LIFE HISTORY AND ENVIRONMENTAL CHARACTERISTICS

The previous chapter explored the characteristics of a sample of gifted students at Southern University who responded to my survey about their giftedness. Quantitative data can provide general information about the participants' perceptions of their talent development process, however as this research used a mixed method approach, interviews with eight outliers from the survey results provide more depth to our understanding of the students own perceptions of their giftedness.

Participants

The eight students who participated in interviews in this study have little in common beyond their identification as gifted students, although a few share certain characteristics or previous activities primarily due to the limited number of activities available to exceptional students at Southern. An overview of how they were identified and their common and individual characteristics serves to introduce the students. Three of the eight were identified for the initial study by faculty recommendation; the remaining students were identified through departmental honors. Two juniors and six seniors were interviewed for this study. Of those graduating, one plans to enter the workforce, one will be working for Teach for America in Washington D.C., a service program that places college graduates in inner-city schools as teachers, one will be pursuing an MA degree, the remaining three will be pursuing PhD degrees.¹

¹ In discussing this research, pseudonyms are employed for all participants and other identifying characteristics have been covered by generic terms to prevent identification.

Anthony was identified for the initial study through faculty recommendation and for the interview process because he had the highest mean ratings for the environmental catalysts construct on the survey instrument. He was a senior originally from Massachusetts, graduating with a major and a minor in the natural sciences. His initial intention was to double major but in his freshman year he decided against the double major in order to graduate in three years. Anthony completed several semesters of research, including a senior thesis in the natural sciences. Next year, he will be attending an Ivy League university, pursuing a PhD, with a Master's degree awarded en route, which he said is the standard practice for his field.

David was identified for the initial study through departmental honors and for the interview process because he had the highest mean ratings for the gifts construct on the survey instrument. He was a senior, graduating with a double major in the social sciences. Originally from West Virginia David was a freshman honors student at Southern and lived in the freshman honors dormitory. He successfully defended two honors theses, one in each major, and is the only participant to do so. He has two patent applications under consideration and started a business teaching study skills to his fellow college students while at Southern. After graduation, he is getting married and beginning his job as a consultant in a major mid-Atlantic metropolitan city.

Jacob was identified for the initial study through departmental honors and for the interview process because he had the lowest mean ratings for environmental catalysts on the survey instrument. He is a senior social science major and has served as a Teaching Assistant and Research Assistant in his major, experiences that he not only enjoyed but that influenced his future career. Jacob successfully defended an honors thesis and will

be attending graduate school in his home state's flagship university, next year to pursue a PhD. He would like to be a Professor after he earns his PhD.

Kristen was identified for the initial study through departmental honors and for the interview process because she had the highest mean ratings for the environmental catalysts construct on the survey instrument. She was a senior social science major and language minor from a rural area of the mid-Atlantic state in which Southern is located. She has been involved in several undergraduate research projects and has successfully defended her honors thesis. Kristen was integral in starting a student philanthropic organization on campus and served in a leadership role on campus as an assistant director for an orientation program. She was also active in her sorority and in a musical performance group on campus. Next year, she will be pursuing a MA at a New England university.

Linda was an in-state student coming from the northern part of the state. She was identified for the initial study through faculty recommendation and for the interview process because she had the highest mean ratings for the developmental process construct on the survey instrument. She was a junior humanities major with a language minor. Linda created a study series on a video sharing site that was later marketed by a company, for whom she continues to create the videos. She will be conducting research with a faculty member abroad over the summer and is attending Southern University on a full tuition scholarship. Next year she will be completing her senior year; she does not plan to write an honors thesis so that she can use her time attempting to publish her work from her summer research grant.

Molly was identified for the initial study through departmental honors and for the interview process because she had the highest mean ratings for the developmental process construct on the survey instrument along with Linda. She was a senior social science major from a northern mid-Atlantic state who was involved in the service learning program at Southern University. She earned a leadership role in the service learning program and successfully defended an honors thesis in her major. Next year she will be participating in the Teach for America program in a major mid-Atlantic metropolitan city.

Another in-state student, Clay was identified for the initial study through faculty recommendation and for the interview process because he had the lowest mean ratings for the intrapersonal catalysts construct on the survey instrument. A junior, he carries a double major in two distinct areas: natural science and humanities. He plans to complete an honors thesis in his natural science major. Clay was a member of the advanced freshman honors program and has worked as a Research Assistant on the campus of Southern University as well as other college campuses. An avid horn player, Clay helped to start two musical ensembles on campus. Next year, he will be completing his senior year at Southern and working on his honors thesis. He plans to attend graduate school after graduating from Southern University.

Peggy was identified for the initial study through departmental honors and for the interview process because she had the highest mean ratings for intrapersonal catalysts on the survey instrument. She was finishing a double major in two diverse fields, natural sciences and humanities, and successfully defended an honors thesis in her natural science major. She served as a Research Assistant at Southern and other college

campuses during the summer and was actively involved in her sorority. Peggy does not have a home state, having been raised in the Europe and the Caribbean due to her mother's career. Next year, she will be pursuing a PhD at an Ivy League university.

In order to ensure transferability, I use direct quotes from the participants that support the discussion of the themes, allowing their words to illustrate the findings (Glesne, 2006). In the following sections, I present results from this study in the same general order as the structure of the interview protocol. I begin with the participants' discussions of their life histories, including K-12 educational experiences and their upbringing. The next section discusses the details about their talent development process in college, including their collegiate activities and environmental influences. The internal characteristics that facilitate their talent development found in the interviews is discussed in Chapter VI, along with the participants' reflections on our first interview and their talent development process, including Gagné's (2009) question: *What makes a difference?*

Life History

During the initial interview, I asked participants to describe their educational experiences throughout their lives. Over the course of the first interview, participants discussed their gifted experiences throughout their K-12 education, the opportunities for accelerating their learning, and their upbringing and families. I also asked gifted collegians about areas in which they felt they excelled; these natural abilities were fostered from childhood throughout their collegiate talent development process and are discussed as the final component in the life history section.

K-12 Educational Experiences

Several of the students experienced gifted programming during their K-12 education. Programming occurred in elementary school through gifted programs, but also through AP, IB and Honors classes in high school. These programs had an impact on their development in primary and secondary school, as well as on their overall talent development process. Gifted programming encouraged students to pursue new areas and areas in depth, enabled them to build their knowledge faster, allowed them to accelerate their K-12 requirements, and identified them to teachers who encouraged their talent development.

Kristen began school already reading, and was placed into a gifted program in elementary school. She described the program, and a memory of being unique, standing out, taking a lead role, and seeking challenges.

My mom told me I started to read at the age of 3 or 4. I started reading in preschool, and they thought that they should get me started with [the gifted program], so I guess that's why they pushed me through to do the gifted stuff when I got to elementary school. I was the only one that could read in my kindergarten class, I do remember this, so when we put on the spring play I was the narrator because I was the only one that could read. But in terms of other educational experiences, I guess I've always been given extra work, or I was in charge of the group when we would do a group project. I was always that big nerd who would always ask for extra stuff, if I'd already finished my homework. I was worried that I would get behind or that I wouldn't get into a good school.

All of these were clearly irrational beliefs. (personal communication, May 2, 2009)

Molly, like Kristen, also participated in gifted programs in primary school, but both young women as children deliberately had to choose to engage in these opportunities. The gifted programming in Kristen's school involved optional after-school workshops, but did not involve any change during the school day. Molly had a similar experience in her gifted program in her elementary school, in which the gifted programming was an after-school experience in which she chose classes to take depending on her interests, without accommodations made during the school day.

Linda and Clay had different experiences with gifted education in their schools in suburbs of a major metropolitan city. Linda's parents enrolled her in an elementary school that was designed as a feeder to a prominent math and science high school in the school district. At this school, she was fast-tracked into mathematics and given opportunities not available to other students. This milieu provided her with new stimulation, priming her creative development.

So I went there and was in the gifted and talented program and that really helped a lot because I got to be pulled out from the normal general education and then worked on just special math projects mostly, that was mostly just math and problem-solving things and I eventually did a lot of web sort of designing.... [It was] the first real chance to explore my own creativeness in school. (personal communication, April 28, 2009)

Clay also attended a primary school program that extracted gifted students out of the class for several hours during the course of the regular school day. Although he expected

to pursue the gifted route, following his siblings, his experience was not entirely positive as he became sensitive to the opinions of other “non-gifted” students.

Well, it was definitely separate and you got the vibe that the other kids didn't like you because it was a smaller group at least at the school I was at. But I mean at the same time I had two older brothers who had both been sent to gifted and talented in about fourth grade or so, so it was something that I had sort of expected would come. (personal communication, April 18, 2009)

The separate programming for the gifted often had a side benefit for these students. The gifted programs allowed several students to accelerate their K-12 education. David experienced a great deal of acceleration in his K-12 education. Not only were his schools supportive of his abilities by allowing him latitude in pursuing advanced study, but he possessed an inner drive to accelerate and explore a variety of areas of study.

I was in a classroom that was a [two grade] combined classroom [throughout elementary school], and so I listened to the Math that was a year ahead of me, so at that point I got accelerated a year, and so that persisted through time. Sixth through ninth grades, I transferred to a different Catholic school because that program was significantly better. And they really allowed me to skirt the rules pretty significantly, in terms of getting a lot of high school credits in one year, doing a lot of independent studies, and so that was really helpful. And then they basically ran out of classes, they were a small school. And so then I transferred to the public school. My family moved ten miles, so I was in a different state in a different school district because the [state] schools were better than the [state]

ones, so I went to a public high school. Because I was accelerated every year that I went to high school, I went to high school less. I did more and more independent studies. My final semester in high school I went to school for about two and a half hours a day. I took nine or ten AP exams, I think, about half of which I never had the class for. I just bought the books online and did independent studies for them. And that was essentially my educational experience. (personal communication, April 25, 2009)

All of the participants took either AP or IB classes and entered college as freshman with several credit hours. David, Clay and Peggy used the acceleration to undertake second majors. Anthony benefited from honors and AP courses by earning his degree in three years rather than four, but the special courses had an added benefit for him; he discovered a passion for a subject that would later become his major in college and in which he will be pursuing his PhD. High school experiences fostered interests and lead to decisions that impacted Anthony's collegiate experiences. He described his passion forming through his high school experiences,

After much debate I decided I wanted to take honors [science] even though I wasn't in honors [science] the year before. [My teachers] went to the department about that but eventually they said to go ahead, try it and it was just really, really fascinating, even though I could tell it was the simplest basic stuff but it was fascinating, and really interesting. The next year I took advanced [science] and I started to do really well in it; I was the only one in my high school to get a 5 on the AP exam and so...I don't know, the more classes I take, the more interested I keep getting. (personal communication, May 5, 2009)

Another component of the K-12 educational experiences that had an impact on these gifted collegians was their interaction with their teachers, whose encouragement spurred their interests in and dedication to their talent fields. Molly described her teachers as encouraging and supportive of her abilities, “I had the support of my teachers in high school who told me that I was smart and that I could achieve and helping me use the talents that I had in a productive way” (personal communication, April 26, 2009). Molly went on to explain that her teachers were very involved in meeting her educational needs and ensuring that she was challenged: “My teachers picked up on my natural gifts and as a result pushed me harder or encouraged me or provided me extra of whatever kind of permissions to keep me moving fast to make sure I was not getting bored” (personal communication, April 26, 2009). Peggy described the impact of a teacher on her choosing her college major and career path; it all started with one class in high school, taught by one special teacher.

It probably had a lot to do with the teacher. She was just this amazing teacher who was so enthused about the subject, almost an infectious sort of enthusiasm. Her enthusiasm made me love the subject even more. It was just really cool. She always used to call us Pumpkin—that was really cute. I remember we were doing reproductive processes and she was 28 and had been married a year, and she was all cute and kind of embarrassed about it and tried to cover it up. She got up on top of a chair behind her desk and was pointing at diagrams and being completely ridiculous. She was making fun of her own embarrassment, the way she dealt with it made it all funny. She was a very good teacher in general. (personal communication, April 23, 2009)

Students described their early educational experiences as having a significant impact on their talent development even before entering college; their primary and secondary experiences set the stage for their collegiate experiences. Their experiences in gifted programming fostered their thirst for knowledge, taught them essential skills and encouraged them to continue developing their talents. While establishing a life history and discussing their experiences in talent development, the gifted collegians in my study also talked about their upbringing and familial culture, and the impact it had on their talent development.

Upbringing and Family

Students in this study discussed how familial and cultural upbringing, such as a culture of academic excellence or rules and structure while growing up, had an impact on their talent development. Their upbringing fostered their motivation and work-study habits that enabled their achievements later in life. Molly and David both explained the impact that childhood rules, especially limited television viewing, had on their talent development. These rules established a system of priorities towards reading and academics over television. Clay also referred to family rules, and the system of rewards and punishments that contributed to his successes.

I'd have to say my upbringing [was important in my talent development]—determining my personality traits and getting the ball rolling on my strengths has set up the framework so that everything else can carry that out...The general—doing good things, being rewarded, doing bad things getting punished at home as a child—picked out those traits as the ones that should be furthered. (personal communication, April 18, 2009)

Peggy described the impact of the culture of academic excellence that was pervasive in her upbringing, “I guess it’s partially upbringing. My mom has a Master’s degree in [science], my father has a Master’s degree in [humanities], all my grandparents have gone to college.... It’s a drive to excel and live up to family expectations” (personal communication, April 23, 2009). The culture of achievement in her family provided role models and extrinsically motivated her to pursue opportunities and to achieve.

For some gifted collegians, faith plays a large role in the talent development process. Linda and David both spoke about how their upbringing in Christian homes impacted them in terms of their talent development. The values that they strive to meet are faith-based, thus their faith plays a role in decision-making and goal-setting and operates as a driving force. These values were learned and reinforced throughout their childhood. David remarked that his faith was instrumental in decisions such as his early marriage, but also that his faith motivates him to succeed. Given his beliefs, he has translated his talents into a personal responsibility.

I feel like I have a purpose in life...it gives [me] motivation. I think that this is related to my faith, because I think in the absence of that I would be significantly different...but I feel that there is a significant burden for me to use my talents because I am acutely aware of how blessed I've been. The most striking example would be the parable of talents, where the king, being God, goes away and gives one person one talent, which was a significant unit of money, one person with five, one person with ten. The one with ten made ten more and he got promoted. The one with five made five more and he got promoted and the one with one made nothing and he got thrown out into the night where there was gnashing of

teeth. And so I am definitely in a ten talent category, everyone here is and so that leaves me with no choice. And I think that was my normal penchant anyway, but it reinforces it as something that I have no choice in the matter. (personal communication, April 25, 2009)

Kristen also felt the impact of faith on her life, commenting that the events that shaped her life were part of God's plan for her. Spirituality then, serves as a motivating force in the talent development process for three of the students providing an impetus for using their gifts, and has become the basis for their goal-setting behaviors.

Participants relayed the importance of their parents while they were growing up. As the participants' first teachers, parents fostered a desire to learn. They helped to motivate their children and their encouragement and support proved to be essential for the participants' development. Both David and Kristen learned to read at home before entering school. David spoke of his mother's desire to ensure continuous education for him and his siblings. "My mom was very aggressive about making sure we were productive over the summer. She devised structured incentive systems where we would do activities to gain points which were transferred into rewards" (personal communication, April 25, 2009). Peggy's father personally sacrificed to demonstrate to her and her brother how important their education was to him. She explained that

My dad first off, he was our teacher growing up. He's a very talented tennis player and coach; he coached the Davis Cup team in the Dominican Republic. He made a lot of sacrifices to make sure my brother and I got a really good education. We lived in this tiny town in the Netherlands. The only the English-speaking school was in the Hague, which was an hour and a half bus ride away. If he'd wanted to,

he could have put us on a bus three hours a day, every day, but he didn't want to put us through that. So he made sacrifices in his career to make sure we got a really good education. He really dedicated himself to that—a lot. (personal communication, April 23, 2009)

Peggy spoke of her father's dedication to her education several times during the course of both interviews, explaining the great impact her homeschooling had on her talent development. He fostered the importance of the work ethic to her and encouraged her interest in her talent areas.

Clay felt that his family established a positive work ethic for him and his siblings, encouraging them to perform at their highest level.

My dad always emphasized his policy that your best is what they expect of you. So if I brought home a C in a class, and said I tried my hardest there, he would be happy. And if I brought home a B+ in that class and said that I hadn't really tried to get that, he would be upset that it wasn't an A. So that's sort of the atmosphere of pressure and reward that I grew up in. And my two older brothers and my younger sister were all very much accomplished, similar to myself in being top of the class for a lot of their school years. It was very supportive and nurturing.

(personal communication, April 18, 2009)

Parental support was a key for the gifted collegians, as it encouraged them in their talent development, provided support, early education and opportunities for growth.

Siblings also had an impact on the talent development of gifted collegians in two ways. First, siblings were noted to be supportive and helpful to these students. Four of the participants have older siblings whose positive role modeling encouraged them

through their success. Molly spoke about her older sister as an inspiration and encouraging force in her life.

My older sister did extremely well in high school and in college. She graduated law school last year and she works really hard and I think that was a very good example for me growing up. She always worked hard so my parents expected that of me as well. It was nice to see someone succeed and be happy in their successes. Seeing her at a good school and then going on to law school and[being] very happy with the job that she has now, is a reminder that it pays off. She's also just being encouraging of me and excited about what I do. (personal communication, April 27, 2009)

Peggy described learning her multiplication tables overhearing her older brother struggle with his. "I learned the multiplication tables because my father was trying to teach my brother, who's really smart but hates math. So my dad was trying to teach it to him, and I just hung around and picked it up" (personal communication, April 23, 2009). Having an older sibling encouraged her to try new things and explore potential areas of interest.

More commonly, however, siblings served as a source of competition for the gifted collegian, operating as an extrinsic motivating force. When asked what people had an impact on his talent development, Anthony discussed the motivational aspect of sibling rivalry.

My father is a lawyer and my mother is not like a scientist or anything so there's no real pressure to become a scientist like some families had. But I'm the second child and I've found that, as much as I don't want to be, I'm locked in a

competition to be better than my older brother. So there's that aspect of it. I like impressing them. So I confess that's an aspect and an effect also.... I always had to be better than him. That had a lot to do with me getting to where I am.

(personal communication, May 12, 2009)

Kristen studied parent-child relationships through her research in her major, and she appreciates the impact of her family on her personality and talent development. She realizes that she is the result of a combination of care and concern from many sources in her extended family.

I see now that my family really has been my first teacher. I think the family is the most important teacher of anyone for a child.... I also think that they're the most important because you develop that relationship with them from infancy. I think my siblings and my grandparents had a lot to do with it too, it's not just my parents. You know, my parents supported me and encouraged me to, you know, shoot for the stars and be who I am and my siblings kind of kept me in check socially, I guess. Really formed a lot of my personality just making sure that my ego didn't get too big, they still turned me out to be a cool person. (personal communication, May 2, 2009)

Whatever the relationship, parents, siblings, or grandparents, family has been integral to the success of most of the gifted collegians in my study, coupled with their educational experiences. Only one participant felt that his parents did not make a large impact, describing their influence as typical of parents. Jacob described his family as supportive, but not overly involved. "My parents were good parents. They expected a lot from me, but they weren't demanding parents by any means. I came from a good, stable,

supportive environment” (personal communication, April 28, 2009). For the most part though, families fostered a climate of achievement, encouraged gifted collegians in their educational attainments, and encouraged intrinsic and extrinsic motivation. The final component of the life history section of this chapter explores the gifted collegians’ perceptions of their natural gifts.

Gifts

During the interviews, I asked gifted collegians to describe their areas of strengths. Gifted collegians recognized their natural abilities in intellect, creativity and social skills. These gifts enabled them to achieve in their fields, as they consider their gifts to be the baseline of their talent development process.

Several students remarked that their gifts exist in their thinking processes. Anthony enjoyed using these skills both in physics and while participating on the debate team; he especially liked that his particular skills could be used in both an academic and extra-curricular setting. “I feel like I really excel in analytical thinking: math and that kind of thing. Even in humanities classes when I have to write papers and arguments and whatever I feel like I can construct arguments kind of well” (personal communication, May 5, 2009). Clay felt that his intellectual strengths were also located in his thinking skills, and that his gifts crossed a variety of disciplines.

Certainly, math, compared to the average kid—although I'm friends with a lot of math majors and they outshine me, so that's in a different perspective. But I am good at spatial reasoning and logic kind of problems where things just need to fit together in a certain way, or ideas need to fit together in a certain way. And that's

how I pretty much bring everything in my head, whatever class I'm taking.

