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Diann Gully

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A Study of the Talent Development of Gifted Individuals with Attention Deficit
Hyperactivity Disorder

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A Dissertation presented to the Graduate Faculty
Of the College of William and Mary in Candidacy for the Degree of
Doctor of Philosophy

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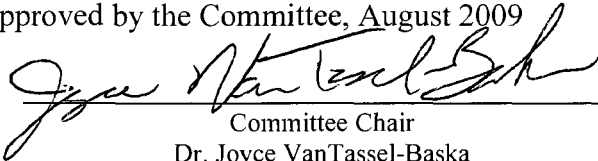
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Doctor of Philosophy



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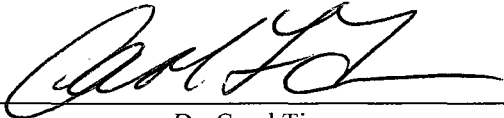
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A STUDY OF THE TALENT DEVELOPMENT OF GIFTED INDIVIDUALS WITH
ATTENTION DEFICIT HYPERACTIVITY DISORDER

ABSTRACT

This qualitative study examined the effects giftedness and ADD/ADHD has on the talent development process of gifted individuals with ADD/ADHD. There is abundant research on the negative influences ADD/ADHD has on academic achievement and psycho-social functioning (Barkley, 1998); however, there is a dearth of research on gifted individuals with ADD/ADHD.

Talent development and gifted research have found both environmental catalysts, such as a supportive environment, and internal characteristics, such as an internal locus of control and persistence, as contributing to the development of talent (Bloom 1982). These characteristics are the opposite of the characteristics of an individual with ADD/ADHD (i.e. external locus of control, lack of persistence) (Brand, Dunn, & Greb, 2002). The effects of the confluence of these catalysts on the talent development for gifted individuals with ADD/ADHD are less known.

The participants of this study were one female and three male college graduates, ages 27-36 years-old, from middle class families from diverse communities. All were identified gifted in elementary school, and two were diagnosed ADD/ADHD as children and two as adults. Data were collected through interviews with the participants and their parents, and assessments. Analysis was conducted through coding, pattern matching, display matrices, and descriptive analysis.

Findings revealed the following to be major influences in the talent development process for these individuals: (a) the symptoms of ADD/ADHD, (b) personal support, (c) quality of acceleration, and (d) internal coping mechanisms.

More research is needed to determine other factors that may affect talent development in this population and to generalize findings to the wider population.

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CHAPTER 1

Overview of the Research Problem

The education and development of academically talented students has been an ongoing concern of educators. Those in the field of gifted education have long recognized that many variables factor into the process of developing a student's talents. Home and school environment, educational opportunity, community resources, socioeconomic status, race, birth order, and gender have all been examined to determine their impact on talent development. Studies on eminence have shown that all of these factors as well as a person's psychological make up influence an individual's rise to the top of his field (Albert, 1992; Arnold, 1994; Baldwin & Vialle, 1999; Bloom, 1985; Gagné, 2002; Goertzel & Goertzel, 2004; Kaufman, 1981; Kerr, 1994; Stanley, 1996; Subotnik & Arnold, 1995; Subotnik & Steiner, 1995). Although the rise to eminence is limited to a few individuals in each field, one could argue that, short of eminence, the realization of one's potential should be attainable by the majority, especially those who academically or artistically function in the top 10% of the population. Yet, many such individuals, often labeled gifted, do not realize their potential (Gagné, 2002, 2007). One of the many reasons for this may be disabilities that interfere with the development of talent.

Historically, gifted individuals with disabilities have been under-identified and underserved (Baum & Owen, 2004; Fox, Brody, & Tobin, 1983; Grimm, 1998). Brody and Mills (1997) identified three subgroups in the population of gifted students with disabilities whose talents and or disabilities may be hidden or dismissed. The first group consisted of students identified as gifted but whose learning problems have gone unidentified. The second group included students who were identified as having a

disability that overshadowed their giftedness and prevented the student from being identified as gifted or from receiving appropriate services. The last group consisted of students with disabilities and talents that cancel each other out. For these students, neither the disability nor the giftedness rise to the forefront, resulting in the appearance of average ability. All of these subgroups are vulnerable to devastating social and emotional consequences resulting from their dual exceptionality (Baldwin & Vialle, 1999; Baum & Owen, 2004; Brody & Mills, 1997; Webb et al., 2005).