(personal communication, April 18, 2009)

Several of the students remarked, however, that they did not feel that their intellectual gifts were any greater than their peers at Southern University, given the selectivity of the college. Although they feel that they are intellectually capable or even advanced, they also feel that the majority of the students on the campus of Southern University are similarly able. As Clay stated, "Intellectual gifts: I'm sure I have them as much as anyone here at ...[Southern University]. This whole place and therefore myself as a student here has lots of knowledge and receptivity to new knowledge" (personal communication, April 18, 2009). Kristen argued that her intellectual abilities were beneath the level of her peers at Southern,

In the intellectual domain, I don't think it is necessarily my strong suit. I know, I'm at [Southern University], but I did not score that well on the SATs coming through. I was probably at the bottom of the average that was coming through. I got a 1290—that was the highest I ever scored. But when I was coming through, I felt like I was kind of pretty smart but not a genius. I'm not going to be one of the big theorists or researchers or anyone that's coming through anything. But I was smart enough to get me through school and to not have to worry about grades. I had a lot of friends coming through grade school and they worried about their grades all the time and I was so thankful that I didn't really have to worry about it too much. So intellect is not my strong suit but it's not too bad. (personal communication, May 2, 2009)

The intellectual gifts of the collegians often spill out into the extra-curricular and social realms. The pervasiveness of these intellectual gifts and interests allow their abilities to be part of their personas as learners. Anthony feels that his intellectual strengths in analytical thinking and logic were of service to him while participating on the debate team. Peggy spoke of her need for intellectual stimulation, even in social settings, “I enjoy having intellectual conversations with people, even outside of intellectual settings. I’ll be at a bar talking to a guy and I’ll be talking about something intellectual like [science] or [humanities] or something silly like that” (personal communication, April 23, 2009). In addition to intellectual strengths, gifted collegians also remarked on the importance of creativity, often in conjunction with intellectual gifts.

Linda described her feelings on the tandem nature of intellectual gifts and creativity: “I feel like in order to be intellectual you have to be creatively thinking” (personal communication, May 2, 2009). Like many other participants, Linda recognizes the importance of her creative gifts in her achievements and in the talent development process. She talked about making up stories for her younger siblings that served as catalysts for her creativity and provided her with intellectual stimulation. Creativity was noted also in more traditional expressions, such as in music in Kristen and Clay’s experiences, but also in the pure academic realm. David feels that his college experiences have fostered creativity at greater levels than his secondary school experiences.

Creativeness, I would say that this has increased significantly during college; there was some during high school, but the work itself was too basic and it didn’t really lend itself to creativeness.... Dump it in and puke it out, you know, that’s

what high school's basically about. I had writing assignments and stuff but no independent research. Since college, I would say I've progressively gotten more creative and had the ability to exercise [my creativity] (personal communication, April 25, 2009).

Clay also mentioned that he enjoys doing projects that are creative. In high school he chose to participate in a world championship of Odyssey of the Mind over competing with his physics science fair project at the state level because of the value he placed on activity he perceived as the more creative. Creative gifts are not only integral to the talent development process, but, according to Clay and Linda, part of what makes the process worthwhile. Clay emphasized this point, "I hope I have a lot of [creative gifts], because those are the most fun to use.... I love being able to generate [creative ideas]; being able to think on my feet is something I value and am good at" (personal communication, April 18, 2009).

The majority of the participants described themselves as either intellectually or creatively gifted, or both. When I asked about their natural abilities, several participants also remarked on their social gifts. Kristen feels that working with others is one of her greatest gifts, and will benefit her in her chosen career of counseling. "I think I'm pretty creative socially; I think that's probably my strong suit...being socially gifted; I feel I work well with people and that I'm pretty good at mediating in groups and at resolving conflict" (personal communication, May 2, 2009). Those participants that did not bring up social gifts as a strength did not feel that they were weak in social skills, but that their social skills have not been factors in their talent development. As Jacob described, "I feel like I've had enough social abilities to be friendly and not feel depressed or isolated

because I don't have friends, but I don't think it's helped me to succeed" (personal communication, April 28, 2009).

I began the interviews with general questions about the participants' educational experiences throughout their lives, their natural abilities, and their influences in talent development. Participants shared information about their educational experiences, including gifted programming and acceleration opportunities. These opportunities allowed for the extension of their thinking, exploration of new topics and acceleration in their schooling experiences. The students also discussed their upbringing, specifically the impact of their home life, their faith, and their family on their talent development. Their upbringing helped to shape their personalities as achieving students, as well as provided support and encouragement from parents, siblings and teachers. Finally, we discussed their natural abilities or gifts, in intellectual, creative and social realms. These gifts are the building blocks of the talent development process, a baseline of skills and knowledge with which the talented individual can continue to develop. As the interviews progressed, I asked students to talk in more detail about their collegiate experiences and the impact they had on their talent development.

Collegiate Talent Development

Throughout the course of their three or four years on the campus of Southern University, gifted collegians have taken classes, explored research, joined clubs, explored their musical talents, and even started their own companies, all of which has influenced their talents and their future directions in life. However, other college activities have been integral in their success and talent development. Two participants were involved in honors programs, and many of the gifted collegians with whom I spoke discussed the

impact of their coursework, and out-of-class experiences. College is not merely a series of courses and programmatic opportunities to the gifted collegians in my study; they were impacted by environmental characteristics such as professors and peers, who fostered their motivation and provided encouragement in the talent development process. Finally, participants revealed their perceptions of the role of chance in their talent development process.

College Activities

Gifted collegians described many activities in college that contributed to their talent development; their learning, training and practice helped them to translate their natural abilities into developing talents. Only two participants studied in the honors program at Southern. However, all of the participants experienced some form of research, many for the purpose of departmental honors. Participants also discussed coursework, out-of-class experiences, the pace of their education, and their investment and willingness to take advantage of collegiate opportunities.

Honors Program

The Honors Program had an impact on the two gifted collegians that participated, either through the research or the housing component of the freshman honors program at Southern. For Clay, the monetary award to participate in research was the primary benefit of the honors program. A double major in the humanities and natural sciences, he conducts research through the science department in his primary concentration but is using his honors funding to accomplish summer research in his humanities major while residing in a southern state this summer, and is excited about the opportunity to do so. The honors program scholarship was also the reason Clay chose to attend Southern over

an Ivy League school. “If I hadn’t been offered the...scholarship I would probably be at [another school]. I had been accepted there, but after a long debate in my head, this is where I am and the... scholarship was a huge part of that” (personal communication, April 18, 2009).

David also spoke positively about the research associated with the Honors program, but living in the honors dorm during his freshman year had a much greater impact on him. He feels that it gave him the opportunity to be surrounded by a culture of his academic peers, who felt similarly about academics and the importance of focusing on work.

Socially, I think the way that there is an impact is that they are in your freshman dorm, you are less likely to be exposed to the active discouragement of things associated with your intelligence than you would be compared to a normal freshman dorm. And that’s significant being an [honors scholar]. In [the honors dorm], everyone else is much more likely to be kind of crazy like you. And so I think that people don’t realize that. And I think that was the most significant thing as far as the money or whatever, that was really just extra. (personal communication, April 25, 2009)

None of the other participants were identified for the honors program their freshman year, though many of them did complete, or plan to complete, the departmental honors program as seniors. Departmental honors involve conducting a research project; themes that emerged regarding research and the thesis experience are discussed in response to research question three, later in this chapter.

Coursework

General education requirements allowed these students to explore options outside of their initial interests. In three cases, general education courses led to a second concentration, and in one case, changed a student's concentration altogether.

Coursework was influential in the greater design for students; their experiences helped to change the course of their educational careers. Kristen described the impact of course requirements on her educational decisions, and her eventual career choice.

Everyone has to take [general education requirements], so I was thinking that [social sciences] would be interesting, I wasn't going to rule it out. I'd worked with disabled children at a summer camp in high school, so I was really interested in that [social science] aspect. I just wasn't sure that's what I would end up doing, but I guess just once I figured out that [natural science] was not my thing. That was my grade killer right there. I got Cs in both [natural science courses], and I just thought that maybe it wasn't the best decision for me. And it wasn't just that I thought that I wasn't getting good grades I'm not going to take it. The work was just such a drudgery and I didn't really like it, and I liked the [social science] classes so much better. (personal communication, May 2, 2009)

For Kristen, taking general education requirements altered her collegiate path, but also put her on the road to success and achievement that she may not have earned if she remained a natural science major. Peggy described the benefit in terms of engaging her whole self as a learner, "because of the arrangement of classes, I've been drawn into using the other side of my brain. If I had just been doing Science, I'd be much less

fulfilled.... But I've gotten to explore every venue and take fun classes" (personal communication, April 23, 2009)

Many of the participants felt that the courses within their concentration were helpful in their talent development. This was in large part due to the passion they had for their subject area. Taking more courses served to increase their already existing love for the subject area, and made their work more enjoyable. Clay felt that his interest increased exponentially with increased coursework, and that the courses themselves were the core of his intellectual development. "In taking tons and tons of classes, far more than the major requires, just doing all that work, going to all of the labs, and experimenting and working on research, that's where the lion's share of the development comes from" (personal communication, April 18, 2009). Coursework, both as general education requirements and within the concentration, was helpful to students in their talent development process. This more formal educational experience was bolstered by a variety of out of class experiences such as study abroad and campus groups that impacted the gifted collegians journey.

Out-of-class experiences

Out-of-class learning experiences have been helpful in developing talent for the gifted collegians. These out of class experiences varied from study abroad to positions as teaching assistants, and to extra-curricular activities. Disparate as they may be, they all gave the students experiences outside of pure academics that influenced their talent development through exposure to different people, cultures and opportunities. Several of the students also created organizations or businesses while at the college that also benefited their talent development.

Three of the participants had beneficial experiences with study abroad in Europe, Asia and Central America. All of them enjoyed the experience and feel that it contributed to their academic success by exposing them to different cultures and people that impacted their learning. Kristen's study abroad in a European country influenced her perceptions of culture and its impact on schooling. Her research within the study abroad enabled her to perceive her own culture in a different light.

The program was really to explore [a European country] and develop language skills, so I took one class that was the equivalent of [European] Civilization. We learned about the culture, we did a lot of reading, and a lot of literature and a lot of generally studying the culture. We were over there when they had the big European soccer tournament and that was really interesting to see, to look at national pride, so we did a project on that. I also did an independent study over there about immigrants in [the European country], especially the [Middle Eastern] immigrants. I got to interview different people, the equivalent to our department of education for the city, which was really interesting, taking a look at their structure of education, especially when you're bringing in immigrants, people who aren't naturally [European]. And in America, it's different, because we're really a melting pot, but for them it's just a little different.

Molly mentioned that overall, she enjoyed the experience, feeling that she succeeded in gaining a strong foundation in the language that she could apply to her future endeavors in Teach for America. She also felt that it was a learning experience for her in her social development, as she did not particularly like others in the program. "I didn't like a lot of the people in my program. And I was really upset about that at first and then I realized

that I don't always have to have really strong friendships... so that was a good life lesson for me" (personal communication, April 27, 2009). She described this personal development as helping in her journey to success as an important life lesson.

Jacob and Linda held positions as teaching assistants (TA) in their major areas. Described as helpful in their talent development and academic achievements, the experience allowed them to learn and process information in different ways in order to teach it to others. Jacob stated that his TA position assisted him further by focusing his career path in the academic world of his major area by fostering a desire to become a professor (personal communication, April 28, 2009). Linda shared her experiences in terms of planning and teaching as a TA, and how the process enabled her to gain a deeper understanding of her language and humanities concentrations.

Sometimes [the lesson plans] will say have them do an activity and talk about something and I'll have to come up with something that is stimulating. So I'll have to think about not just the language but the grammar behind it and the ways to interpret it. A lot of times there will be questions from the students about why we have to learn this grammar, and I'll say from a [humanities] standpoint, it's this and that. So I'm able to tie that in as well. So being able to help from both the [language] and [humanities] side of it seems to be clarifying for the students and for me as well. (personal communication, May 2, 2009)

A few of the participants remarked on the importance of extra-curricular activities, such as the debate team, musical ensemble, and orientation activities in their academic journey. These activities enabled the participants to utilize their intellectual strengths in settings other than academics, and to explore and develop areas of interest

outside their major areas. Anthony was a member of the Debate Team, and enjoyed putting his analytical thinking skills to use in another domain.

One of my close friends from freshman year joined [the Debate Team] her sophomore year and kept trying to get me to go and I eventually did. And just, I mean, I like it because the speeches you give are really short; you have to get in and out with six well-developed points so it removes a lot of the flowery language that English classes that make it difficult for me. And it just gets down to logically following things out and seeing how they play out or poking holes in peoples' logic, which is a lot better for me. Another thing is I kind of like working under pressure and so having to write or having to outline a speech that I have to give for 8 minutes during someone else's 7-minute speech; just it's fun. I don't know that I was particularly good at it but it's fun. (personal communication, May 5, 2009)

Kristen and Clay both participated in music ensembles, enjoying the chance to explore music as an activity for enjoyment rather than for class. Clay described his involvement as continuing an exploration of his musical talent for enjoyment; he specifically did not major or minor in music because he wanted to pursue it for enjoyment only.

Well, in high school, I had about eight friends who played [brass instrument] in the bands, and we all just loved to get together at marching band rehearsals and play music together, so I started arranging music for us. And I really enjoyed that so when I got here I wanted to continue that, I wanted to find a [brass instrument] group, and it took me a few semesters longer than I would have liked but I found three other people who wanted to come play. So now we have a running [brass

instrument] quartet. We have no instructor, we just bring whatever music the four of us have, and practice that once a week and then put on a show for whatever of our friends want to come see it at the end of the semester. [My second ensemble,] the big band on the other hand, a friend of mine put together. It's his dream, his baby. He haunted the practice rooms and when he heard someone playing really well, he would knock on the door and invite them to join the band that he was forming. And so that's another one where anyone who has music or who arranges a piece can bring it in and we rehearse more rigorously and we put on gigs eight or ten times a semester.

Molly actively participated in a service learning scholar program while at Southern University. This program helped her to hone her leadership and communication skills, useful in her chosen field in the future. She remarked, "I have kind of gained these leadership roles in which I'm facilitating conversations and facilitating discussions and leading reflection and doing a lot of trainings of my peers and I think that also helps me there as well." (personal communication, April 26, 2009)

Several of the participants in this study were budding entrepreneurs as well; their projects, ensembles and businesses fostered their self-initiative and encouraged them to take their personal and academic education into their own hands. Linda began creating videos on strategies used when studying foreign languages and they were picked up by a company; she is currently producing them as a business. David has two patents under review, both in software design. He also started a business on campus teaching speed-reading and time management courses to other students having as many as six employees and 125 students at one point. David spoke of the benefits of his speed-reading class,

“teaching the speed-reading class was especially helpful. I learned a ton from that, about how to run things, how to have employees, I was a good public speaker, I became a better public speaker” (personal communication, April 25, 2009). And, of course as discussed above, Clay started two musical groups on campus, and Kristen started a volunteer organization on campus. Another academic activity that impacted gifted collegians in this study is undergraduate research; this emerged as a separate theme in the their talent development process.

Research

Research has been a valuable experience for all of the gifted collegians in this study, as it furthered their practical knowledge in their fields, giving them hands-on experiences in the creation of experimental and research design. Some have worked as Research Assistants, some have undertaken research positions at other schools during the summer, and most conducted their own research in the form of a senior thesis. Most worked with a professor from class on their research project, and then developed the ideas into their own project. Molly remarked, however, that her research for her thesis was completely individual. Her procedure for finding a research assistantship was slightly more based on initiative and serendipity, “I just kind of knocked on doors of the people I was doing research with and asked them if they had any projects they working on because I was interested in getting research experience and they both had” (personal communication, April 26, 2009).

Kristen described the opportunities to do research as practical work that allowed her to extend upon and expand her learning experiences at Southern University. These experiences contributed to her education by helping her to gain knowledge in new and

different ways, and apply that knowledge in real-world situations. “So I think my hands on educational experiences have been the most valuable part. And I think that has helped me achieve the most and get the most out of my education here.” (personal communication, May 2, 2009) Several students remarked that their research experiences were preparing them for the rigor of graduate school, and their future professional lives; one participant is moving on to her Master’s, and three are going straight into PhD programs. The chance to spend so much time on undergraduate research was aided greatly by the pace at which the participants completed their education at Southern University.

Pace

Acceleration played a large role in the talent development process of the gifted collegians in this study by allowing them to complete multiple majors, take more electives, or graduate early. All of the participants came into their collegiate experience with substantial credits through Advanced Placement (AP) programs at high school; they were able to earn college credit or test out of requirements by virtue of taking an exam in high school. Once at Southern, they were able to explore more options and electives or to graduate in less time. The acceleration thus contributed to their talent development process by fostering the exploration of new areas of knowledge and broadening their educational horizons. Two participants graduated early, after six and seven semesters on campus. Anthony initially was going to use the acceleration provided by his high school to add a second major, but then elected to graduate early instead.

I started my physics major my freshman year, second semester by taking a sophomore class, [I didn’t take] the freshman year classes. I did a physics major

and tried to do a math major at the same time, [but I] eventually found out that there are some aspects of advanced math that I'm not too fond of and dropped down to a minor. Second semester my second year here I decided I was going to try to graduate in three years. Now it's the end of my 6th semester and I'm graduating. (personal communication, May 4, 2009)

Clay, however, wanted to take all of his concentration coursework in a science at Southern University so he used the acceleration to explore electives and ended up choosing to double major in Linguistics.

Coming in as a freshman I knew that I would be a [science] major. I knew that I enjoyed the liberal arts education ideal, so it was through taking general requirements that I found linguistics that year, and got interested in that. About a year and a half later I decided, oh I should make this another major. (personal communication, April 18, 2009)

Acceleration is not the only matter of rate of learning that emerged as a theme in the interviews. Students also discussed working quickly and slowly in terms of their daily coursework, not just the speed with which they moved through the program. Whether they moved quickly or slowly, a theme emerged that the optimum pace varies by person; students feel that the important thing is setting educational goals and working at whatever pace was necessary to achieve those goals. Linda said that she discussed pace in her study videos, and how she works at her pace, "I always tell people make sure you find your own pace that works for you. And for me that's just kind of going back to things at least once a week and just going through whatever book I'm working on" (personal communication, May 2, 2009). Clay enjoys his pace and does not feel the need

to alter it by taking more classes, studying abroad, or investigating scholarship opportunities that were recommended to him by the honors program advisors, as he feels comfortable with his chosen courses and activities.

I'm perfectly happy to spend my days here working at this pace. I have a certain amount of free time, which is just what I need. When I have too much work or not enough work, I get the same sense of problem in myself. I think it's just that day to day stuff that makes most of the difference. (personal communication, April 22, 2009)

Andrew felt that pace itself was not indicative of ability or talent development. "It's kind of weird though, I feel like there can be people who were gifted that can go at a normal or slow pace, and people who aren't gifted can go at a faster pace, so it's not necessarily indicative" (personal communication, May 12, 2009). Beyond pace, talented collegians also remarked on seizing opportunities and investing themselves in the talent development process.

Investment and opportunities

Seeking and undertaking opportunities is an important part of talent development according to the gifted collegians in this study. David spoke of the responsibility to use one's talents from his basis in faith, while Peggy considered her educational experiences from a cultural standpoint, having spent her high school years overseas.

Growing up overseas and experiencing different cultures, being exposed to different cultural ideas and seeing people who don't have the educational opportunities. I went to high school in the [a Caribbean country] and there was a little boy who didn't have shoes who lived across the street, well he lived in the

street. And driving down the street the rich guys had houses with semi-automatic weapons in front of their houses. They actually need them. So part of it is being aware of the opportunities that you have and knowing that you have to take advantage of them. (personal communication, April 28, 2009)

Linda began her video study series because she saw an opportunity and chose to try to fill it; David gave the same explanation for the computer software he has under patent consideration. Gifted collegians feel that part of the talent development process involves seeking and undertaking opportunities; courses are not the only source of valuable educational experiences.

Similarly, the investment of time, money, and energy is also a theme that emerged from the interviews. David considered investment important, sharing a story about a student from his hometown.

If I was going to emphasize one thing it would be that investments is [sic] unbelievably foundational in the progression from abilities to competencies and in the improvement of natural abilities. I don't really think it's just another subcategory that's as big as your family or whatever. I don't think you can overstate that. I think that if I were going to give a story that there was a kid, not actually, this would be a good example, not too extreme, there was a guy who swam with me. He was exactly as fast, almost as fast as me and in some ways we were equal, and at the end of you know, high school, we took, you know you take your ACTs, your standardized tests. He took his ACT and his verbal score was the same as mine. Right and we were on the team together and I was really smart and he was fine but I was the smart kid, right but I actually think based on just

talking with he [sic] that he was very smart. I actually think that it's entirely possible he was as intelligent as I was in the verbal capacity, but he chose a different path. He chose to have a lot of fun, he chose to take easy classes and he is going to have a fun life. But he also has a level of social competency which is high. And so he also chose to use that and maybe he's developing that later and I appreciate but none the less, the condition, and he went to a local college, Ohio University, and didn't use the juice he had, at least with respect to that. So I would say that, I can't overemphasize the importance of that path of life.

(personal communication, May 2, 2009)

College is an integral time in the development of gifted students as many choices are made that can impact a gifted collegians' future (Albert, 1994). Students are exposed to a variety of college activities, such as honors programs, coursework, out of class experiences and research that can all have an impact on their talent development. Additionally gifted collegians make choices about pacing through acceleration and their level of investment and desire to undertake opportunities; this can greatly impact their talent development as well. These choices are often helped or hindered by the people in their lives and the culture of the college.

Environmental Characteristics

Gifted collegians at Southern University do not exist in a bubble; they are surrounded by people, buildings, and a collegiate culture of academic excellence. The extent to which individuals are affected by their surroundings varies, but many of the gifted collegians in this study remarked about the importance of environmental forces on their talent development. The culture of Southern University is one of those forces, as it

nurtures the gifted collegians' affective nature while the coursework nurtures their academic minds. People are instrumental not only in establishing this culture, but as individual influences on the gifted collegian, as role models, teachers and systems of support. This section discusses comments from the gifted collegians regarding the culture at Southern and individuals that had an impact on their talent development, such as professors, peers and parents.

Culture

The culture at Southern University has an impact on the gifted collegians' talent development by creating an environment of respect, encouragement and academic excellence. Faculty, students, administrators, and environmental surroundings all work together to comprise the culture of the college. Clay described the culture as one of encouragement and respect; this culture encourages him in his academic pursuits and helps him to develop not only intellectually but personally as well.

One of the best things about [Southern University] is you don't have problems of jealousy when it comes to intelligence and talent, you don't have people sabotaging each others' projects like you might hear about at med schools, in order to drop the curve or make their own grades look better. [Here, even if] someone thinks you're way smarter than them, they're not going to get upset that you got a 60 point better test score. They're not going to look angrily at you every time a big assignment comes back and they know you did better. They're going to be supportive of that. You can just trust that everyone just has a lot of mutual respect for everyone else. ... That sort of environment here is incredibly beneficial. (personal communication, April 18, 2009)

Anthony shared that the culture inspired him to focus on his own potential and his education, "I guess it's the culture here. Southern is the place where everybody is dedicated to their academics. And everyone is a nerd. It has helped me to care more about school" (personal communication, May 12, 2009). This environment of respect and encouragement was mentioned by several of the participants as impacting their talent development through the emotional support it offers. The culture is fostered by peers as well as faculty and professional staff such as administration and student affairs staff. These individuals make a great impact on the gifted collegians in this study.

Individuals

The gifted collegians all remarked on the impact that individuals have on their talent development, as role models, teachers and supporters. Different participants place different weight on the various individuals; some feel a greater impact by peers more than professors, for example.

Clay experiences a greater impact on his development from peers at Southern University, and notes how they contribute to the culture of the school. Clay feels his peers are supportive in his intellectual pursuits, and this encouragement fosters his success.

At [Southern] it's an environment of respect and peers, and people who will praise you for your gifts rather than being jealous and upset that you got an A and they got a C. And that's just absolutely crucial to me, that's the biggest thing about this place, is that you can talk to each other and get respect and encouragement from everyone and know that they're intelligent enough to follow you when you explain what's going on. And so looking at individuals I would

place a lot of value in the peers here. I still talk to my family but they don't have the same direct influence and I talk to my professors on friendly terms. ...My professors have opened a lot of doors for me, but [they] haven't worked like that supporting actor in a movie who is providing all the insight and enlightenment. I have not had a mentor in that sense. (personal communication, April 22, 2009)

The gifted collegians describe their friends and peers as the same group; they became friends with their intellectual peers, meeting through classes and other activities. Kelly also described her relationship with her friends as a symbiotic, encouraging relationship.

I think it's just kind of encouraged me, a social norm type of thing. If I'm not doing well in school, I'm going to get upset about it, and they're going to say, "oh, you know, let me help you". They're also very encouraging of doing well and being successful. Your friends want to see you succeed just as much as they want to succeed. That's been a nice thing. My friends are very good people, they're very giving people, they're also inspiring people, they volunteer a lot. We just kind of feed off of each other. (personal communication, May 2, 2009)

Peers create a network not only of friendship and emotional support, but of intellectual and academic support as well. This supportive network is complemented by the participants' relationships with their professors.

Participants benefit from professors at Southern University who are friendly, open, encouraging and helpful. Several students remarked that they count their professors among their peers and friends. Anthony discussed the professor who was also his advisor; he challenged Anthony intellectually, while at the same time providing intellectual and emotional support.

There's that same professor from that one class that wound up being my advisor and he was tough as an advisor but in the same way he was really encouraging. He was never so tough that I was frustrated and just couldn't do anymore but he was encouraging and patient and pushing pretty hard at the same time. I'd say that helped a lot too. (personal communication, May 5, 2009)

Clay's first exposure to a professor in his science major at Southern was a positive experience, allowing him to develop relationships with other faculty over the course of his years at Southern.

In the second semester freshman year, I got a good vibe from my professor...who I went to talk to the next fall, and got working in his lab, and so that's been my part-time job for the past two years, doing research with him in his lab. And pretty much all of the [science] professors are really open, welcoming, the undergrads can go approach them. I'm on good terms, friendly terms with several of them, just having been in their class, I can still talk to them. (personal communication, April 18, 2009)

Kristen also had positive experiences with professors, finding them to be accessible and encouraging. Their willingness to meet with her in the evenings, on or off campus, and help her to make decisions about her academic progress influenced her talent development. One important conversation with a science professor helped her to take a realistic look at her academic potential and the future of her education at Southern. She changed her major and career path

...after talking to my first [science] professor. [My professor], he's an interesting man. He sat down with me. I had been going to him almost every week, saying

that I need help, that I really feel like I'm not understanding the material but I study every night. I felt it was getting a little ridiculous. And he said that maybe you should just try something else, if this isn't working for you. Some people just don't click with whatever. Look at the other classes you're in, look at your grades, see what you like. If you don't like anything right now, just try something else. And I thought that was really encouraging, even though the first words out of his mouth were asking me if I had considered withdrawing from his class, but after that he went on to explain that, maybe you just don't fit with [science] the way you do with other subjects, and maybe you'd be better at something else. So he helped me realize that maybe I didn't have to go to med school just because I was at [Southern], I don't have to be a lawyer. I guess what he was trying to tell me was that I could be whatever I wanted to be when I got here, and that I didn't have to fit a stereotypical mold.

Southern professors served not only as teachers, but as role models, confidants, advisors, and even friends to these students. Their support and encouragement has helped them to make decisions about courses and future career paths, and continually motivates them to succeed in their chosen field.

The influence of parents on participants' talent development process during primary and secondary school was discussed earlier in the life history section. Parents continue to be influential on the participants once they entered college, though the relationships have changed due to the geographical distance imposed by traveling to college, and the parents' goal of helping their children to become independent.

For most of the students, a level of communication with and certain support from their parents continues, but their day-to-day role in the talent development process has changed. Clay noted that during secondary school his parents maintained an expectation that he do his best in terms of grades. His father would ask about his grades on tests and assignments, and as long as Clay said that the grade, whether A or C, was the best that he could do, his father was proud. Since Clay arrived at college, his father has been far less focused on grades. Though they talk regularly by phone, the subject of grades only comes up at the semester's end when grade reports arrive at his home. Molly has a similar relationship with her mother.

It's just different. It's more distant now. [My parents] don't know every time I have an exam. They don't know how I do and I have the liberty to tell [my mom] or not tell her as I wish. It's also become more personal now as I want to do well because I want to do well. I'm not doing well because my mom wants me to do well. I know I have the ability to achieve highly and that I want to achieve so it's again my motivation to do so. Which I appreciate, but my parents are still very supportive and my mom is still very proud that I've done well and have done work. (personal communication, April 26, 2009)

This supportive but more distant role of parents is due to the increased physical distance, as well as a desire on the part of both the parents and students to achieve greater levels independence on the part of the students. However, technology such as cell phones and email help to close that distance, according to participants.

Chance

Whether it is labeled kismet, luck, or serendipity, chance plays a role in talent development, as it plays a role in life in general. As one of the final questions in the first interview, I asked collegians to describe a time that luck or chance influenced their lives. Most collegians attributed at least some of their decisions, opportunities, or achievements to chance. Clay contributed his freshman scholar membership and his second major to luck.

I would like to say that many parts of the [Freshman] Scholarship process were luck because I mean, my dad found out about it and told me to apply, and if he hadn't, I would have never known about it. And you know, that's obviously good luck. In terms of [my humanities major] here, I by complete chance satisfied that general requirement and not one of 12 others my freshman year, and if I had taken a humanities course later, or had taken a different kind of course to satisfy that requirement, then I might never have approached the idea of majoring. (personal communication, April 28, 2009)

Clay attributed a great deal of his environmental catalysts to chance, such as being born into his family, attending the schools that he did, and meeting his peers and professors. Jacob also attributed a collegiate opportunity to chance, feeling that his job as a TA came from a series of fortunate events.

It's related to being a TA—I understood the material, I was pretty good at it. But it was also a bit of luck that it happened. He emailed several people, I was one of two or three people that got a perfect score on the last final or got the top grade in the class. So it was a bit of luck that I was the first to respond and the most

persistent one. It was a bit of luck. He also had a policy that if your final exam grade was better than your previous three, than your final grade would be your whole grade. So I had a pretty good A coming in, but I'm pretty sure I got a perfect score on the final, so I got a perfect grade. It's a bit of luck that happened. I wasn't there for the last class, and I randomly asked my roommate what we did and talked about on the last day and the concept he went over was something I hadn't studied and then it turned out to be one of the short answer questions, so it was a bit of luck that happened. (personal communication, May 4, 2009)

Peggy and Molly attributed their research to luck. In Peggy's case, a professor fortuitously approached Peggy with a topic and asked her to join on the research project. Molly put forth personal effort into finding a research opportunity, but she said it was a result of chance that the doors she knocked on opened. "I knocked on doors asked [professors] if they had any projects because I was interested in getting research experience and they both had projects going on. So I was definitely lucky they happened to have something for me" (personal communication, April 26, 2009).

Not all gifted collegians put their faith in chance; Kristen feels that events transpire following God's general plan. "I don't believe in chance or luck too much.... I feel like there's purpose for everything. I feel like God has a general plan laid out, some of the details may not necessarily planned out, but the big things are" (personal communication, May 4, 2009). Kristen felt that God arranged the big details of her life, but that she was instrumental in making the little things happen; her serendipity was still provided by an outside force, by her faith.

Conclusion

Those gifted juniors and seniors at Southern University who were asked to participate in interviews as a result of being outliers in the survey agreed to participate in my study on the talent development process of gifted collegians. They spoke at length about their college experiences, the courses and research opportunities that challenged them academically, as well as the culture of the college, which provided support for their intellectual and personal growth. They shared stories about their professors, peers and parents who contributed to their talent development, by serving not only as encouraging forces for the students, but as positive role models, advisors, and friends. Peers and professors also establish a climate of intellectual respect and academic excellence that foster the participants' talent development. Finally, the students for the most part believe that a certain amount of serendipity or luck has provided them with opportunities for their talent development. This chapter dealt with the external forces on the talent development process of gifted collegians; the next chapter discusses the internal forces on participants' talent development.

CHAPTER VI

CONVERSATIONS WITH GIFTED COLLEGIANS:

INTERNAL CHARACTERISTICS AND REFLECTIONS

In the previous chapter, I presented findings from my interviews with gifted collegians that focused on the external or environmental components of their talent development process. The students in this study were also strongly driven from within. During the initial interview, they reflected on the internal characteristics that enabled their achievements and in the development of their talent, such as awareness of themselves and others, motivation, and volition. During the final interview, I asked participants to reflect on their talent development process and to talk about what factors made a difference in their talent development.

Internal Characteristics

As part of the interview protocol, I asked gifted collegians about the internal aspects of their talent development process, such as personality traits or characteristics that helped them to succeed. Students remarked on their awareness, both of self and others, that allows them to recognize their strengths and weaknesses and helps them to work with others. Participants also discussed the motivating factors in their talent development process, such as their values, preferences and interests; their passions motivate them to achieve. Finally, gifted collegians discussed the will power necessary for the talent development process; self-discipline is an essential component of their success, as they are responsible for and accountable to themselves.

Awareness

For gifted collegians, their level of awareness, either self-awareness or awareness of others, impacts the talent development process. Being aware of others helps the gifted collegians in meeting the others' needs while working as assistants or working as part of a team. Awareness of others also helps the gifted collegians in their awareness of themselves; it provides a base by which they measure their own achievements and efforts and enables them to learn about possibilities from other talented individuals. Their self-awareness helps them to set realistic goals and to recognize their own limits.

Linda specifically remarked on a level of comfort with her race setting her apart. As the only African American student in her department, she said that she enjoys being different and recognizes that these differences have brought her opportunities.

I'm African American but I grew up in just a normal white American suburban environment and my Dad really pushed to create opportunities. He said that I could really shine, so that always felt like a pressure because I was the one person who stuck out [because of my race] and I wanted to make sure I was sticking out well. So that kind of played in a little bit. I think it kind of made me more aware of myself so I just really wanted to push hard. Because if people are going to notice me, I might as well be pretty awesome.... But it's just become a motivation to me because I like being set apart. I've gotten kind of comfortable with it. (personal communication, May 2, 2009)

Linda went on to describe how meeting others helps her to be more aware, not only of others and how to help to meet their needs, but of herself; it enables her to reflect on her own possibilities by seeing the range of others' abilities and skills.

The more people I meet, the more I can understand people and the better I can understand how things work for people. For [my TA position], I know that some people like to talk or read, so I try to hone in on their strengths, and help them as well.... In terms of my own achievement, being able to see a lot of people makes it easier to be able to see myself. And just being able to gauge where I am and where I need to be, not even where I need to be, but where I could be. Meeting a lot of people is really helpful in finding out what's realistic for myself. (personal communication, May 2, 2009)

David is comfortable with his giftedness, and level of intelligence. His self-awareness enables him to understand his own strengths and weaknesses, which allows him to set and attain realistic goals:

I was always very comfortable with the idea that I was gifted. I was already aware of the fact, so the identification didn't help me. That was not a revelation.... You have to be aware of what you're good at and what you're not. If you don't know that, you're going to end up competing in fields where you're going to lose. And you have to understand why you're good at things and why you're bad at things. And that lets you choose fields you're going to excel at. You have to be honest about where you are in the gifted spectrum. It does no good to assume that I'm a genius, and it does me no good to say that I have a 75th percentile intellect. Both of those are false statements, and I have a very strong perception of what it requires to be a genius, and so I do not believe that I meet that criteria. It does not mean that I might not be wonderfully successful, but it

does mean that my IQ does not meet that threshold; it meets gifted, but not genius. (personal communication, April 25, 2009)

Peggy commented that she feels that she has a level of awareness of others that assisted in her talent development. She feels that talent development often depends on being aware of others, because achievements may depend on others' work and support. Peggy commented, "I think I'm aware of others. I'm aware of other people's strengths and weaknesses, and how to work around them to [my] benefit and their benefit too" (personal communication, April 23, 2009). This level of awareness helps in the talent development process in terms of helping to set limits and goals for oneself and creating an awareness of possibilities through exposure to other talented individuals, as well as to recognize the strengths and weaknesses of others and how they might help or hinder the talent development process.

Motivation

All of the gifted collegians listed motivation as a compelling force in their talent development. For this study, motivation is defined as press for accomplishing what a person sets out to do, the goal-setting behaviors such as forming interests for the content, having a value for achievements (Gagné, 2009). The gifted collegians feel that their internal motivation helps them to get things done, and contributed greatly to their success by providing the impetus to work to the best of their abilities. Peggy feels personally motivated to do her personal best, "With motivation, I always want to get an A in life. I want to excel in everything I do" (personal communication, April 23, 2009). Motivation can be extrinsic and based on outside forces such as individuals, such as the examples discussed in the last chapter, or intrinsic. Students' competitive nature and their passions,

for learning in general or for specific subject matter, can also serve as intrinsic motivation.

Competitive Nature as a Motivating Factor

For gifted collegians in this study, competition is a motivating force for achievement. Competition is defined by the students in several ways: as internal competition by which they push themselves to be the best and by competition with their siblings in which they push to excel at higher levels or different areas than their siblings. Competition in either case serves as a motivating force, encouraging gifted collegians to excel in their talent fields.

Jacob and Peggy both described being very competitive with themselves ; their inner competitive nature forces them to strive for excellence in their work. Both described their goal as excelling at the top of their personal ability but not necessarily trying to surpass others; they continually strive to do their personal best. Jacob said, “I’m competitive. Personally, though, not against others, but top spots in economics, [I am] determined to be really good at my own thing (personal communication, April 28, 2009). Peggy also declared, “I’m very competitive, but mostly with myself, not with other people. It’s a better way to deal with things” (personal communication, April 23, 2009). Peggy described this kind of competition as very healthy, a form of motivation that pushed her in her talent development process.

For Anthony and David, competition exists primarily with their siblings, specifically their brothers. And this competition pushes them to excel. Anthony’s competition with his brother fostered his drive for excellence in his talent field. “I’m the second child and I’ve found that as much as I don’t want to be, I’m locked in a

competition to be better than my older brother. So there's that aspect of it. I like impressing [my family]" (personal communication, May 5, 2009). His competitive nature is a motivating factor in his talent development process.

Personal Interests, Values and Preferences as Motivating Factors

Intense interest in learning about their content areas fosters the growth of the gifts of the participants. These passions and preferences serve as motivating factors for the gifted collegians; their interests in the subject matter and general preferences for learning more makes the devotion of time and effort less onerous for participants, while their values for academic excellence compel them to focus on academics.

Molly discussed her varied interests and motivation to learn about those interests as essential for her talent development process, as her interests helped her to focus her attention and motivate her to learn more about her interest areas.

I have very diverse interests in what I like learning about. [I] have been able to self-motivate myself to... find resources that I can use to... educate myself about things that I might be interested in if I feel that I have not been getting that information from my classes. (personal communication, April 26, 2009)

Some gifted collegians remarked that personal values and preferences are important for the talent development process, because preferences shape their personalities and contribute to their work ethic. According to Jacob, for instance,

Preferences in general [are important]—how you have a preference for studying or not studying and playing football and hanging out with friends. Why people have these preferences—it is [a] random process.... Some people like apples, some like bananas, I think the same goes with academics and studying. I don't

know where that fits in, maybe motivation, but I think preferences is a little different. Maybe it fits with abilities, in terms of it's not just the skills you were born with but the tastes and preferences you were born with, I feel has helped a lot of people succeed. (personal communication, April 28, 2009)

Gifted collegians specifically called attention to a personal value of success in school as a motivation for talent development. Students feel that success as a personal value is important for high levels of achievement. Without this value, students would not be challenged to perform at their personal best. Jacob put forth effort into his studies because he strives for academic excellence:

I've always put a big value on how well I do in school, getting good grades, succeeding is important to me. Maybe a little bit too much at times. I basically really enjoy what I do and what I study. I probably wouldn't be doing as well if I didn't really like what I was doing. That's very helpful in my talent development. (personal communication, April 28, 2009)

Passion for learning in their talent area was cited as integral for the talent development process by all of the students. From social sciences and natural sciences to humanities and languages, gifted collegians love learning, especially in their content areas. The majority of students also mentioned that they enjoy going to class, learning and completing assignments because of their interest in learning and the content area. Because of this passion, gifted collegians to continue to pursue their talent areas.

Clay remarked on the great pleasure that he experiences when working on a physics problem set and the satisfaction he receives when obtaining the right answer in the end. Many of the participants shared a passion for learning that extended beyond

their majors into any academic field they were studying. When probed about the love he felt for learning, Jacob stated, “It’s like the quote ‘if you enjoy what you do you never have to work another day in your life.’ I enjoy it so I don’t mind spending a lot of time on it, or starting early on it” (personal communication, April 25, 2009). This love of learning and passion for their subject areas make the decision to spend a great deal of time on their talent development easy; since they derive enjoyment out of their academic pursuits, they are motivated to continue to explore them.

Volition

Gifted collegians at Southern are intrinsically motivated; they are genuinely interested not only in their content areas but in the process of learning. Participants also exhibit volition in their talent development process; they put forth a great deal of effort, and are self-disciplined. Though motivation describes what inspires the gifted collegians, volition refers to the degree of motivation, or the effort they are willing to put into their talent development (Gagné, 2009). Participants described high levels of self-discipline, drive, and effort that are instrumental in order to achieve and be successful in their talent areas.