In a pilot study designed to investigate the consequences of coexisting giftedness and disability, a colleague and I (Burrus & Drummond, 2002) studied seven elementary to middle school aged gifted students with various disabilities. Although all of the study participants experienced negative consequences related to their disability, the students with Attention Deficit Hyperactivity Disorder (ADD/ADHD) experienced negative consequences in more areas.

The literature on twice-exceptional students includes numerous studies focusing on gifted students with learning disabilities, but only a few that specifically focus on gifted students with ADD/ADHD. This group of twice-exceptional individuals frequently suffers through the same debilitating academic, social, and emotional problems as other twice-exceptional individuals, but the problems are amplified by symptoms commonly associated with ADD/ADHD: impulsivity, motor excesses, social dysfunction, and poor peer relations (Webb et al., 2005). In all too many cases, these problems follow the twice-exceptional individual through adolescence into adulthood, resulting in continued negative effects on development and preventing complete realization of their talents.

To understand why talent development may be difficult for gifted individuals with ADD/ADHD, one must first have an understanding of giftedness, ADD/ADHD, twice exceptionalities, and the talent development process.

Key Concepts

Giftedness

Defining giftedness is difficult even within the field of gifted education. Various existing definitions fall primarily into two broad categories: psychometric conceptions and educational conceptions (Hoge & Renzulli, 1991). In the early years of gifted education, the psychometric definition of giftedness, identifying individuals scoring in the top 3%-5% of a standardized norm referenced test as gifted, was used most often (Gagné, 2007). In recent years, researchers, theorists, and practitioners have moved from this narrow, one-dimensional definition of giftedness to definitions that include multiple qualities in addition to intellect, such as task commitment, creativity, performance, and social and motivational properties (Renzulli, 1984; Siegler & Kotovsky, 1992).

Gagné (2002), in his Differentiated Model of Giftedness and Talent (DMGT), describes the gifted individual as one whose innate superior ability in one of four domains becomes superior talent through practice and learning. Gagné asserts that environmental catalysts such as parental and educational support and innate characteristics like physical and psychological factors may serve to “speed up, slow down or even block, talent development” (p.2).

Gifted individuals, according to Gagné (2002), are those who possess innate superior ability in at least one disorder. Gagné supports identifying individuals as gifted using a precise quantitative system and then matching services to the individual’s level of

performance. He has developed a metric-based system that labels individuals from mildly gifted (1:10 in general population, 120 IQ) to extremely gifted (1:100,000; 165 IQ). At the same time, he proposes that the search for those in need of talent development be broad and inclusive, conducted early in a child's education (prior to 3rd grade), and include a continuum of services to meet each student's needs. Gagné's goal is to enhance the talent development process of informal and formal learning and practice by encouraging and promoting positive environmental and interpersonal catalysts while negating or compensating for negative environmental and interpersonal catalysts. For the purpose of this study, I will use Gagné's definition of giftedness and talent development, as it provides a clear framework for examining the effects of certain catalysts on academic achievement and talent development in gifted individuals.

ADD/ADHD

ADD/ADHD is a behavioral disorder that includes a diverse assortment of symptoms, with inattention, hyperactivity, and impulsivity being the most common (Webb et al., 2005). The *Diagnostic and Statistical Manual of Mental Disorders IV- Text Revision* (DSM-IV-TR) (American Psychological Association [APA], 2000) estimates the incidence of ADD/ADHD in school age children to be 3% - 5%, with a higher incidence in boys than girls (APA, 2000). Other studies have estimated the incidence to be from 12% to 24% (American Academy of Pediatrics, 2007; Purdie, Hattie, & Carroll, 2002). The reasons for the inconsistencies in reported rates of the prevalence of ADD/ADHD include the variety of professionals who diagnose the disorder, from pediatricians to mental health professionals, and the various standards they use to make their diagnosis. Further complications include the lack of a valid measure for gathering

parent or teacher data, comorbidity with other disorders, reported to be present in 80.4% of diagnosed ADD/ADHD cases (Kaplan, Dewey, Crawford, & Wilson, 2001), and the subjectivity of the clinical definition of the disorder (Schlachter, 2008).