For the gifted college students in this study, self-discipline is important in working toward talent development; they need some measure of drive or self-control in order to accomplish their goals. Self-discipline was described by the participants as a form of drive, willingness to work, or focus that allows them to achieve. All of these describe the effort that the gifted collegian must be prepared to put forth in order to succeed in their learning environment.

Peggy described her self-discipline by saying that she was able to get things done on her own accord. She credits her self-discipline to her experiences being home-schooled from kindergarten until high school. “If I need to do something I’ll set the goals and I’ll do it myself. I don’t need someone on my back telling me that you have to do this by this time and this date. It’s very much self-disciplined” (personal communication, April 23, 2009). David described his process of self-discipline on his daily schedule, which includes the elimination of irrelevant tasks.

I actually have a system that I’ve implemented recently, which is good for me because I already thought this way. It’s *Getting Things Done* by David Allen, and so I have this excel sheet on my computer and it governs my life. And every major project that I have in my life relates specifically to a life goal that I am trying to achieve. I really try to get away from any project that doesn’t relate (personal communication, April 25, 2009).

David recognizes the importance of the skill of organization to maintaining his focus on his immediate goals that in turn achieves the maximum long-term success. Clay gave an example of completing work expeditiously, by setting personal goals in terms of the timeliness and quality of his work:

If I’m given an assignment due in a week, I like to do it the next day, the day after, as soon as possible. It keeps me ahead on work and allows me to get more done, and allows me to turn in a better representation of my best, because I can spend more time on the [assignments] if I need to. (personal communication, April 18, 2009)

Gifted collegians also described volition as a self-imposed focus or drive that enables them to pursue their talents and work towards their achievements. David said that focus was key in the talent development process, helping to hone his abilities. “I think that the focus is how people turn a natural ability to a competency” (personal communication, April 25, 2009). Other participants described a dedication, a persistence in completing tasks that overcomes obstacles. Linda said that she gets things done through “a lot of my own perseverance to get through things and my desire to get whatever it is that I’m pushing for at that time” (personal communication, May 2, 2009). Her dedication sees tasks through to completion. For Anthony, everything boils down to his own desire to meet his goals; he feels that he is where he is today because he put himself there. He said, “Even if everything else [abilities, pressure from other people] were there, if I chose to be lazy, or if I didn’t want it enough then, well, things could have gone a very different way” (personal communication, May 5, 2009).

Willingness to put forth effort is important for talent development according to the gifted collegians; their successes are not easy to achieve, but require a great deal of time and effort on their part. David recognized early that the gains he would receive from exploring the unusual would reap more distinctive benefits than merely following an easier road.

The level of my autonomy and effort has been very significant and without it I absolutely would not be where I am. There’s just no question about it. If I had just taken the run of the mill and just been president of preexisting clubs and just taken whatever classes, my grades in high school would have been marginally

better, but I would have been significantly less advanced in my talent development. (personal communication, April 25, 2009)

Molly also described being dedicated to persist in her work. She sets goals and works to achieve those goals.

I have a lot of self-motivation, in that if I want to do something, I'm aware that I need to take steps to make sure I attain it and I'm pretty good at following up with that. At the same rate, I work very hard, I think, and that I'm willing to put work into things that are important to me. So I motivate myself to work hard.

(personal communication, April 26, 2009)

Whether labeled self-discipline, dedication or effort, gifted collegians concur that some amount of personal drive or volition pushes them to get things done. When we discussed this intrapersonal catalyst during the interviews, the gifted students relayed that it was a great factor for them in their talent development process and without some kind of internal drive, they would not have achieved their present state of development. All of the participants mentioned the need for this, though Clay mentioned that he would perform better if he had more self-discipline or drive, saying "If I had a more intense drive, if I had the sort of interest that would lead me to read current physics literature in my free time, [I'd be further along]. Kids like that are going to go way further than me, I'm sure" (personal communication, April 18, 2009).

I asked the students about their personality traits that may have impacted their talent development. Jacob tips the balance toward intrapersonal skills over his natural abilities. "I think it's more based on how motivated you are. What you see in terms of what I've achieved is more of my work ethic, so my achievement has been more affected

by my intrapersonal traits [rather] than my natural abilities” (Jacob, personal communication, April 28, 2009). Many students put a great deal of emphasis on these internal characteristics, such as competitiveness, motivation, drive and willingness to work. Others, such as Kristen and Clay feel that any internal characteristics are secondary compared to the influence of individuals on their talent development. In the final interview, I asked students to reflect on all of these factors, and asked them what elements make a difference in their talent development process.

Reflections on Talent Development

After the first interview, I transcribed the tape-recorded interview and sent it out to the participants via e-mail. This effort had two purposes. First, it allowed for member checking; participants were able to read through the transcription to discern they were clearly understood. All interview participants felt that the transcriptions were representative of the interview session. My second purpose was to allow the students to revisit the interview prior to the second interview and reflect on the discussion and on the talent development process.

After allowing time to clarify anything from the transcriptions, the second interview was devoted primarily to reflection on the talent development process. During the course of the second interview, I explained Gagné’s (2009) DMGT, to the participants, and asked them to think about the aspects of their talent development through the lens of the model. I asked students to comment on the model, detailing any experiences that they felt were commensurate with the model, anywhere they felt that they deviated from the model, and anything that they felt impacted their talent development that was not included in the model. All participants felt that the model

made sense and accurately described their talent development. The following section describes aspects of the model that students commented on that differed from the previous interviews, physical traits. The section concludes with the students' answers to Gagné's *What Makes a Difference?* Question. I asked students to rank order the four components, gifts, intrapersonal catalysts, environmental catalysts and developmental process, into an order that suited their perception of the components' impact on their talent development process.

Physical Traits

When presented with the mental and physical traits (intrapersonal catalysts), three gifted collegians remarked on the impact of physical traits in terms of race. None of the other participants mentioned physical traits, nor said they had any effect on their talent development process. Linda was the only African American participant in this study. During the first interview, she did not comment on her race at all, but when presented with the physical traits section of the DMGT, she remarked,

I could always remember being the one black person or the one girl in my class so that's just been a constant thing throughout my educational process... I like to push the fact that I'm unique now just cause it gets me a lot of places, but it seems pretty normal here [at Southern University]; there are a lot of very different people. But to me it's just become a motivation sort of to me because I like being set apart. [I've] gotten kind of comfortable with it. (Linda, personal communication, May 2, 2009)

Linda had slowly gained an appreciation for how her race sets her apart, and what her raced has enabled her to accomplish.

Molly and David recognize the sociological impact of the physical characteristics that accompany race as a member of the majority population. They both commented that they were aware that their physical appearance may have helped them, and most likely did not hinder them in their talent development process. Molly recognized that her skin color had a lot to do with her opportunities and thus talent development, because she is Caucasian. Molly said, “skin color I think that definitely has a lot to do with it, I mean it allows me to do more because I am in the majority” (personal communication, April 27, 2009). David feels that he has an edge as a result of another physical trait.

Sometimes the way people look matters a lot, and so that’s just really unfortunate. So my voice is helpful. If I had a high voice, people would not view me as, as credible... it’s not super deep but it’s effective at commanding dogs, children, and large groups of people. Well, I mean, it’s so stupid, but it matters. (personal communication, May 2, 2009)

The rest of the participants either did not comment on their physical appearance, or said that they felt it did not have any bearing on their talent development process. Even though students commented that they were normal, not disabled, and of the majority race, they believe that their physical traits have not been influential in their talent development process.

What Makes a Difference?

During the final phase of the second interview, gifted collegians were presented with Gagné’s (2009) DMGT and asked to rank order the four factors in the model in terms of what made the most difference in their lives (see Table 9). Three participants ranked the aspects in the following order: intrapersonal catalysts, gifts, developmental

process and environmental catalysts. Three others ranked the constructs in this other: gifts, environmental catalysts, intrapersonal catalysts, and then developmental process.

Table 9

Gifted Collegians' Rank-Ordered Constructs

Collegian	Rank			
	1st	2nd	3 rd	4th
David	Gifts	Environmental	Intrapersonal	Developmental Process
Jacob	Intrapersonal	Gifts	Developmental Process	Environmental
Anthony	Intrapersonal	Gifts	Developmental Process	Environmental
Kristen	Environmental	Gifts	Intrapersonal	Developmental Process
Linda	Intrapersonal	Gifts	Developmental Process	Environmental
Molly	Gifts	Environmental	Intrapersonal	Developmental Process
Clay	Gifts	Environmental	Developmental Process	Intrapersonal
Peggy	Gifts	Environmental	Intrapersonal	Developmental Process

The remaining two both ranked environmental catalysts and gifts in the first two slots, but in opposite order; they also ranked intrapersonal catalysts and developmental process in the final two positions, again in opposite order.

One finding that emerged from this rank order is that gifts are considered highly important to the students, as the construct was either first or second in all lists. Molly began with gifts, saying that her natural abilities started the ball rolling. She conceded to the influence of other factors, such as people and motivation, but said that those factors are still inspired by the gifts.

I guess I would say that I would start with my gifts just because I think that kind of inspired a lot of the other things that have definitely influenced me strongly but I think those were encouraged by the presence of some natural gifts. (personal communication, April 27, 2009)

Andrew listed gifts second to intrapersonal catalysts. He felt that that the willingness to work and put forth effort may inspire someone with few gifts to perform highly or the lack of putting forth effort may inhibit someone with many gifts not to succeed.

Gifts, just having the natural predisposition can certainly help you. I feel like there are people with the intrapersonal catalysts who aren't as gifted but that could reach the definition of talent, but I think there are people who have the gifts but don't have the intrapersonal catalysts that won't be able to make it there. I do agree that it is certainly pretty important. (personal communication, May 12, 2009)

All of the participants feel that their gifts are integral to the talent development process; without their individual gifts, they would not be where they are today. However,

as we discussed gifts within the context of talent development specifically, the students feel that gifts alone are not a sufficient basis for their talent development. Effort and training in the area of gifts were suggested by several of the participants as other requisites for talent development. David remarked on the need for the gift to be culturally valued, as he was discussing the differences with his sister, who struggles in reading but is quite gifted musically:

I think my sister and I don't talk about it but it's not really fair. Because her area where she is mentally quite capable [and] I [don't excel] is music. But her area where she's the bottom... is reading. She's dyslexic. And it's just, if we lived in a culture that valued musical ability, I would be the one that would be having all the problems, who would be having to make excuses to compensate. And so I just lucked out, she got the remainder. (personal communication, April 25, 2009)

Whether ranked first or second, the gifted collegians agreed that the presence of natural abilities is integral to the development of talent. As Peggy stated, "you have to have the natural base, to have something to work with" (personal communication, April 28, 2009). Overall, the collegians recognized their gifts, and feel that these natural abilities are a factor in their talent development, but they are not the only factor, as the impact of intrapersonal and environmental catalysts works in conjunction with these gifts.

Developmental process generally ranked towards the bottom of all of the participants' ranked lists, either third or fourth for everyone. Kristen ranked developmental process last, feeling that the other factors have a much greater impact, and that the developmental process is more the finishing touches. Molly also ranked developmental process last, remarking that it influences her in terms of educational

progress, but not to the same degree as gifts and the catalysts, “I guess finally the developmental processes. So I do think it influenced especially like my progress and like, the way I made progress but probably this is number four” (personal communication, April 27, 2009). It is important to remember, though, that despite the tendency to have lower rankings, developmental process was not discounted. Several people noted that the investment part of developmental process has been especially important. Peggy stressed the impact of people willing to invest time and money, and David felt that the investment of effort has been a necessity for talent development.

A final finding concerns the ordering of the catalysts. All participants ranked either intrapersonal or environmental catalysts first or second. A catalyst of some kind is considered important by all participants, but it depended on the individual as to which made a larger difference. Gifts alone are not enough without either factors such as motivation or other people to support the gifts and encourage the gifted collegians on their talent development journey. Three of the participants ranked intrapersonal catalysts highly. Andrew explained, “I would say the intrapersonal is definitely the most important. If you’re not willing to push yourself, if you don’t want it enough then it’s just not going to happen” (personal communication, May 12, 2009). Participants who ranked intrapersonal catalysts high put the impetus of success on their personal motivation, desire, drive, and willingness to put in the work to get things done.

Five participants ranked environmental catalysts high, placing a great deal of importance on family upbringing, the influence of individuals such as family, peers and professors, and the culture of Southern University. Kristen placed a great deal of emphasis on the importance of her family in her talent development.

I would say environmental, just because I feel like everyone can still be encouraged to do things; I was definitely encouraged to be the person that I am today by those people that I was surrounded by and I guess also by the people that I chose to be around but definitely my family and I mean you can't pick your family. I think that if I had been in a different family I would definitely be a different person. Entirely. I think I would probably not be as social, creative, or, I mean, I don't think I would have been as intellectually stimulated without the people in my family, so I think that attributes to a lot of this over here in terms of developing a kind of natural ability. (personal communication, May 4, 2009)

David feels that environmental catalysts were especially important during the college years. College, according to David is an integral time in a person's life, and the effects of the environment are great during this time, "college is foundational and people make mistakes they never recover from. People do right things here that benefit themselves for possibly ten or fifteen years. It's extremely important. So I think it's a good window to grab people" (personal communication, May 2, 2009). Clay tied in chance with the environmental catalysts, stating "environmental factors, that's where I have a huge amount of luck in where I was, that's where chance was unbelievably good to me" (personal communication, April 22, 2009). He felt that he had a great deal of luck in his environmental surroundings, specifically his schooling, both secondary and college, his parents, his peers and his professors.

Overall, their gifts have made a big impact on the gifted collegians' talent development, according to findings from their interviews. Natural abilities are seen as a necessary base on which talent could be constructed and developed. Additionally, at

least one catalyst, either environmental or intrapersonal, was also considered to have had an impact on their talent development. Students varied greatly on whether they felt that intrapersonal catalysts, such as motivation and drive or environmental catalysts such as peers, professors and parents, had an impact. All gifted collegians feel that one of the catalysts has been integral to their success, according to their rank-ordered constructs. The second catalyst and the developmental process, including the pace, progress and instruction, were consistently ranked as having the least impact on the gifted collegians' perceptions of their talent development. Few of the participants feel that any of these factors did not make a difference at all, but the level of impact varied for the participants.

Conclusion

During the qualitative portion of my study, I interviewed eight students at Southern University who are considered gifted because they participated in departmental honors, earned academic scholarships, or were recommended by their professors. I interviewed each student twice, focusing on their history and experiences with talent development during the first interview and their reflections on their talent development during the second interview. Through the analysis of these interviews, I identified several themes about the perceptions of gifted collegians on their talent development process.

Gifted collegians' early years are foundational for their talent development process. All participants in my study had some form of provision for their abilities in their primary or secondary school experiences. For some, it was a gifted program; others took honors, IB or AP classes in high school. These schooling opportunities made an impact on the gifted collegians, as did their teachers, especially in high school. Gifted

collegians' upbringing also made an impact on their talent development, through their family culture, faith, or people such as parents and siblings. These early experiences and individuals reinforced their gifts and motivated the participants to pursue the development of their talents to higher levels.

The bulk of the time in our interviews focused on the collegiate experience, the timeframe that I specifically targeted in this study. Several aspects of the collegiate experience impacted the participants in their talent development process. First, coursework and research opportunities at Southern University pushed the students to excel and achieve in their fields. Two students had positive experiences with the Honors program at Southern, and out-of-class experiences were beneficial to all participants' development. The culture of Southern was also noted as influential, as it creates a network of support and encouragement in the attainment of academic excellence. I also asked students about the internal characteristics that aided them in their talent development. Participants spoke of their personality and physical traits, level of awareness, motivation, personal values and preferences, passion for learning, and self-discipline, determination and willingness to work. Finally, gifted collegians addressed how professors and peers helped to motivated them, and encouraged them to excel, as well as the role of chance in the talent development process.

In the second interview, I asked participants to reflect on their talent development process, thinking back to the first interview and their feelings about what we spoke about. I also showed the participants Gagné's (2009) Differentiated Model of Giftedness and Talent and asked them to reflect on their experiences through the lens of the model, and to rank order the four constructs (gifts, intrapersonal catalysts, environmental catalysts

and developmental process) in terms of their relative impact on their talent development. Overall, when asked what made a difference in their talent development process, gifted collegians ranked gifts in one of the top two positions. A catalyst (either intrapersonal or environmental) also occupied one of the top two choices for all gifted collegians. Developmental process and the second catalyst were rated lower.

This study sought to understand the perceptions of gifted collegians of their talent development using Gagné's (2009) Differentiated Model of Giftedness and Talent as a lens. Through the collection of both quantitative, presented in chapter four, and qualitative data, presented in chapters five and six, I was able to examine their perceptions and discuss themes that emerged regarding their talent development process. In the next chapter, I will discuss these findings in terms of the literature base, and offer recommendations for future study.

CHAPTER VII

DISCUSSION

The purpose of this study was to investigate gifted collegians' perceptions of their talent development process. I used an explanatory sequential mixed methods design to look at gifted collegians' talent development through the lens of Gagné's (2009) Differentiated Model of Giftedness and Talent in order to better understand the process that enables highly able students to achieve and succeed in college. The DMGT is an explanation of the talent development process that begins with natural abilities or gifts; gifted individuals are the top 10% of people with these natural abilities. These students go through a developmental process of learning, training and practice that varies by pace, instruction and investment. While going through the developmental process, intrapersonal and environmental catalysts act upon the individual. Intrapersonal catalysts include goal-management behaviors such as motivation, volition, and self management ability and traits, such as personality and physical characteristics. The environmental catalysts include the person's surroundings, provisions offered to the individual, and people, such as teachers, mentors, family and peers. The top 10% of gifted individuals, having gone through the developmental process with the help or hindrance of the intrapersonal and environmental catalysts, can be termed talented in their respective domains. I designed the research study to answer four research questions, based on the constructs of Gagné's (1985, 2009) DMGT:

1. To what extent do gifted collegians perceive their innate gifts as affecting their talent development process?

2. To what extent do gifted collegians perceive intrapersonal and environmental catalysts as affecting their talent development process?
3. To what extent do gifted collegians perceive the developmental process of activities, pace and investment as affecting their talent development process?
4. What do gifted collegians perceive as important factors in their talent development process?

I began the study using questionnaire data from 83 highly able college students, identified through the completion of departmental honors, acceptance of scholarships, and the recommendations of professors at Southern University. Questionnaire data asked students to rate, using Likert-style items, the extent to which they felt that statements referencing the constructs of the DMGT applied to them. I ran descriptive statistics, *t*-tests, and correlations on the data, the analysis of which was provided in Chapter 4.

The students with the highest and lowest means in each of the constructs (intrapersonal catalysts, environmental catalysts, developmental process and gifts) were asked to participate in phenomenological interviews; eight participated. I conducted the interviews in two stages, allowing the participants to reflect upon their responses in between interview sessions. Interview questions during the first interview asked students to reflect on experiences that reflected the four constructs in Gagné's (2009) DMGT. In the second interview, I shared the DMGT with participants, and asked them to consider the model and the constructs, with the final question asking participants to rank order the constructs in terms of what made the biggest difference in their talent development process. I transcribed the interviews and coded them in order to draw out the themes that I discussed in Chapters 5 and 6.

Chapter 2 presented literature in three major strands. First, I discussed research on the talent development process. For the second strand, I presented information related to gifted collegians. In the final strand, I explored the research on programmatic options for high-achieving collegians, such as honors programs. The discussion portion of this chapter will present the results of my study organized by research question, and apply these results to the literature reviewed in the three strands presented in Chapter 2. The conclusion section synthesizes the findings and concludes with implications for practice and future research.

Innate Gifts

Highly able collegians found the presence of natural abilities to be integral in their talent development process. The survey results indicated that high-achieving college students felt that they had the gifts described by Gagné (1985, 2009), and the interview results strongly suggested the importance of gifts on the talent development process of gifted collegians.

Gifted collegians remarked on the importance of their natural abilities in the creative, intellectual, and social domains. Responses on the online survey averaged 3.97 for the construct of gifts, indicating that participants “agree” with the statements corresponding to the presence of levels of natural abilities as described by Gagné. When asked on the survey to rank the four catalysts in order of their importance, high-achieving collegians listed gifts as either first or second 54% of the time. Results of a *t*-test indicated that students identified as gifted in K-12 education had significantly higher means on the gifts subscales than students not identified as gifted. Labeled as gifted throughout their education, these students may be more likely to identify themselves as

gifted or recognize their own natural abilities to a greater extent, as they have a history of exposure to the terminology.

All of the interview participants felt that gifts were an important factor in their talent development; when asked to rank order Gagné's constructs in terms of what made a difference in their talent development, all interviewees ranked gifts either first or second. Gagné (1985, 2009) defines gifts as natural abilities that occur within people in different aptitude domains: mental domains, including intellectual, creative, social and perceptual abilities and physical domains, including muscular and motor control abilities. During the interviews, highly able collegians recognized their natural abilities in terms of their intellectual, creative, and social gifts.

Intellectual Gifts

Most of the students in this study remarked on their intellectual gifts; they feel that they have high levels of natural intellectual abilities, and these gifts need to be stimulated in order to achieve. Sternberg noted intelligence as part of the WICS Model of Giftedness (2005), while Gagné and St. Père (2001) explored the relationship between cognitive ability and achievement, finding that strong cognitive abilities were predictors of achievement. The high-achieving collegians in this study felt that their cognitive abilities led to their achievements, such as earning scholarships, honors, and high marks in class. Coursework and peers provided the necessary intellectual stimulation to the students, offering participants the opportunity to use their intellectual abilities in their academic work and personal lives and pushing themselves towards achievement. Several researchers mentioned gifted students' cognitive abilities; gifted collegians need academic challenge, and the opportunity to use critical thinking (Kem & Navan, 2006;

Olenchak & Hébert, 2002) as they have the capability of deeper processing and understanding (Carnicom & Clump, 2004; Kem & Navan, 2006). The highly able collegians in this study corroborate these findings from the research, as they described their need for academic challenge and ability to make intellectual connections in their coursework and their personal lives.

Several participants stated that they enjoyed the challenge that their coursework and research presented to them, finding that information in their chosen content areas came easily to them. This finding supports the literature; Achterberg (2005) described honors students as able, accelerated, and advanced, a fitting description for the high-achieving collegians' self-described strengths in their content areas. Clay described taking more science classes than necessary for the major, because the minimum classes just were not enough to satiate his interest. Arnold (1994) described the positive relationship between academic achievement in high school and college. Gifted collegians in this study support Arnold's finding, remarking that their interest in their core concentration areas stemmed from classes and experiences in high school, and pursuing these interests voraciously in college.

Creative Gifts

Gifted collegians in this study remarked on the importance of creativity as natural ability in their talent development process. Gifted collegians described having gifts that are traditionally considered creative, such as musical and artistic ability; as well as creative gifts in terms of creative thinking. Participants applied these creative gifts to work in their fields, through coursework, projects, and research. Gagné (1985, 2009) categorized creativity as a natural ability, and Tannenbaum (1983) also spoke of the

impact of non-intellective or psychosocial traits like creativity on gifts and achievement. Sternberg also included creativity as a skill in his triarchic theory of intelligence (1985) as well as the WICS Model of Giftedness (2005). According to both the literature and the highly able collegians in this study, creativity is a natural ability that aids in the talent development process.

Social Gifts

Special collegiate programs foster the characteristics deemed essential in the students' intellectual and emotional growth, such as innate social and leadership abilities (Hébert, 2006). Several of the high-achieving collegians spoke extensively about their inherent social gifts and leadership gifts that were encouraged and developed during their time at Southern. Having strong natural social gifts benefited the students in their chosen fields, especially in areas such as Psychology. These abilities were further fostered through academic and extra-curricular programs such as service learning. Students also felt that honors programming options such as honors housing allowed them to explore their social gifts, and helped these abilities to grow.

All of the interview participants felt that gifts were essential to their talent development and success in college. Three widely cited areas of gifts include natural intellectual, creative and social abilities. Gifted collegians did not feel that their gifts worked in isolation, however, and felt that their motivation and volition, as well as supportive individuals, were necessary for them to realize their gifts. Described by Gagne as intrapersonal and environmental catalysts, these factors are discussed in the following section.

Intrapersonal and Environmental Catalysts

Intrapersonal and environmental catalysts strongly influenced gifted collegians' talent development process. Students noted that intrapersonal traits were important, with a mean of 4.10 on survey items related to these characteristics, signifying that they "agree" that they have these personality traits. On the survey instrument, environmental catalysts had the lowest mean of the four constructs, with a mean of 3.79. This rating still signified that high-achieving collegians agreed that environmental catalysts had an impact on their intellectual and emotional growth, but that the level of agreement was not as strong as it was for the intrapersonal catalysts.

Additionally, I found through quantitative data analyses that there were significant differences between members and non-members of honor societies on the intrapersonal catalyst subscale; gifted collegians in honors societies were more likely to feel that their intrapersonal catalysts, such as personality traits and motivation, had a greater impact on their academic growth than those who did not participate in honors societies. There were also significant differences between juniors and seniors on the environmental catalysts subscale; juniors did not feel that people such as peers, parents and professors, their environmental surroundings, or special provisions offered to them had as much of an impact on their talent development as seniors in the study.

Qualitative findings emerged from the interviews concerning both intrapersonal and environmental catalysts. Intrapersonal catalysts integral to the talent development process of the highly able collegians in this study include awareness, motivation, and volition. Individuals, surroundings, and special provisions were all considered important

environmental catalysts for academic growth by the gifted collegians. These two strands are discussed in detail in the following sections.

Intrapersonal Catalysts

In the interview portion of the study, several themes emerged about these intrapersonal and environmental catalysts. Students remarked on their awareness of self and others that allows them to recognize their strengths and weaknesses and work with others. Participants also discussed the motivating factors in their talent development process, such as their values, preferences and interests, and their passions motivate them to achieve. Gifted collegians discussed their volition in the talent development process; their will power and self-discipline were essential components of their success, as they felt responsible for and accountable to themselves. Finally, high-achieving students described how their physical characteristics opened doors and encouraged opportunities for growth.

Awareness

Gifted collegians described their awareness of their own strengths and weaknesses, and the ability to recognize and work with the strengths and weaknesses of others. Students described their level of comfort with their gifts and abilities and the importance of awareness of others as a way of helping them understand their limits and potential, as well as how others' abilities impacted them. Understanding the needs of others was a social skill that enabled them to succeed in classes and in social situations with ease. Gagné (1985, 2009) described one's level of awareness of self and others as an intrapersonal catalyst in the talent development process; the gifted collegians in this study agree that awareness is an important trait, useful in developing their talents. Edman

and Edman (2004) found that honors students exhibit more self-knowledge than their peers, and were higher in emotional intelligence. Awareness of self and others is a component of emotional intelligence, which helps “individuals to understand and predict aspects of everyday life, including emotion-eliciting life events, enable better adaptation to life events and aid in life outcomes of mental health, relationship quality, work success or physical health” (Edman & Edman, p. 18).

Motivation

Gifted collegians often attributed their successes in talent areas to their internal drive and motivating forces such as faith, competition, and passion for their area of strength. Motivation was the driving force for many participants that pushed them to succeed, described as the ability to self-regulate and accomplish tasks, and a personal drive towards achievement and even overachievement. Motivation is the most widely supported catalyst in the talent development literature, encouraging highly able collegians to continue to work in their talent areas, helping to overcome obstacles and increasing their drive to succeed (c.f. Bloom, 1985; Burton et al., 2006; Calderon et al., 2007; Csikszentmihalyi et al., 1997; Gagné, 1985, 2009; Gagné & St Père, 2001; Piechowski, 1998; Subotnik & Steiner, 1994; Tannenbaum, 1983) as well as in literature on gifted collegians and honors programming (see Fries-Britt, 1998; Hammond, McBee & Hébert 2007; Hébert, 2006; Hébert & McBee, 2007; Keen & Howard, 2002, Rinn, 2004; Wolfensberger, 2004). The finding of the importance of motivation adds to that literature support base.

Several students remarked on the importance of a competitive nature as a motivation tool. Some collegians experience internal competition, holding themselves to

high standards and meeting those expectations. Others feel that their competition was with siblings, manifesting in a desire to impress their families with academic achievements. Research supports the importance of many personality traits that encourage the intellectual and emotional growth process. These findings support existing literature; Gagné (1985, 2009) listed personality traits as intrapersonal catalysts for the DMGT, and Tannenbaum (1983) included psychosocial traits as important for giftedness. In their study of talented teenagers, Csikszentmihalyi et al. (1997) found that the talented youths had traits that helped them to focus and allowed them to be open to experiences, such as those described by the high-achieving collegians in this study. Competition can be helpful as a motivator or facilitating factor in the talent development process.

Gifted collegians in this study shared an intense passion for learning that fostered their motivation to succeed in their individual talent areas. Their descriptions of their work highlighted their genuine enjoyment of their work, their research and their learning. Often, the passion for learning described by the highly able collegians extended beyond their specific concentration areas to learning languages, music, and other academic content areas. Gagné (1985, 2009) described personal interests as an intrapersonal catalyst while Bloom (1985) noted a commitment to the field was a characteristic of talented individuals. The love of learning facilitated students' intellectual and emotional growth because it made doing the work and putting in the effort easy. This is similar to the concept of flow, in which an individual gets lost in the experience of completing a task (Csikszentmihalyi et al., 1997). In Astin's (1985, 1999) extensive research on college student development, he found that the quality and quantity of psychological and physical energy a student puts into the college academic experience is directly proportional to the

student's learning and development; the more effort that a student puts into the college experience, the greater their learning and development. Passion for learning on the part of gifted collegians is the impetus for the energy they put into their work, and thus their continuing progress in talent development.

Volition

Gifted collegians in this study are disciplined, dedicated, determined to succeed and willing to put forth the effort it takes to succeed. Their volition was expressed through the self-discipline to get work done, sheer perseverance, and personal autonomy and effort. These characteristics are what enabled the gifts to manifest into talents. Without these traits, someone with gifts would atrophy and not develop their abilities. The literature supports these attributes, both in the gifted collegian strand and the talent development strand. Piechowski (1998) found that talented adults relied on will and self-management in order to succeed, while Burton et al. (2006) found persistence to be integral in the high-achieving athletes' academic growth. These ideas are echoed in the talent development models of Bloom (1985), Gagné (1985, 2009), Tannenbaum (1983) as well as by the gifted collegians in this study.

Physical Traits

Gifted collegians in this study said most often that their physical traits did not impact their academic and emotional growth; however three participants did note the importance of physical traits, such as appearance and voice quality. Whether it was appearance and voice that fostered commanding presence and contributed to effective leadership, or being in a majority race that could have positively affected her growth, especially in the proliferation of opportunities, a few participants did feel the effect of

their physical traits on their talent development. Linda, the only African-American participant, remarked that she was aware of her race and being different from others as a Black woman studying her foreign language. However, she said at that stage of her intellectual growth, she felt comfortable with her race, and that she had opportunities open to her because of her race, such as scholarship funding. Fries-Britt (1998) found that gifted Black students often enter college with few to no existing relationships with other high-achieving Black students and that exposure to intellectual peers with similar achievement orientations and cultural backgrounds has academic and social benefits for the gifted Black student. Linda felt that the culture of diversity and academic excellence at Southern University gave her a level of comfort with her race and ability.

Environmental Catalysts

Along with intrapersonal catalysts, gifted college students also expressed the importance of environmental catalysts in their talent development process. Individuals who served as motivators, role models, and teachers greatly impacted gifted collegians and their growth in abilities and achievements. Surroundings and the climate found not only in their homes but at Southern University as well affected the gifted collegians in their talent development process. Finally, the provisions offered to highly able individuals throughout their educational careers, from gifted programming to honors programs, contributed to their intellectual growth.

Individuals

Findings from the qualitative study supported the importance of parents. Participants characterized their upbringing as having great deal of familial support. The gifted collegians said that their parents' influence helped to shape their personalities,

including their temperament, drive and abilities. Parents were cited as having an impact on the talent development process as motivators and support systems by several researchers (see Albert, 1994; Bloom, 1985; Burton et al., 2006; Calderon et al., 2007; Csikszentmihalyi et al., 1997; Gagné, 1985, 2009; Piechowski, 1998; Subotnik & Steiner, 1994; Tannenbaum, 1983). However, since leaving for college, participants said that the direct effect of their parents had lessened, as communication had lessened due to increased distance. The feelings of support and encouragement remained and continued to be an influence on the highly able students.

Research on gifted collegians has not focused on the role of parents as much as in the talent development literature; the focus rather has shifted in a large part to the importance of peers (Bonner, 2001; Csikszentmihalyi et al., 1997; Fries-Britt, 1998; Gagné, 1985, 2009; Hammond, McBee, & Hébert, 2007; Hébert & McBee, 2007; Tannenbaum, 1983). The presence of intellectual peers was important for the gifted college students in this study as well, as their peers from class were also their friends, and they strongly felt the importance of being able to share their work with and sustain intellectual conversations with their friends and roommates. The culture of academics and achievement at Southern University, which will be discussed as a separate theme later in this section, was credited by some as providing these intellectual peers; at another university they may have been harder to find.

The importance of professors to the gifted collegians emerged as a strong theme in this study. Bloom's (1985) study described three kinds of teachers; the first helped the student establish a love for the field, the second emphasized technical skills and held higher expectations, and the third was a master teacher who helped students express their

talents. For some, their first undergraduate professor in a field established a love for the content area, leading to a second major in that field. Many of the professors helped to increase the students' skills, while also serving as guides, allowing the students to express their talent in individual ways through research. All participants noted that professors had an effect of on their achievements, although the level of impact varied by student. In the talent development literature, teachers have a great impact on the talent development process (see Bloom, 1985; Csikszentmihalyi et al., 1997; Gagné, 1985, 2009; Tannenbaum, 1993). This theme is also supported in the gifted collegian and honors literature (Bonner, 2001; Kem & Navan, 2006) Gifted collegians expressed that professors had an impact on their talent development, as teachers, lead researchers, encouraging adults, peers, advocates and guides. None of the gifted college students noted having a mentor that had an impact on their collegiate experience, which varies from the gifted collegian and honors program literature, which suggests an influence (Hébert, 2006; Hébert & McBee, 2007). Three participants noted the influence of professional staff, such as the Dean of Students and Honors Program administrators; however, they did not specifically describe the individuals as mentors.

Milieu

Gifted collegians feel that their cultural and familial upbringing had an impact on their academic growth. Through a culture of academic excellence established by the family, parental rules, and the systems of rewards and punishments that shaped their personalities, participants' familial upbringing fostered their intellectual and emotional growth, prior to and throughout their college years. Gagné (1985, 2009) describes individuals and familial culture as an environmental catalyst surrounding highly able

individuals: for example, a family tradition of academic excellence or a cultural push towards a religious major. Research support for the impact of the gifted collegian's upbringing is more indirect; support exists for the role of family, school, and culture that is part of the upbringing. This is another area that would benefit from continued exploration through further research.

Several gifted college students remarked on the importance of their religious faiths in their talent development process. One aspect of this faith was from their upbringing; being raised in Christian homes had an impact on several students and their values. These faith-based values encouraged the gifted collegians to make decisions and set goals that are in line with their religion, and pushed them to succeed. Faith is a factor that is not directly supported in the research, although Gagné (1985, 2009) refers to values as an important intrapersonal catalyst. Hébert and McBee (2007) found a different relationship between faith and the gifted undergraduate, as their study participants “experienced a great deal of asynchrony between their own religious values and beliefs and the values of the community, which usually consisted of a fundamentalist and evangelical sect of Christianity” (p. 143).

The culture of the college is a pervasive feeling across campus that greatly impacts student achievement and the talent development process, created by students, faculty, student affairs staff, and the administrators of the college. For highly able college students at Southern University, the culture of academic excellence, faculty support and peer support greatly impacted the talent development process. Students described Southern's culture as one in which excellence was valued, and academic jealousies between students did not exist. There was a culture of support from faculty

and individuals in the administration that influenced the intellectual and emotional growth of participants. Research support exists on the impact of the individuals on the gifted collegians, such as those described in the previous sections. This indirectly supports the impact of the culture of the college, as individuals help to establish that culture. Future research could include looking specifically at the culture of the college and its impact on the talent development process for gifted collegians.

Provisions

Gifted students benefited from several provisions during their K-16 school experiences, such as gifted programming, acceleration, and honors programs. Starting in primary school, many of the students in this study participated in gifted programs, while others were able to accelerate their education through independent study and honors courses. Once at college, two students participated in the honors program, one of whom reaped incredible social benefits by living in honors housing. These provisions served as catalysts to the students' intellectual and affective growth, enriching and accelerating their education, while supporting them emotionally.

Several of the students experienced gifted programming during their K-12 education and through AP, IB and Honors classes in high school. Programs varied from a pull-out model, where students were removed from their regular classes in order to participate in a special gifted class once during the week, to after-school enrichment classes, to advanced courses within the regular school day. These programs had an impact on their development in primary and secondary school and encouraged students to pursue new areas and areas in depth, enabled them to build their knowledge faster, allowed them to accelerate their K-12 requirements, and identified them to teachers who

encouraged their academic abilities. Csikszentmihalyi et al. (1997) found that talented teenagers benefited from teachers who were supportive and demonstrated an involvement in and enjoyment of their academic field.

One programmatic option for highly able learners in college is the honors program. A lauded benefit of honors programming is that it offers gifted students the opportunity to have their intellectual and cognitive needs met through special honors classes, projects and research provided by the honors program (Cosgrove, 2007; Hammond, McBee & Hébert, 2007; Hébert & McBee, 2007; Rinn, 2007; Seifert et al., 2007). In this study, two students were enrolled in the freshman honors program. This program provides students a stipend to conduct research over the summer, early registration for classes, advisors for the program and for scholarships, a lunch series with a focus on research, and the option for honors housing. Clay noted that the honors advisor had an impact on his achievement, helping him plan for classes and challenging him to explore opportunities outside of his concentration, which indirectly added to the discovery of his interest in linguistics. Clay also discussed the opportunity for additional research monies that enabled him to explore research interests in linguistics, in addition to his standard research in physics.

Honors housing, located in one dormitory on campus, is available to freshman honors scholars; it is an option for those who wish to live in an honors dorm rather than a general freshman dorm. David feels that his fellow honors students were more welcoming of his focus and dedication than other classmates or members of his sports team, because they were very similar in their levels of focus and work ethic. One theme that emerged in the literature on honors programs is that they enrich the environment in

that gifted students can learn alongside their intellectual peers (Hébert, 2006; Hébert & McBee, 2007; Keen & Howard, 2002; Rinn, 2004). While Clay also spoke very highly of the impact of peers on his social and academic growth, his peers were not restricted to other honors participants; rather he discussed peers in his science concentration.

Developmental Process

Gifted collegians went through a myriad of educational opportunities that were differentiated by pace and levels of personal investment, and incorporated in- and out-of-class learning experiences that impacted their talent development process. The mean score for the developmental process construct of the survey was 3.89, indicating that gifted collegians “agree” with the statements corresponding to Gagné’s construct of developmental process. Students had the greatest range of agreement with statements on this construct. Gifted college students ranked developmental process in the lower two quartiles most frequently when answering the question pertaining to what made a difference in their intellectual and emotional growth. Several themes emerged from the interview portion of the study concerning the developmental process construct, including the impact of coursework, out of class experiences, undergraduate research, and pace of learning and their personal investment and willingness to take opportunities.

Impact of Coursework

The courses that gifted students took, both within and outside of their areas of concentration, impacted their talent development process. Their general education requirements often served as initial courses in areas that later became interest areas. Some students described their general requirements as time consuming, yet valuable in being well rounded students in the exposure to academic fields outside of their

concentration areas. The greatest impact of coursework is often in the highly able collegians' area of concentration. These formal educational opportunities are essential for the learning component of the talent development process (Gagné, 1985, 2009), as this process gives the training necessary for the college students to develop their skills in their talent areas. Tannenbaum (1983) lists schooling as an important environmental factor in academic growth, while Kem and Navan (2006) found that gifted collegians preferred courses that moved quickly and involved critical thinking. Students echoed these findings as they enjoyed using critical thinking skills during coursework within and outside of their talent area, as well as during extra-curricular activities. Formal learning opportunities are a large component of the training for the gifted college students (Gagné), and are essential in the talent development process of the gifted collegians in this study.

Out of Class Experiences

Coursework is not the only learning experience available to gifted college students; participants remarked on the importance of extra-curricular learning experiences, such as service learning, musical groups, and sororities. These opportunities helped students develop leadership skills, and positively impacted their academic growth and personal education throughout college. On the survey, members of honor societies had significantly higher scores on the developmental subscales than participants who did not belong to honors societies, meaning that participants who are members of honors societies rated questions about developmental process, such as coursework, pace, and investment, higher than the participants who are not honor society members. Students selected for honors societies are likely to have high levels of achievement in coursework,

as membership is based at least partially on GPA. Astin (1985, 1999) found that involvement in extra-curricular activities, part-time on-campus employment, honors programs, research participation, Greek life, athletics, and student government positively impacted learning and development. Students out of class experiences encouraged good time-management practices and enabled them to develop critical and analytical thinking skills outside of class. Another out of class experience that emerged as its own theme is undergraduate research.