The clinical definition of ADD/ADHD, according to the DSM-IV-TR (APA, 2000), will be used for the purposes of this study. According to the DSM-IV-TR, there are four subtypes of ADD/ADHD: (1) Predominately Inattentive Type; (2) Predominately Hyperactive/Impulsive Type; (3) Combined Type; and (4) ADD/HD Not Otherwise Specified, in which Individuals who have six or more symptoms in one of the following categories, and for whom the symptoms have lasted for at least six months in two or more settings (school, home, work) meet preliminary screening criteria for Type 1 or 2. Individuals with six or more symptoms in both categories meet initial criteria for type 3 and those whose symptoms of inattention or hyperactivity/impulsivity are present but do not exactly meet the specified diagnostic criteria meet the initial criteria for type 4. Further, a diagnosis of ADD/ADHD requires evidence of a significant impact on educational, social or occupational functioning, and absence of other psychological or behavioral disorders that would better explain the symptoms.

Typical behaviors associated with inattention are difficulty in paying attention to details or a problem with making careless errors in work; problems with sustaining attention; trouble organizing tasks and activities; difficulty with completing tasks; problems with listening and following instructions, problems engaging in tasks requiring sustained attention; distractibility, forgetfulness, and often losing things needed for activities.

Behaviors commonly associated with hyperactivity and impulsivity are fidgeting and/or squirming, talking excessively, moving about excessively at inappropriate times, blurting out answers, interrupting or intruding on others, leaving one's seat, and having difficulty waiting one's turn.

Twice Exceptional

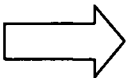
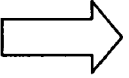
Until the 1980s, with the exception of the work of Leta Stetter Hollingworth (Klein, 2002), little attention was given to the notion of a gifted student having a learning, attentional, or behavioral disability. With the advent of multiple intelligence theory, broader concepts of giftedness, and research on the scatter in intelligence test scores of students referred for special education or gifted services, the idea of students being both gifted and disabled began to surface (Fox et al., 1983). By the late 1990s, the terms "twice-exceptional" and "dual-diagnosed" became common jargon in the gifted education field. For the purpose of this study, twice-exceptional will be used to refer to "...students who have or show potential for remarkable gifts and talents in specific areas, but whose deficits and difficulties in learning, paying attention, or meeting social and emotional expectations impede their development" (Baum, Rizza, & Renzulli, 2006, p.138).

Talent Development

Several researchers have presented theories on how talent develops in individuals at the top of their fields (Bloom, 1985; Ericsson, Nandagopal & Roring, 2005; Feldhusen, 1995, 1998; Gagné, 2002; Jarvin & Subotnik, 2006; Simonton, 2005; Sternberg, 2000; Tannenbaum, 1997). For example, based on his work with world-class artists, athletes, and academics, Bloom (1985) posited that there are three stages of talent development

(Figure 1). In the first stage, the early years, the individual engages in fun and playful activities with a nurturing, warm teacher. The individual is motivated by immediate extrinsic rewards along with the enjoyment of the fun activities. The second stage occurs in the middle years, as the individual matures in his talent, and long, hard practice of monotonous tasks takes the place of playful activities. During this stage, motivation comes from the intrinsic desire to master a skill and improve performance. Teachers are masters of the talent and, as such, respected by the student. The final stage comes later, when the individual becomes totally dedicated to his talent and seeks to reach beyond the established boundaries to make an original contribution. Usually, a talented individual works with a world-renowned teacher or coach at this point, often away from their home, no matter the age of the student.

Figure 1. *Stages of talent development* (adapted from Bloom, 1982)

	Ability 	Competence 	Expertise
Engagement	Fun, playful activities	Long, hard practice; monotonous tasks	Total dedication to talent domain
Motivation	Extrinsic rewards and enjoyment	Intrinsic desire to master skill	Desire to make an original contribution
Instructor/ Mentor	Nurturing and warm	Respected master of talent domain	World class teacher, coach, mentor

Bloom’s three stages of talent development coincide very well with Gagné’s (2002) DMGT, which not only defines giftedness and talent but also presents a model for talent development that takes intervening intrapersonal (engagement and motivation) and environmental catalysts into consideration.