Undergraduate Research

All of the participants in the interview process participated in some form of special programming; for the majority of highly able students in the study, undergraduate research was this programmatic option. Most of those involved in undergraduate research also completed or planned to complete a thesis, which is a requirement of departmental honors. All who participated, whether for the skills it enabled the students to develop, the preparation it fostered for graduate school, or for the experience itself, considered this time in research to be very influential. Undergraduate research could be considered an activity in the developmental process of Gagné's (1985, 2009) DMGT, however, it is not specifically addressed in the literature on gifted collegians, honors programs, or talent development. Russell et al. (2007) participants in undergraduate research had greater levels of understanding of the research process, confidence in their research skills and an awareness of graduate school expectations than general undergraduates, similar to this study's findings, but they did not identify participants for the study based on giftedness or honors designations. The impact of undergraduate

research on the talent development process of gifted collegians is another potential area of future research.

Pace of Learning

During interviews, gifted students noted the importance of the pace of their learning in the talent development process. Most of the collegians accelerated through part of their academic work based on extra credits earned in high school AP and IB classes. Two of the students chose to graduate early due to these credits. Researchers noted academic achievements as an outcome of honors programs, such as increases in GPA for students in honors housing (Blimling, 1993), and higher degree completion rate and time to completion from students in honors programs (Cosgrove, 2004). Of the two honors program participants, David successfully graduated after seven semesters rather than eight, with two majors and completing two separate honors theses, one for each major. Clay will graduate on time, maintaining a near-perfect GPA, while also completing an honors thesis in one major and conducting research in his second major through the funding provided by the freshman honors program. Participants in this study exemplify the traits suggested by Achterberg (2005) as traits of gifted collegians; they were academically able, accelerated, and advanced.

Personal Investment and Willingness to Take Opportunities

A theme emerged from the qualitative portion of the study highlighting the importance of investment and putting forth time in order to advance in their field of studies. This theme corresponds to one in the literature: the importance of practice, time, and effort to academic achievements. This can be seen in Csikszentmihalyi et al.'s (1997) focus on balancing time, and Gagné's (1985, 2009) development process of

learning and practice. Despite the great time commitment, students considered the time worth the end results: achievements in their talent area and the opportunity to excel in their fields, such as research grants, businesses, and TA or RA positions. Students also spoke about the importance of taking advantage of available opportunities, as they started businesses, musical groups and student organizations; all of these emerged from a perceived need for such a program, and the students chose to fill that need.

Csikszentmihalyi et al.'s (1997) study found that talented teenagers had characteristics that made them open to experiences; this willingness to take risks would not exist without being open to the possibilities.

Reflections on Talent Development

In the final interview, students were asked to reflect on their talent development and discuss what factors had an impact on them. Participants discussed the role of chance in their talent development process; many of them believed that luck was a factor in their achievements. Gifted students also described which of Gagne's factors had the most impact on their academic growth.

Chance

Chance played a role in the highly able collegians' intellectual growth in this study. I asked students to describe a time that luck or chance influenced their lives; most collegians attributed at least some of their decisions, opportunities, or achievements to chance, such as finding the right research opportunity or learning about the freshman honors program. Piechowski (1998) noted the importance of chance, seizing opportunities and making chance work in the individual's favor. Bloom (1985) acknowledged that some elements of the talent development process occurred by chance,

while Tannenbaum (2003) noted that many eminent individuals credit unpredictable moments of chance that helped them to achieve. Gagné (2004) acknowledged the importance of Tannenbaum's chance element in influencing his Differentiated Model of Giftedness and Talent (1985). The gifted collegians also felt the impact of chance from scholarships or grants, the discovery of second majors, and undergraduate research opportunities; they even described many of the environmental catalysts, such as being born into their families, meeting individuals, and their schooling, as the result of chance or good luck.

What Makes a Difference?

The final question on the survey asked the "What makes a difference?" question directly. Students most often ranked intrapersonal catalysts first or second, 63% of the time, considering these intrapersonal characteristics to be important in the talent development process. They saw traits such as motivation, drive, and willingness to work as essential to developing their talents. Gifted college students ranked gifts first or second most important 54% of the time and felt that their baseline abilities, such as intellectual or creative strengths, were important to the academic growth. Developmental process' were most often ranked third or fourth most important (53% of the time), as were environmental catalysts (54% of the time), signifying that the highly able collegians were less likely to emphasize the importance of environmental catalysts, such as individuals and their surroundings, and the developmental process, such as the instructional activities or pace, in terms of their effect on the talent development process. Gifted college students ranked intrapersonal and gifts higher a greater percent of the time,

while they ranked developmental process and environmental catalysts in the lower half more frequently.

I asked the same question during the interviews. Gifts were always in one of the top two spaces; a catalyst (either intrapersonal or environmental) also occupied one of the top two spaces. Developmental process and the second catalyst were in the final two slots. Gagné suggested asking the “What Makes a Difference?” question. In a recent article, Gagné stated:

Do some components generally—on average—exercise more powerful influences on talent emergence? My own review of the existing literature has brought me to propose the following *downward* hierarchy among the four components: G, I, D, E.... But, creating a causal hierarchy should not make us forget that in most situations *all* components play an important role in the talent developments process. In a nutshell, talent emergence results from a complex choreography between the four causal components, a choreography that is unique to each individual. (2009, p. 6)

In this study, I found similar support, as gifted students ranked gifts higher and developmental process lower. However gifted collegians widely disagreed about the relative importance of the two catalysts. Several of the participants would agree with Gagné’s higher rating of intrapersonal catalysts, feeling that their motivation or commitment drove their growth, while others recognized that environmental catalysts, such as individuals and special provisions had a greater impact on their academic growth. A theme did emerge from this study that many factors work together to produce talent;

gifts, catalysts or developmental process alone would not be sufficient for the high achievements in a talent field.

The impact of peers and faculty and the personality characteristics of talented individuals emerged as themes across the three strands of literature and the qualitative section of this study. In addition, the findings supported the importance of family, gifts, time and practice from the talent development literature and need for challenge and intellectual stimulation from the collegian literature. My research offered some support for the importance of programmatic options for highly able learners, but the few honors participants in this study limited those themes. This study did provide support for aspects often included in honors programs, such as acceleration and undergraduate research opportunities. The conclusion of this chapter will present implications for practice and research that emerged from this study.

Conclusions

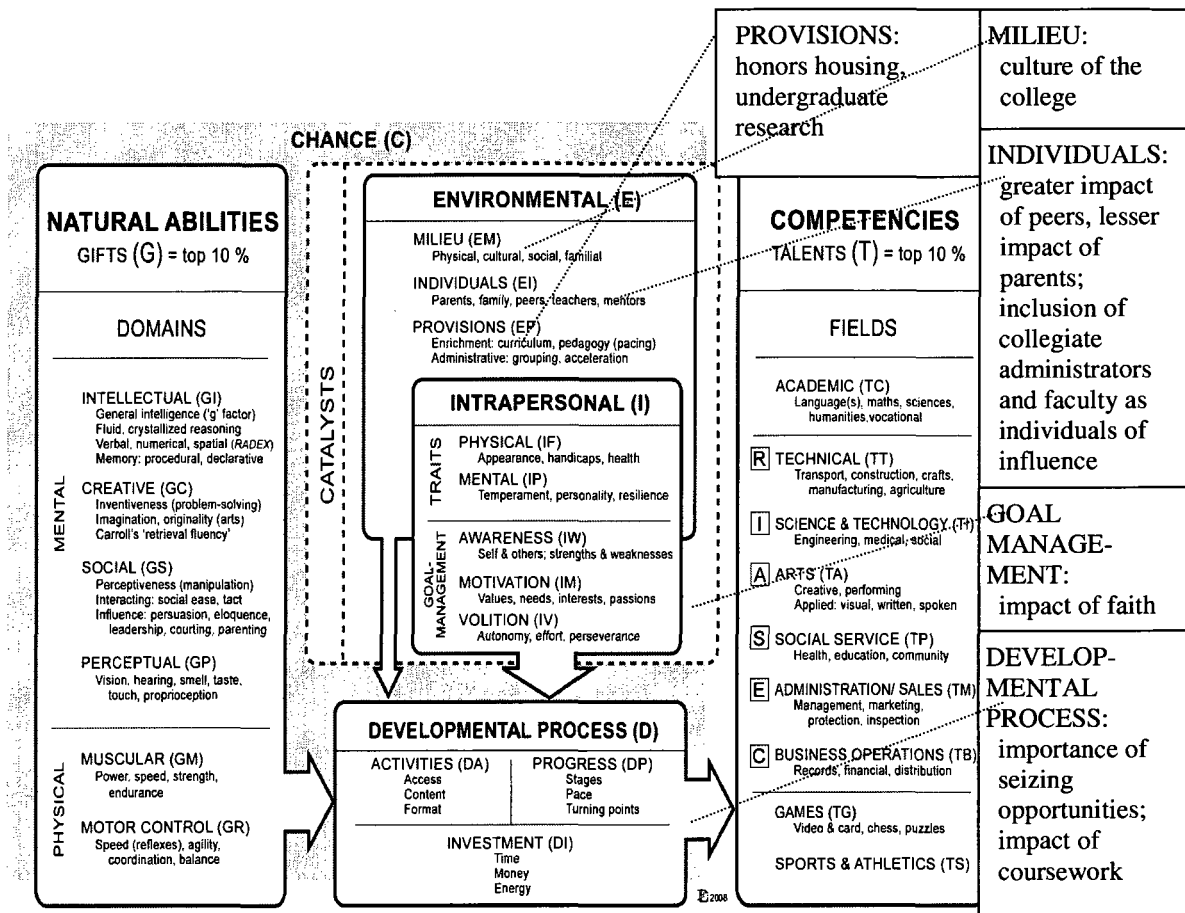
In this study I sought to understand the talent development process through the lens of Gagné's (1985, 2009) Differentiated Model of Giftedness and Talent. The four research questions address different constructs in his model: gifts, intrapersonal catalysts, environmental catalysts and the developmental process. The final research question allows for anything that might emerge from the study that was not covered in Gagné's model, as well as the opportunity to answer his "What Makes a Difference?" question.

Overall, I found that the gifted students feel that all of the aspects of Gagné's (1985, 2009) DMGT were integral in their talent development process. They feel that everything works together to impact their achievements and successes. All of the participants feel that gifts were essential, but not exclusive to their talent development

process, as the presence of a catalyst was integral for their success. Catalysts were dependent upon the individual, and could be intrapersonal, such as a competitive nature, awareness of self and others, faith, motivation, personal values and preferences, passion for learning, and self-discipline, determination and willingness to work, or catalysts might be environmental, such as their upbringing, the honors programs, the general culture of the college, and individuals such as peers, professors and family members. Gifted collegians viewed the developmental process, such as the impact of coursework at the college, out of class experiences, undergraduate research, their pace of learning and their personal investment and willingness to take opportunities, as less important than gifts and potentially less important than either intrapersonal or environmental catalysts.

My study provides support for the applicability of Gagné's (1985, 2009) DMGT with gifted collegians and supplements the existing literature on talent development, gifted collegians and programmatic options for gifted students. Findings suggest that gifts are the building blocks, but intrapersonal and environmental catalysts provide the personal support and motivation to achieve, while the developmental process provides the training and academic support necessary for intellectual growth. There are several aspects, however, that may be more significant for college students than for gifted students in elementary or secondary school, such as the impact of faith, the stronger impact of peers and the diminishing presence of parents, and the importance of personal investment in seeking and taking advantage of opportunities to develop one's talent. Figure 3 shows Gagné's (2009) DMGT, overlaid with the study's findings where they differed from the DMGT or where aspects are of greater impact to gifted collegians compared to K-12 students.

Figure 3. DMGT (Gagné, 2009, p. 3) Overlaid with Study Findings



The final sections of this paper discuss the implications of this research for practice as well as implications and recommendations for future research. Because of the limited generalizability of this explanatory sequential mixed methods study, implications of this study are most applicable to Southern University. To meet the standards of acceptable and competent practice, I had a goal of transferability in this study (Rossman & Rallis, 2003). I provided a thick, rich description of the interviews in order to fulfill the goal of transferability, so that other universities may also find the suggestions of value.

Implications for Practice

Albert (1994) and Csikszentmihalyi et al. (1997) suggest that the late adolescent years are integral to study, as new identities emerge, career choices are explored, and students make decisions about continuing to work and study in their talent areas. An examination of the talent development process of talented college undergraduates will help collegiate administrators, both general and honors, in meeting the needs of highly able students. This study has implications for both the academic and student affairs divisions of colleges.

Academic implications

Two very important themes emerge from this study, which are relevant to the academic side of colleges, the academic departments, and faculty. The role of faculty and their impact on gifted students' talent development process cannot be ignored, and that dedication should be reflected in the promotion and tenure process. Also, the importance of coursework and the nature of curriculum offerings, as well as research opportunities have implications for the faculty.

In this study, professors are described not as lecturers at the front of the class; but as facilitators in their students' progress; encouraging and helping their students. Often, they are described as peers or friends, willing to meet with students outside of class and supporting their students in extra-curricular endeavors rather than merely their in-class experiences. It is important for faculty to maintain this status as it has a great impact on the talent development of gifted students. Students look favorably on the level of teaching that they were exposed to at Southern University, and it is important that the university recognizes this dedication. If information on such levels of involvement with

students and commitment to fostering undergraduate research were included in the promotion and tenure process, this may help to extend this level of commitment to more faculty members across campus. This would allow the additional effort put forth by the faculty, through activities such as sponsoring undergraduate research, to be constructive for their careers in the promotion and tenure process. Additionally, administrators in the department and college could take notice and commend these professors for their service. It may be important to consider the characteristics of these faculty members and how they help the students along their talent development process so these actions can be encouraged at other institutions.

The coursework and opportunities for research have a large impact on the highly able college students in terms of their talent development process. Gifted collegians in this study describe the coursework as challenging, saying that the coursework encourages them to continue in their studies. Students consider real-world learning experiences such as research to be valuable, as they are able to gain a better appreciation of the content through research. The kinds of curriculum offerings found at Southern University met their dual need for challenge and high interest; the wide array of available courses in the different departments was helpful to students' intellectual growth and should continue at Southern and extend to other universities.

In order to facilitate coursework that is helpful and meaningful to gifted college students, departments should continue to offer research opportunities to students, and even expand the research opportunities available. Students do not need to be enrolled in honors programming to conduct undergraduate research, but they may need assistance in finding opportunities. College students would benefit from an increase in the number of

available research opportunities as well as an awareness of these opportunities. By promoting opportunities for research, college students may be more likely to take advantage of the opportunities, developing their talents in new ways. Olenchak and Hébert (2002) found that underachieving students saw the core curriculum of the university as repetitive and uninteresting; this lack of challenge was instrumental in their underachievement and lack of success. It is essential that the academic departments at colleges are aware of the need for challenge in the coursework offered to gifted collegians.

Supportive faculty, challenging coursework and research opportunities are all cited by highly able collegians as integral in their talent development process. The academic side of campus, including academic affairs, both the advisory and the professoriate, may be well-served to take note of the importance of these aspects, and to encourage faculty interaction, intellectually challenging coursework, and the opportunities for undergraduate research. Other important themes emerged such as counseling, student activities and residence life.

Student affairs implications

Themes emerged in this study regarding the importance of peers, college culture and intrapersonal catalysts in the talent development process. Student affairs staff at the college in areas such as residence life, student activities and counseling, can benefit from this information, thus helping these and other talented college students in their talent development process.

The importance of peers emerged as a very strong theme in this study; student affairs staff might take several steps in assisting with the intellectual growth of gifted

collegians using this information. First, some measure of study priorities and interests could be included in the housing process, such as sections on a pre-housing questionnaire that allow students to choose dorms designated for quiet study. Study sessions and student activity groups could be suggested and run by the student affairs department, in order to smooth the progress of peer relationships. One of the roles of student affairs is to facilitate interaction among students; enabling students to connect on an intellectual level through academic clubs or groups would be of assistance to gifted students.

Several students remarked on the importance of the culture of Southern University. The campus is one where students felt comfortable to achieve and succeed, where academics are emphasized and recognized as integral to the success of the students. Student affairs staff can help to maintain that sense on the campus, facilitating groups and providing recognition for academic excellence, such as awards, honors, or special privileges in registration, housing or even lunches with the college president.

Another theme that emerges is the importance of intrapersonal catalysts, such as motivation, determination, and effort. This finding leads to a final implication for student affairs. While it may seem that these personality traits are already set by the time the students enter college, Siegle and McCoach (2005) suggest that motivation, goal valuation and self-regulation could be increased in gifted underachieving high school students. By learning strategies to increase self-regulation and motivation, gifted students achieved at higher rates; these strategies could be used for gifted college students as well. A recommendation for student affairs is to undertake training on these measures for gifted collegians, achieving or underachieving, in order to facilitate the talent development process.

Gifted college students in this study were identified through their achievements; they were already successful in their collegiate careers and were developing contributions to their fields. Academic and student affairs professionals can facilitate the intrapersonal, environmental and developmental process aspects of talent development in order to assist other highly able collegians in their talent development process.

Implications for Future Research

Gifted collegians are an important group to study, whether under the auspices of higher education or gifted education. The existing literature has several themes that exist across talent development, honors and gifted programming in college and gifted collegians, such as the importance of faculty, peers and personality characteristics. More research is needed, however, because some of these areas of the research do not fit together. This section will describe general suggestions for future research, as well as specific suggestions for a replication of this study.

Topics for future research

Several themes emerged in the interview portion of this study that were not emphasized in the literature. In addition, themes that emerged in the research were not represented in this study. These areas are the first suggestions for future study.

First, several participants brought up the role of their faith in their talent development process. Faith and a belief in a higher power could be characterized under either intrapersonal catalysts for the belief or environmental catalysts for the impact of attending church services. This is an area that would be of interest to study in greater depth; an examination of the importance or influence of faith on intellectual growth could be conducted in order to draw more consistent conclusions on its impact.

Another theme that emerged from the study that was not found to a great extent in the literature is the role of program administrators and student affairs staff. Three participants mentioned the honors program administrator, service learning administrator and Vice-President for Student Affairs as having a great influence on their personal and academic growth during their college years. College is a wider environment than K-12 education; more adults besides teachers and parents have the potential to impact highly able students. Thus, the impact of student affairs' personnel and professional staff on gifted collegians' talent development process is another area of potential future study.

The role of the culture of the college, the philosophy, values or mores of the individual college, in the talent development process is another theme that did not have direct support in the literature. Southern University's culture was cited by several students as influential in their talent development process. While research support exists pertaining to the influence of peers and faculty who help to create the culture, direct references to the culture of the college in the talent development process are not present in the literature.

Finally, the impact of undergraduate research on gifted collegians' talent development process is a theme that emerged from my study that does have direct support in the talent development, gifted collegian, or talent development literature. At Southern University, undergraduate research is a component of the departmental honors and freshman honors program, though any interested student can conduct this research. The relationship between undergraduate research and talent development would be interesting to investigate, both at Southern University where it complements the honors

program, and at other universities where it is collegiate offering not under the auspices of honors.

One theme that emerged in the talent development and gifted collegian literature was the impact of mentors (see Burton et al., 2006; Calderon et al., 2007; Gagné, 1985, 2009; Subotnik & Steiner, 1994); however, none of the eight gifted students in this study had access to or were not affected by a mentor. This could be an area to investigate further, especially in terms of what differentiates a mentor from a professor or professional staff member for the highly able collegian.

Because of my limited sample size of two honors students, I could not deeply examine the impact of the honors program at Southern University. It would be interesting to investigate the talent development process at a university that has a separate honors program, rather than one that funds a research opportunity. The themes of peers and one student's experience with honors housing suggests that there could be a great deal of benefit to programs that encourage students to engage with intellectual peers; research at a university with an honors program or college would help to solidify this relationship.

Suggestions for improvement of this study

First, I have several recommendations to improve the survey instrument administered during the first section of this study. The Likert-style items did not have a common goal; some items asked to what extent the gifted collegian had the characteristic or experience; others asked to what extent the experience impacted their achievements; this was a limitation to the study. For example, an item in the developmental process construct stated, "I participate regularly during class," while an item in the intrapersonal

catalyst construct stated “I put forth a great deal of personal effort when developing my abilities.” It was therefore hard to generalize from the survey which constructs the participants felt represented them, and which they felt impacted their intellectual growth. The results in Chapter 4 included both interpretations; however it would be beneficial to contain consistent language. My suggestion is that the survey items be rewritten to gauge the extent to which students felt that they demonstrated the traits or characteristics, or the items could be rewritten to gauge the extent to which gifted collegians felt that the traits or characteristics impact the talent development process. My second recommendation for the survey instrument is to remove the bulk of the open-ended questions. Often, these were skipped by participants or answered with one or two word answers. This made the data analysis for these questions difficult. The final question for which students were asked to rank order the constructs could be continued, however, I recommend that a future researcher alter the survey instrument to include only Likert-style or forced choice questions.