Environmental catalysts include factors such as school services and programs. According to Feldhusen (1998), school programs should be identifying students for

specific talent aptitudes instead of general intellectual ability, and should subsequently focus services on the educational needs of each student. Other important goals of a school talent development program are to help students understand their own talent and potential, engage in activities that promote their talent and maximize their potential, commit to the development of their talent, and contribute to society through the use of their talent.

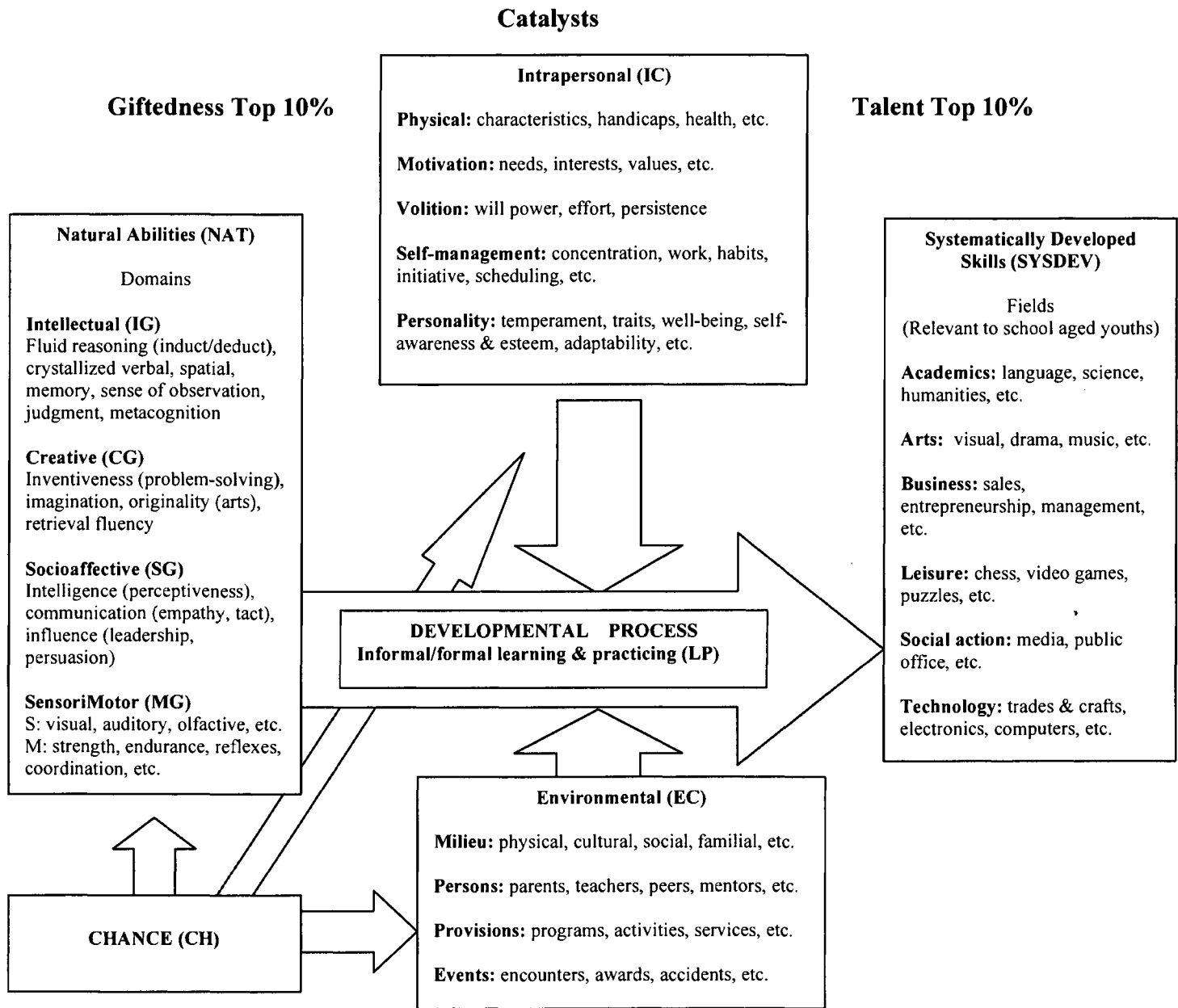
In order to meet these diverse goals, a school program must be flexible, providing many opportunities for each student. Programs should use appropriate criteria to identify talent in the four major domains (academic, artistic, vocational-technical, and interpersonal), provide a challenging curriculum, and ensure that teachers genuinely care about the students' talent development and are trained in delivering the curriculum.