In addition to recommendations for revising the survey instrument, this study would benefit from the use of a comparison group and an implementation at a less academically focused university. First, a second group of participants could be included with which the next researcher can compare results. In this study, all of the participants could be considered high-achieving because of the selection process. The goal of the study was to investigate those students who could be considered talented, or on their way to being recognized as talented. However, I believe it would be interesting to compare a group of high-achieving and underachieving gifted collegians. A comparison would allow greater information about findings, such as the impact of coursework or peers,

which would narrow the focus of the implications for practical application. My final recommendation is to undertake this or a similar study at a university that does not have a general focus on academics campus-wide. Several students remarked that they felt that they were average among the students on campus; Molly even remarked that she felt she was on the lower end of the academic spectrum at the university. It would be interesting to study the talent development process of gifted students at a university where there is a greater distinction between the gifted students and the general population of students.

Conclusion

My purpose in this study was to expand the literature on talent development to include a greater emphasis on the highly able collegian. College students are an important group to study, as they transition from adolescents to adults and make career and life choices that have a great impact on themselves and society. The lack of research on gifted collegians is slowly being rectified; this study seeks to begin to fill the gap by exploring the talent development process of gifted collegians through the lens of Gagné's (1995, 2009) Differentiated Model of Giftedness and Talent. The model appears to serve gifted college students as well as it does gifted students in K-12 education, as many of the themes that emerged coincide with the DMGT as well as the literature on gifted collegians, talent development and honors program. However, themes emerged from my student sample, which are not represented in the literature and vice versa. This could be due to their relative importance to the college-aged gifted as opposed to gifted elementary or secondary school students. Although this study supports the literature on talent development highly able college students and, in part, programming for the college gifted, more research is needed to address the talent development process of gifted

collegians in order to judge the efficacy of collegiate programs and services in meeting their needs.

APPENDICES

Appendix A: Table of Specifications

Research Strand	Researcher or Source	Key Findings
Talent Development	Bloom (1985)	<p>Talent development starts recreationally in young life, transitions to more time-consuming work, and then achieves a balance between work and play.</p> <p>Few talented adult participants were child prodigies.</p> <p>The talented individual had three types of teachers: the first helped the student establish a love for the field, the second emphasized technical skills and held higher expectations, and the third was a master teacher who helped students express their talents.</p> <p>Parents were a positive influence, establishing a good work ethic and providing support and resources for their child.</p> <p>The element of chance was pervasive across participants' lives and talent development experiences.</p> <p>Significant contributions to the field occurred after at least ten years of work and</p>

		<p>practice.</p> <p>Talented individuals were committed, had a desire to achieve at high levels and were willing to give great time and effort to their talent development.</p>
	Tannenbaum (1983)	<p>Talent is an adult construct; five elements must work in conjunction to help demonstrate giftedness that can be translated into adult talent:</p> <p>General ability, or g, is a necessity, but the required threshold varies by field or domain</p> <p>Special abilities in the core domain</p> <p>Nonintellective or psychosocial traits, including motivation and creativity</p> <p>Environmental factors, including parents, teachers, peers, school and community</p> <p>Chance</p>
	Gagné (1985)	<p>Six components, or two trios work together to transform gifts into talents</p> <p>First trio: conversion of gifts (in different aptitude domains, including intellectual, creative, socioaffective and sensorimotor) into talents (in the fields of academics, arts, technology, social action, business, leisure and sports) through</p>

		<p>a developmental process of learning and practice</p> <p>Second trio: catalysts to the conversion process, including internal catalysts (motivation, volition, physical characteristics, personality and self management ability), external catalysts (surroundings, provisions offered to the individual, other people and significant events) and chance.</p>
	<p>Piechowski (1998)</p>	<p>Research supported aspects of Gagné's model:</p> <p>The importance of personality characteristics</p> <p>Reliance on will, or volition and self-management</p> <p>Importance of chance, seizing opportunities and making chance work in the individual's favor</p> <p>Family support was essential for half of the participants, however the other half had unsupportive or destructive families.</p>
	<p>Burton et al. (2006);</p>	<p>Research supported aspects of Gagné's model:</p> <p>Importance of personality traits such as motivation, perseverance, resilience</p>

			Factor that pushed talented women to success was the support of others, especially family, mentors and coaches
		Gagné and St Père (2001)	Research supported one aspect of Gagné's model: strength of cognitive abilities was a predictor of achievement. Findings contradict intrapersonal catalyst of motivation: gifted students were neither more or less motivated than the comparison group
		Calderon et al. (2007)	Research supported aspects of Gagné's model: Importance of intrapersonal catalysts of intrinsic motivation, self-management and persistence Importance of environmental catalyst of parental support and mentors
	Arnold (1994)		Talented sample was not achieving in early career attainment at levels commensurate with high school achievements. Majority of participants graduated from college and were in careers that were related to their degree.

		<p>Positive relationship between academic achievement in high school and academic performance in college.</p> <p>Influence of gender and social context impact the career achievements of gifted high school graduates in the sample.</p>
	<p>Subotnik & Steiner (1994)</p>	<p>Majority of Westinghouse winners remained in the science field.</p> <p>Retention in the science field credited to persistence against obstacles, presence of mentors and an understanding of the political culture and underlying value system of scientific field.</p> <p>Attrition from the science field credited to the lifestyle required of a research scientist, poor guidance by school and parents, deficiency of mentors and poor science instruction.</p>
	<p>Lubinski & Benbow (1994)</p>	<p>Both male and female mathematically precocious youth were equally likely to pursue and earn advanced degrees.</p> <p>Males were eight times more prevalent in engineering, math, and physical science fields.</p> <p>Females were more likely to pursue organic sciences, biology and medicine.</p>

	Albert (1994)	<p>Parents were an important influence on talented sons' creative and educational potential, especially the amount of family stress, presence of differences between parents and the quality of the father/son relationship</p> <p>There was a positive relationship between participants' creative potential, ego development and personality with their parents' same three qualities.</p> <p>Essential career decisions were made during the late adolescent, early adult years due to the melding of creativity, identity and career choice.</p>
	Csikszentmihalyi et al. (1997)	<p>In order to develop talent, the individual must first have skills that are recognized as important in the culture.</p> <p>The participants had traits favorable for concentration (achievement and endurance) and traits that allowed them to be open to experiences (awareness and understanding).</p> <p>Talent cultivating habits are essential (studying, thinking, sharing hobbies with friends rather than just socializing).</p> <p>Talented teenagers were conscious of the potential conflict between relationships with peers and their work, and more conservative in their romantic relations</p>

		<p>and sexual attitudes.</p> <p>Families were important in providing both challenge and support.</p> <p>Talented teenagers preferred teachers who demonstrated an involvement in and enjoyment of their academic field and were supportive.</p> <p>Talent development is a process that requires expressive involvement and positive feelings, as well as contributes to future goals, providing instrumental rewards.</p> <p>Optimal experiences, or flow helps talent to develop.</p>
<p>Gifted Collegians</p>	<p>Kem & Navan (2006)</p>	<p>Gifted collegians prefer faster-moving course in which critical thinking and deeper understandings could occur.</p> <p>Overexcitabilities manifest in the students' delight when solving problems, the intensity with which they pursue their areas of talents, feelings of overwhelming empathy and a strong belief in calling or mission.</p> <p>College professors viewed giftedness as a positive attribute, welcomed the students' thoughts and contributions to class discussions, and recognized the students' abilities to think critically. This recognition had a positive affect on the students' continued motivation in their studies.</p>

		<p>Students valued the collegiality between themselves and the instructors found in honors courses and felt comfortable in voicing opinions and making contributions to class discussions.</p> <p>Interactions with faculty gave the students confidence in their cognitive ability and helped to motivate their achievement orientation.</p>
	Olenchak & Hébert (2002)	Underachieving students saw the core curriculum of the university as repetitive and uninteresting; this lack of challenge was instrumental in their underachievement and lack of success
	Achterberg (2005)	Honors students are able, accelerated and advanced
	Carnicom and Clump (2004)	<p>Honors students had significantly higher scores in deep processing ability, which is a learning style involving organizing and evaluating information critically.</p> <p>Honors students did not score significantly different than non-honors students on effective study skills.</p>
	Hébert & McBee (2007)	Honor students felt isolation due to their asynchronous development in goals, values and intellectual ability.

		<p>Honors students demonstrated overexcitabilities, especially the psychomotor, emotional, intellectual overexcitabilities</p> <p>Mentoring programs had a significant effect on the psychosocial development of the students involved, operating in additional roles as advisor, friend, and intellectual peer. Mentors played a significant role in the students' collegiate environment, facilitating their motivation, and enabling their achievement orientation.</p> <p>Honors programs give students the chance to work with intellectual peers, who possess similar goals and aspirations.</p>
	<p>Wolfensberger (2004)</p>	<p>Honors students typically have high levels of intrinsic motivation, rather than career orientation and extrinsic motivation.</p> <p>Honors students are generally interested in asking questions and forming new knowledge.</p>
	<p>Edman & Edman (2004)</p>	<p>Honors students had high levels of motivation when compared to like-ability non-honors peers.</p> <p>Honors students were likely to have high levels of emotional intelligence, as</p>

		<p>compare to their non-honors peers.</p> <p>Honors students exhibit self-discipline and self-knowledge more than their peers.</p>
	Hammond, McBee & Hébert (2007)	<p>The opportunity to connect with like-ability peers provided students with a sense of security and belonging and assisted honors students with expanding on their sense of identity.</p>
	Bonner (2001)	<p>The formation of meaningful relationships between students and their peers is an important factor in attrition, stability, and satisfaction among gifted African American collegians.</p> <p>Positive relationships with faculty helped gifted African American students develop a success-orientated outlook and intrinsic motivation.</p>
	Fries-Britt (1998)	<p>Academically gifted Blacks often enter college with few to no existing relationships with other gifted or high-achieving Black students.</p> <p>Being exposed to their intellectual peers with similar achievement orientations and similar cultures has academic and social benefits for the gifted Black student.</p>
	Hébert (2006)	<p>Mentors worked with the gifted fraternity students on a personal level as well as serving as motivators in the lives of the gifted young men by leading by</p>

		<p>example.</p> <p>Mentors held younger gifted collegians to higher standards and the students worked to meet those standards.</p>
<p>Programs for Gifted Collegians</p>	<p>Rinn & Plucker (2004)</p>	<p>Honors students receive some kind of special services designed to meet their intellectual needs, including scholarships, smaller classes, and research opportunities.</p>
	<p>Astin (1985, 1999)</p>	<p>The quality and quantity of psychological and physical energy a student puts into the college academic experience (involvement) is directly proportional to the student's learning and development.</p> <p>Examples of involvement include residence, extra-curricular activities, part-time on-campus employment, honors programs, research participation, Greek life, student-faculty interaction, athletic involvement and student government.</p>
	<p>Hébert & McBee (2007)</p>	<p>Honors students found the community within the honors program supported students intellectually, emotionally and socially providing for intellectual growth and stimulation, as well as academic challenge.</p> <p>Gifted collegians attained academic growth through the honors courses themselves</p>

	<p>and from high expectations from the professors.</p> <p>Honors participants describe feelings of accomplishment and motivation fostered by the challenging work involved in the advanced curriculum.</p> <p>Honors programs give students the chance to work with intellectual peers, who possess similar goals and aspirations.</p>
Hammond, McBee & Hébert (2007)	Honors programs had positive effects on achievement motivation in the honors students through academic challenge and a culture of achievement.
Fries-Britt (1998)	The honors program offered a supportive climate and a community similar to an extended family for gifted Black collegians which fostered achievement motivation.
Rinn (2007)	Gifted students in the honors program had higher academic achievement as well as higher academic self concepts than the comparison group of gifted non-honors students.
Cosgrove (2004)	Students who completed their college years in an honors program had the highest academic performance, took the shortest time to complete their degrees, and

		had the highest graduate rates compared to students who did not complete their honors program, and like-ability students who did not participate in the honors program at all.
	Seifert et al. (2007)	Honors students had classes in which cooperative learning and prompt feedback were used, and the quality of teaching was high. Honors programs have significant positive effects of on the students' cognitive development, on measures of critical thinking, mathematics and a composite score.
	Blimling (1993)	Students living in honors housing demonstrated increases in their grade point average.
	Reichert (2007)	55% of honors administrators felt that honors housing was an important factor in student success, though 21% were uncertain as to how to measure this success. Honors administrators felt that housing is important for community-building in their honors programs.
	Rinn (2004)	Honors students living and learning together in a community are prone to reinforce academic achievement for each other, which assists in goal setting

		<p>and motivation.</p> <p>Living in honors housing helps to facilitate freshman in acclimating to a new experience by placing students into a peer group at the onset.</p> <p>Honors housing can help gifted students establish a social or group identity, as peers reinforce their intellectual identity.</p>
	<p>Keen & Howard (2002)</p>	<p>Experiential education has benefits for gifted collegians, including:</p> <p>The program allows the students to recognize the responsibility they hold in their own learning, fostering intrinsic motivation and higher achievement.</p> <p>It offers unique challenges not found in other university settings, such as removing students from the safe setting of the classroom and placing them in a new environment: paid employment in advanced facilities in their fields of study.</p> <p>The program allows the students to learn from peers who were similarly engaged and at the same maturational level.</p>
	<p>Hébert (2006)</p>	<p>Out-of-class experiences promoted talent development in gifted males.</p> <p>Participation in an academically focused fraternity fostered the development of the</p>

		<p>students' social and leadership skills.</p> <p>The fraternity environment helped to motivate the students, to have a sense of pride in their accomplishments and to set higher standards for themselves; all of these factors influenced the students to achieve.</p>
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Appendix B: Table of Specifications for the Quantitative Phase

Research Question	Survey Question	Research Support	Data Analysis
1. To what extent do gifted collegians perceive their innate gifts as affecting their talent development process?	Question 1, 2, 3, 4, 6, 12	Gagné (1985, 2009)	Descriptive Statistics
2. To what extent do gifted collegians perceive intrapersonal and environmental catalysts as affecting their talent development process?	Internal Catalysts Question 6, 12 Environmental Catalysts Question 7, 8, 9, 10, 12	Albert (1994); Bloom (1985); Burton et al. (2006); Calderon et al. (2007); Csikszentmihalyi et al. (1997); Gagné (1985, 2009); Gagné and St Père (2001); Piechowski (1998); Subotnik & Steiner (1994); Tannenbaum (1983)	Descriptive Statistics
3. To what extent do gifted	Question 5, 12	Arnold (1994); Bloom (1985);	Descriptive Statistics

collegians perceive the development process as affecting their talent development process?		Csikszentmihalyi et al. (1997); Gagné (1985, 2009); Lubinski & Benbow (1994); Subotnik & Steiner (1994); Tannenbaum (1983)	
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Appendix C: Table of Specifications for the Qualitative Phase

Component of Gagné's Model	Interview Guide Questions	Analysis	Talent Development Research Support
Intrapersonal catalysts	<p>What personality characteristics do you have that you attribute to helping you succeed in your talent area?</p> <p>Additional questions will be determined by survey results, in terms of gaining more knowledge about their intrapersonal catalysts and their effect on talent development.</p>	<p>Transcription of interviews, Coding using constant comparative analysis, holistic analysis of data, selective coding of data for the identification of themes</p>	<p>Bloom (1985); Burton et al. (2006); Calderon et al. (2007); Csikszentmihalyi et al. (1997); Gagné (2009); Gagné and St Père (2001); Piechowski (1998); Subotnik & Steiner (1994); Tannenbaum (1983);</p>

<p>Environmental catalysts</p>	<p>Describe someone that has had a positive impact on your achievements or abilities in your area of strength.</p> <p>(Depending on survey results) How has your (identification as a Scholar /winning of award/participation in honors housing) affected your achievements, if at all?</p> <p>Additional questions will be determined by survey results, in terms of gaining more knowledge about their intrapersonal catalysts and their effect on talent development.</p>	<p>Transcription of interviews, Coding using constant comparative analysis, holistic analysis of data, selective coding of data for the identification of themes</p>	<p>Albert (1994); Bloom (1985); Burton et al. (2006); Calderon et al. (2007); Csikszentmihalyi et al. (1997); Gagné (2009); Gagné and St Père (2001); Piechowski (1998); Subotnik & Steiner (1994); Tannenbaum (1983);</p>
<p>Chance</p>	<p>Describe a time where you were faced with an important decision or choice regarding your area of strength. Why did you make the</p>	<p>Transcription of interviews, Coding using constant</p>	<p>Bloom (1985); Gagné (2009); Piechowski (1998);</p>

	<p>decision that you did? How do you feel about that decision now?</p> <p>Describe for me a time that chance or luck had an impact on your achievements.</p> <p>Additional questions will be determined by survey results, in terms of gaining more knowledge about their intrapersonal catalysts and their effect on talent development.</p>	<p>comparative analysis, holistic analysis of data, selective coding of data for the identification of themes</p>	<p>Tannenbaum (1983)</p>
<p>Developmental learning and practice</p>	<p>What kinds of educational experiences have you had in your areas of strength?</p> <p>What kinds of personal experiences (outside of formal education) have you had in your areas of strength?</p> <p>Additional questions will be determined by survey results, in terms of gaining more</p>	<p>Transcription of interviews, Coding using constant comparative analysis, holistic analysis of data, selective coding of data for the identification of</p>	<p>Arnold (1994); Bloom (1985); Csikszentmihalyi et al. (1997); Gagné (2009); Lubinski & Benbow (1994); Subotnik & Steiner</p>

	<p>knowledge about their intrapersonal catalysts and their effect on talent development.</p>	<p>themes</p>	<p>(1994); Tannenbaum (1983)</p>
<p>Innate gifts</p>	<p>Describe your educational experiences (K-present)</p> <p>Tell me about some things at which you feel you excel (have a high aptitude?).</p> <p>Tell me about some of your achievements in your areas of strength.</p> <p>Additional questions will be determined by survey results, in terms of gaining more knowledge about their intrapersonal catalysts and their effect on talent development.</p>	<p>Transcription of interviews, Coding using constant comparative analysis, holistic analysis of data, selective coding of data for the identification of themes</p>	<p>Bloom (1985); Gagné (2009); Tannenbaum (1983)</p>
<p>What Makes a Difference?</p>	<p>Explain the DMGT to the participant.</p> <p>How do you feel this model explains your</p>	<p>Transcription of interviews, Coding</p>	<p>Gagné (2009)</p>

	<p>talent development process?</p> <p>What aspects of the model don't fit your talent development process?</p> <p>Looking at the four main components of the model, which made the biggest difference in your talent development process?</p>	<p>using constant comparative analysis, holistic analysis of data, selective coding of data for the identification of themes</p>	
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Appendix D: Researcher's Bias Statement

Quantitative research, with a positivistic paradigm, is objective and impersonal by nature. Qualitative research, however, reflects the researcher's personal constructions of the world and acknowledges that the researcher has a bias (Gall, Gall & Borg, 2006). It is not a strength or weakness of the paradigm, rather it is a different way of thinking about the meaning of the world and how information is constructed and analyzed. Schwandt (2001) defines bias as "individual preferences, predispositions, or predilections that prevent neutrality and objectivity....Our understanding of ourselves and our world depends on having prejudice (prejudgement). What we must do to achieve understanding is to reflect on prejudice and distinguish enabling from disabling prejudice" (p. 15). The focus in qualitative is not to sweep the bias under the couch and strive to maintain objectivity. It is to acknowledge the bias, allowing the reader to understand that nature of that bias, and acknowledging that the reader, too, has a bias (Schwandt). In this section, I will describe my own biases towards the topics of talent, giftedness and honors education.

This research study involves understanding the talent development process of gifted collegians. One aspect of my life that may influence my perceptions is my own journey through the education with the occasional label of giftedness. Because of my intellectual ability my parents attempted to enroll me in Kindergarten prior to the age limit set in New York, where we lived at the time. Because of school board policy, I was not permitted to enter school early, and I spent that year in daycare. The following year, when my age permitted my entrance into Kindergarten, I was allowed to be grade-skipped directly into first grade. I was also indentified as gifted at this point. When my

family moved to Virginia while I was in the third grade, the identification did not cross state lines- I had to be retested and was no longer gifted! (My older sister, identified as gifted in New York, was also identified as gifted in Virginia). I did, however, still receive special services, the pullout program called LEAP. In middle school, I was placed in the accelerated track (while my sister was in the gifted track), and I was also in advanced courses in high school, including 2 AP classes (Government and French). I attended The College of William and Mary, a selective school, but I was not in any honors program, nor did I earn any honors or scholarships. I found that I had never really developed study skills, as my previous years of education had always come so easy to me, and I struggled through the academics of college, as well as the balancing act of my social and academic life.

My sister's journey through school also made an impact on my views of giftedness. My sister was always very intelligent. She was in the gifted program throughout her K-12 career, took many AP courses, and worked with NASA and the Continuous Electron Beam Accelerator Facility (CEBAF, now the Jefferson Lab) in high school. She participated in a high school engineer program at Rensselaer Polytechnical Institute in New York, and though accepted to RPI for college, chose to attend Virginia Tech which was closer to our home. She double-majored in civil and environmental engineering and graduated with honors. Despite her intelligence and skill as an engineer, my sister never excelled at some social skills, such as interviewing, and it was somewhat difficult for her to find a job in her senior year. She was successful in her career search, and worked in Baltimore as a civil engineer for several years before returning to Virginia Tech for her Masters Degree in Environmental Engineering. Following this degree until

her unexpected death at age 32, she worked as an Engineer in Blacksburg, Virginia, where she also earned a second degree Black Belt and was an instructor in Tae Kwon Do. My sister's struggles with social skills and her depression sometimes seemed in contradiction to her intelligence and giftedness, though I have learned throughout my education that her case is not that unusual. She has always been an inspiration to me in my studies of giftedness, and she continues to inspire me, though she is no longer here.

A final personal aspect that is relative to this study is my interest in honors' programs at the collegiate level. While taking core classes in my doctoral program, I met several people in the higher education program and became intrigued with it as a field of study. The summer after my first year, I took an independent study class in which I looked at any and all research that I could find that I could find on college and giftedness. Since that time, honors students and gifted collegians has remained a principal interest of mine, and I have geared many papers in different classes toward a better understanding of this population. Moreover, I have taken all of the core classes in the higher education concentration in my effort to learn more. My career goal is to work as both a professor in Education but also take an active role in honors program, including a long term goal of being the Director of an Honors Program. These three aspects of my personality and upbringing can influence my perceptions throughout this study, thus it is important to identify them as part of the researcher's bias.

Appendix E: Survey Instrument

Talent Development Factors Questionnaire

Natural Abilities or Gifts

1. What are some of your academic strengths or abilities in which you feel you are naturally strong?
2. For each of the following statements, please rate to what degree it describes you, using a scale of 1 (strongly disagree) to 5 (strongly agree). Please enter in any comments you have about the item directly under your rating.
 - ◇ For the following questions, consider the statement in terms of your **intellectual ability**.
 - i. My observation skills are acute.
 - ii. I am able to understand difficult topics.
 - iii. I have a great memory.
 - ◇ For the following questions, consider the statement in terms of your **creative ability**.
 - i. I am able to solve problems when they arise.
 - ii. My imagination helps me with my school work.
 - iii. I can create original pieces of work (such as papers, paintings, music) without difficulty.
 - ◇ For the following questions, consider each statement in terms of your **social ability**.
 - i. I am aware of how other people are feeling.

- ii. I enjoy interacting with other people.
 - iii. I am a strong leader.
 - iv. I am easily understood when speaking with others.
- ◇ For the following questions, consider each statement in terms of your senses, or **perceptual** ability.
- i. I can clearly understand information based on what I see.
 - ii. I can clearly understand information well based on what I hear.
 - iii. I understand by being a hands-on learner.

Developmental Process

3. For each of the following activities, please rate well they describe you, using a scale of 1 (strongly disagree) to 5 (strongly agree). Please use a score of 0 to signify that you do not agree with the statement (or participate in the activity) at all. Please enter in any comments you have about the item under the survey item.
- ◇ I participate regularly during class.
 - ◇ I complete all required coursework.
 - ◇ I do my work to the best of my ability.
 - ◇ I participate in social clubs.
 - ◇ I participate in academic clubs.
 - ◇ I spend time conducting research.
 - ◇ I have spent time working with a faculty member conducting research.
 - ◇ I regularly read material relating to academics outside of school assignments.
 - ◇ I regularly do academic work outside of school related assignments.

- ◇ I am actively mentally engaged in my academics.

Intrapersonal Characteristics

4. Please rate how well these statements apply to you, using a scale of 1 (strongly disagree) to 5 (strongly agree). Please enter in any comments you have about the item under the survey item.

- ◇ My motivation helps me develop my abilities.
- ◇ My personal values have contributed to my success in school.
- ◇ My strong will power helps me to succeed.
- ◇ My determination to develop my abilities influences my growth.
- ◇ I have a great degree of self-control when I am trying to get work done.
- ◇ I put forth a great deal of personal effort when developing my abilities.
- ◇ I believe that if I persevere, I will succeed.
- ◇ Initiative is a strength of mine that allows me to accomplish goals.
- ◇ I am emotionally mature.
- ◇ I am often motivated by my own academic interests.
- ◇ Learning new things motivates me.
- ◇ I am aware of my strengths.
- ◇ I am aware of my weaknesses.
- ◇ I am aware of others' feelings or emotions.
- ◇ I take others' feelings or emotions into account when I strive towards a goal.
- ◇ I feel that I have high self-esteem.
- ◇ I invest a great deal of effort in order to attain my goals.

Environmental Characteristics

5. Please rate the following statements and how they apply to you using a scale of 1 (strongly disagree) to 5 (strongly agree). Please enter in any comments you have about the item under the survey item.
- ◇ My friends play a large role in the development of my talent(s).
 - ◇ My classmates are integral in the development of my talent(s).
 - ◇ My parent(s)/guardian(s) are very influential in the growth of my abilities.
 - ◇ Family members play a large part in the growth of my abilities.
 - ◇ My professors are integral to my success.
 - ◇ I have a positive relationship with a mentor that contributes to my talent development.
6. Please describe your family make up and your upbringing (in terms of the size of your family, the neighborhood/community in which you were raised).
7. Describe the influence your family and upbringing had on the development of your abilities.
8. Please indicate how strongly these statements apply to you, using a scale of 1 (strongly disagree) to 5 (strongly agree).
- ◇ Where I grew up had an impact on the development of my talents.
 - ◇ My family's culture has had an influence on the development of my talents.
 - ◇ My family's economic situation had an impact on my talent development.
 - ◇ Where I have lived on campus has had an impact on the development of my talents.

- ◇ The suburban setting of my college has contributed to the development of my talents.

9. Please indicate whether or not each of these statements applies to you, by signifying yes or no.

- ◇ I was identified as gifted in K-12 education.
- ◇ I moved through my college curriculum at a faster pace than my peers.
- ◇ I was identified as a Freshman Scholar. (if yes, did you live in honors housing freshman year?)
- ◇ I was identified as an Advanced Freshman Scholar.

Chance

10. How do you feel luck or chance has influenced your talent development process?

Talent Areas

11. Please select any of the following achievements that pertain to you:

- ◇ Planning to or currently working on a departmental honors thesis
- ◇ Received an award in your field (please list)
- ◇ Participated in a competition (please list and describe place earned, if applicable)
- ◇ Earned a scholarship or fellowship for my talent area (please list)
- ◇ Member of an honor society (please list).

12. What were your SAT or ACT scores?

13. If applicable, what are your GRE scores?

14. What is your current GPA?

What Makes a Difference?

15. Please rank order the following in terms of the relative impact they have had on the development of your strengths and talents. Please describe the reasoning behind your rankings.

- ◇ Gifts (natural abilities, such as intellectual, creative, social, or perceptual abilities)
- ◇ Intrapersonal Catalysts (such as motivation, personality, resilience and effort)
- ◇ Environmental Catalysts (such as people, surroundings, and special provisions)
- ◇ Developmental Processes (such as schooling and learning activities, personal investment in the schooling process, and the pace of your schooling)

Appendix F: Interview Protocol

The interview will be conducted in two stages. At the first meeting, or stage, the researcher will establish a life history and gather specific details of the participant's giftedness and process of talent development. The second stage will occur after the participant has reviewed the transcript from the first interview. During this stage, participants will be asked to clarify any details of their experiences and reflect on the meaning of the experiences they have shared. Using the interview guide approach, previously identified questions are limited to the basic topics that will be discussed; follow-up questions will be used to prompt for elaboration.

Stage of Interview	Aspect of Gagné's Model	Interview Questions
Establish a life history and gather specific details of the participant's giftedness and process of talent development	Four Aptitude Domains (Gifts): Intellectual, Creative, Socioaffective, Sensorimotor	*Note: Additional interview guide questions will be created based on the survey results. -Describe your educational experiences (K-present) -Tell me about some things at which you feel you excel (have a high aptitude?).
	Developmental Process: Informal/Formal Learning and	-What kinds of educational experiences have you had in your areas of strength? -What kinds of personal experiences (outside of formal education) have you had

	Practicing	in your areas of strength?
	Systematically Developed Skills (Talents)	-Tell me about some of your achievements in your areas of strength.
	Intrapersonal Catalysts	-What personality characteristics do you have that you attribute to helping you succeed in your talent area? -Questions would be determined by survey results, in terms of gaining more knowledge about their intrapersonal catalysts and their effect on talent development.
	Environmental Catalysts	-Describe someone that has had a positive impact on your achievements or abilities in your area of strength. -(Depending on survey results) How has your (identification as a Scholar /winning of award/participation in honors housing) affected your achievements, if at all?
	Chance	-Describe a time where you were faced with an important decision or choice regarding your area of strength. Why did you make the decision that you did? How

		<p>do you feel about that decision now?</p> <p>-Describe for me a time that chance or luck had an impact on your achievements.</p>
<p>Clarify any details of their experiences and reflect on the meaning of the experiences they have shared</p>	<p>What Makes A Difference?</p>	<p>-What do you feel are the reasons you are where you are today?</p> <p>-What would you say is the biggest factor out of these?</p> <p>-Present Gagné's model and ask for their perceptions of their process as it compares to the DMGT.</p> <p>- Rank order the aspects of Gagné's model and describe your reasons for the rank order.</p> <p>-If you were to draw a model or make a diagram of your talent development, what aspects would you include (offer the opportunity/paper & pencil to draw)</p>

Appendix G: Informed Consent Letters

First Phase (Quantitative) Letter (completed online)

Talented Collegians Perceptions of their Talent Development Process

I agree to participate in a research study involving students who have academic talents at The College of William and Mary. The purpose of this study is to examine the perceptions of talented students on their talent development process. The researchers have purposefully selected students who have academic achievements in various domains. This survey is part one of the study; data from the survey will be used to select participants for the second part of the study, which involves an interview. Agreement to complete the first part of the study, this survey, does not obligate you to complete the second part of the study. The researcher is conducting this study as part of a dissertation for a doctorate at The College of William and Mary.

As a study participant, I understand that I will be expected to take an online survey related to my perceptions of my talent development process. I understand that my honesty is crucial for this study, but that I do not have to answer every question that is asked. I understand that there is an incentive for completing this survey. One participant will be randomly selected to receive a VISA gift card at the completion of the study.

As a study participant, I understand that my confidentiality is important to the researcher. While my name is needed for the survey, I understand that it will not be used to identify me in the report. Names are requested to follow up with potential participants in the second phase of the study, as well as to contact the winner of the drawing for the giftcard. All efforts to ensure my complete confidentiality will be made, including

concealing my identity in the final report, and keeping all identifying information confidential.

I understand that my participation involves minimal risk (less than or equal to that encountered in daily life at school). I am aware that I may withdraw my consent and discontinue participation in this study at any time by informing one of the researchers by telephone or email. Potential benefits of my participation include an opportunity for self reflection on my educational experience at William and Mary, as well as the chance to contribute information that will benefit the field of talent development and gather a better understanding of talented college students. My decision to participate or not to participate will not affect my relationships with faculty, administration, the Education Department, or with the College of William and Mary in general.

If I have any questions or problems that arise in connection with my participation in this study, I should contact the researcher, Angela Lycan at amnova@wm.edu or (757)848-3465. I understand that I may report any problems or dissatisfaction to Dr. Thomas Ward, Chair of the School of Education Internal Review committee at (757)221-2358 or tjward@wm.edu or Dr. Michael Deschenes, Chair of the Protection of Human Subjects Committee at the College of William and Mary at (757) 221-2778 or mrdesc@wm.edu.

By completing this online survey, I signify that I am at least 18 years of age, that I have received a copy of this consent form, and that I consent to complete the survey.

Second Phase (Qualitative) Letter (signed at interview)

Gifted Collegians Perceptions of their Talent Development Process

I, _____, agree to participate in a phenomenological study involving students who have academic talents at The College of William and Mary. The purpose of this study is to examine the perceptions of talented students on their talent development process. The researchers have purposefully selected students who have academic achievements in various domains. The researcher is conducting this study as part of a dissertation for a doctorate at The College of William and Mary.

As a study participant, I understand that I will be expected to participate in two individual interviews, lasting approximately one hour each, related to my perceptions of my talent development process. I agree that I will review summaries of the information generated during the interviews to check for accuracy. I understand that my honesty is crucial for this study, but that I do not have to answer every question that is asked.

As a study participant, I understand that my confidentiality is important to the researcher. The interview will be conducted by the researcher, and will be recorded to ensure accuracy. At the completion of the study, this digital recording will be destroyed. I also understand that the researcher will be using a pseudonym that will enable them to know my identity. At the end of the study, the key that links me to the pseudonym will be destroyed by the researcher. All efforts to ensure my complete confidentiality will be made, including concealing my identity in the final report, and keeping all identifying information confidential.

I understand that my participation involves minimal risk (less than or equal to that encountered in daily life at school). I am aware that I may withdraw my consent and discontinue participation in this study at any time by informing one of the researchers by telephone or email. Potential benefits of my participation include an opportunity for self reflection on my educational experience at William and Mary, as well as the chance to contribute information that will benefit the field of talent development and gather a better understanding of talented college students. My decision to participate or not to participate will not affect my relationships with faculty, administration, the Education Department, or with the College of William and Mary in general.

If I have any questions or problems that arise in connection with my participation in this study, I should contact the researcher, Angela Lycan at amnova@wm.edu or (757)848-3465. I understand that I may report any problems or dissatisfaction to Dr. Thomas Ward, Chair of the School of Education Internal Review committee at (757)221-2358 or tjward@wm.edu or Dr. Michael Deschenes, Chair of the Protection of Human Subjects Committee at the College of William and Mary at (757)221-2778 or mrdesc@wm.edu.

My signature below signifies that I am at least 18 years of age, that I have received a copy of this consent form, and that I consent to allowing the researcher to interview me.

Date Participant

Date Investigator

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Vita

Education

The College of William and Mary (2006-2010) Williamsburg, VA

- Doctor of Philosophy in Educational Policy, Planning and Leadership with a focus in Gifted Education Administration and a Cognate in Higher Education Administration, January 2010.
- Dissertation Title: An Explanatory Sequential Mixed Methods Study of the Talent Development Process of Gifted Undergraduate Students
- Passed Comprehensive Exams with Honors
- Member, Graduate Student Conduct Council

University of Connecticut (2005-2006) Storrs, CT

- Master of Arts in Education in the Educational Psychology Department, with a focus on Gifted Education, May 2006

Middlesex Community College (Summer 2005) Middlesex, CT

- Took one history course for 6-12 Social Studies teacher license in Connecticut.

Shenandoah University (2001-2003) Hampton, VA

- Graduate student. Completed 15 credits, including 12 in gifted education.

The College of William and Mary (1995-1999) Williamsburg, VA

- Bachelor of Arts, Psychology and Elementary Education, May 1999

Professional Experience

Program Supervisor for Academics *Summer Institute for the Gifted* Stamford, CT

- Supervisor for academic program at 9 residential camps, ten day camps and 3 Saturday programs

- Site supervisor for 3 residential summer camps and 3 Saturday programs

Gifted Teacher, TAG Lead *Newport News Public Schools* (August 2007 to present)

Newport News, VA

- Taught third grade with an identified homogeneous class of “Enrichment” TAG students.
- Served as TAG Lead Teacher; responsible for representing TAG teachers at school-level meetings, as well as conducting vertical team meetings with the TAG teachers.
- Member of the 21st Century Technology Team, Data Team, School-Based Management Team and Social Committee.
- Served as a Cooperating Teacher for a Student Teacher from James Madison University.
- Trained Mentor for first-year and newly-hired teachers to the district.

Graduate Assistant, *The College of William and Mary* (Summers 2006, 2008)

Williamsburg, VA

- Worked at the Center for Gifted Education in a variety of capacities including administrative support, editing, and conference assistance. (Summer, 2006)
- Worked in the Instructional Technology Department of the School of Education: created tools for the static home page for the undergraduate research blog and assisted undergraduate students in creating research blogs. (Summer, 2008)

Teacher *Saturday/Summer Enrichment Program, The College of William and Mary*

(Spring, Summer, 2007) Williamsburg, VA

- Taught various courses for up to 17 gifted children; “Digging Up a Dinosaur”, for pre-kindergarten through first grade, “Towers and Bridges” for grades three through five, and “Psychology” for grades seven through ten.

Gifted Resource Teacher *Norfolk Public Schools* (August 2006-June 2007) Norfolk, VA

- Worked as a resource to teachers at the School of International Studies at Meadowbrook, grades six through eight.
- Taught two courses in the Arts and Sciences after school program, “Making a Documentary” and “Drama: Improvisational Theater”; Coordinated the Arts and Sciences program at the school level.
- Duties included co-teaching, assisting teachers in planning for differentiation, conducting professional development and modeling.

Gifted Teacher *Windsor Public Schools* (August 2005-June 2006) Windsor, CT

- Taught students in sixth, seventh and eighth grades in a pullout program for children identified gifted in Language Arts.
- Coached the Mock Trial Team and Knowledge Master Open Team. Facilitated the Debate Enrichment Cluster and the Lego Robotics Enrichment Cluster.

Gifted Teacher *Region Four Supervision District* (October 2004-June 2005)

Chester, Deep River and Essex, CT

- Worked with students in grades one through six in three elementary schools as the gifted and talented teacher in a pullout program.

- Served as Coach for three Math Counts teams, two Debate teams, an Odyssey of the Mind team, a Math Olympiad team and a Knowledge Master Open team.

Teacher *Hampton City Schools* (August 1999-June 2003) Hampton, VA

- Taught full day kindergarten, second, third and fourth grades, including a mainstreamed special education, an inclusion special education and a gifted cluster class.
- Organized program and taught a class in “H.E.L.P” as well as the “SOL Boosters Club” and “Panda Express”, before- and after-school programs targeting children in need of additional instruction.
- Member of the Literature, Social Studies, Year Round/Uniform, Social and Technology Committees. Served as the United Way Coordinator and Odyssey of the Mind Coach. Study group leader for “Brain Compatible Strategies”, one of three study groups for the school. Case Manager for the Special Education Department.

Research Interests

- Gifted and Talented students in higher education
- Honors Programs and their effect on students
- Dabrowski’s Overexcitabilities and gifted students
- Teacher training and retention of new teachers

Professional Memberships

- National Association for Gifted Children (NAGC), 2004-present
- Virginia Association for the Gifted (VAG), 2006-present
- National Collegiate Honors Council (NCHC), 2008-present

- Kappa Delta Pi, Honor Society in Education, 2007-present
- Council for Exceptional Children, The Association for the Gifted (CEC-TAG), 2008-present
- Association for the Education of Gifted Underachieving Students (AEGUS), 2006-2007
- Connecticut Association for the Gifted (CAG), 2004-2006

Professional Presentations

- (Scheduled) “Talent Development and Honors Programs: What Do We Know?”, National Collegiate Honors Council 2009 Annual Conference, Washington D.C.: October 28-November 1, 2009.
- (Scheduled) “Social-Emotional 101: An Overview of the Issues”, with Valija C. Rose, National Association for Gifted Children Convention, St. Louis, MO: November 5-8, 2009.
- “Strategies for Working with Gifted Children with Special Social and Emotional Needs”, Gifted Department Parents’ Day, Spotsylvania Public Schools, Spotsylvania, VA: March 21, 2009
- “Curriculum Compacting: A Practical Tool to Accelerate and Enrich Curriculum”, National Curriculum Network Conference, Williamsburg, VA: March 11-13, 2009
- “Social and Emotional Needs of Gifted Students: Motivation, Perfectionism and Overexcitabilities”, Essex County Public School’s Exceptional Children’s Family Fun Night, Tappahannock, VA: February 21, 2008

- “Dabrowski’s Overexcitabilities in Gifted Children”, Virginia Association for the Gifted Twelfth Conference, Williamsburg, VA: October 27, 2007
- “Dabrowski’s Overexcitabilities in Gifted Children”, Newport News Public Schools Gifted Resource Teacher In-Service, Newport News, VA: November 14, 2007
- “Overexcitabilities in Gifted Students”, Norfolk Public Schools Gifted Resource Teacher In-Service, Norfolk, VA: May 2, 2007
- “Tiered Assignments as a Differentiation Tool”, Norfolk Public Schools All Staff Development Day, Norfolk, VA: October 30, 2006
- “Differentiating Instruction Using Tiered Assignments” Maury High School In-Service, Norfolk, VA: November 20, 2006