Conceptual Framework

Researchers in the field of gifted education continue to explore many dilemmas surrounding giftedness. Some topics include the nature of the relationship between giftedness and talent, the process by which talent transforms into eminence, and the gifted child or adult who never realizes their potential, by choice or circumstance. Researchers and theorists have proposed and tested several theories of talent development (Reviewed in Albert, 1992; Bloom, 1982, 1985; Feldhusen, 1998; Olszewski-Kublius, 2000; Subotnik & Arnold, 1995). Gagné (2002) provides an excellent conceptual framework for studying the impact a disability and giftedness might have on the talent development of an individual.

In the DMGT (Figure 2), Gagné (2002) posits that giftedness, in one or more areas of natural ability, can develop into talent after much learning and practicing.

Figure 2: Gagné's Differentiated Model for Giftedness and Talent (2002)



The model addresses the previously mentioned quandaries with an explanation of how, during the learning and practice process, positive or negative environmental and intrapersonal catalysts may act on the talent development process to enhance or inhibit it.

When considering a gifted individual with ADD/ADHD, one might assume that all of the negative catalysts, such as impulsivity, attention problems, hyperactivity, behavior issues, or organization problems, are related to ADD/ADHD. However, studies have found that, for some individuals, being gifted has its own set of negative catalysts, such as “the big fish little pond syndrome” (Marsh, Köller, & Baumert, 2001), unhealthy perfectionism (Speirs Neumeister, 2004), unrealistically high personal standards, emotional vulnerability (Dabrowski, 1967; Hoge & Renzulli, 1991), and other educational and psychosocial concerns (Yoo & Moon, 2006). The study is designed to increase the understanding of the positive and negative catalysts, their interactions and consequences.

Purpose of Study

The purpose of this qualitative study is to explore the talent development process of gifted individuals with ADD/ADHD and the effects their giftedness and ADD/ADHD have on that process. Using Gagné’s DMGT as a conceptual framework, this study will examine the intrapersonal and environmental catalysts generated by the confluence of ADD/ADHD and giftedness in an individual and the effects these catalysts have on subsequent talent development in adulthood.

Research Questions

This study is grounded in a qualitative research paradigm emphasizing the need for openness to emerging themes and patterns. While this format prevents formulation of

specific hypotheses in advance of data collection, research questions will guide three areas of data collection: (a) awareness and identification of the giftedness and ADD/ADHD, (b) effects of the giftedness and ADD/ADHD on talent development, and (c) family influences on the talent development of gifted individuals with ADD/ADHD.

The research questions are:

1. How does being gifted with ADD/ADHD help or hinder the talent development process? (e.g. Does an individual's awareness of their twice exceptionalism alter the effects in any way?)
2. How do internal characteristics (i.e. motivation, volition, self-management, personality) affect the talent development process of gifted individuals with ADD/ADHD?
3. What are the effects of primary, middle school, secondary, and post-secondary educational settings on the talent development of gifted students with ADD/ADHD?
4. What is the role of families in supporting the talent development of a gifted student with ADD/ADHD?

Methodology

This study is an instrumental multiple case study employing the qualitative research methods of phenomenological and ethnographic traditions, designed as described by Yin (1984). Study participants are four young adults, 27-36-years-old, who were identified as gifted with ADD/ADHD. Two participants were selected from an ongoing longitudinal study of a national talent search program, the Developmental Study of Talented Youth ([DSTY], Ablard, Hoffhines, & Mills, 1996) at the Center for Talented

Youth. Acquaintances, familiar with my study, referred the last two participants, graduate programs in local universities. In addition to archival records and documents available from the ongoing study, data were collected through interviews with participants and parents.

A holistic analysis of the data based on the theoretical propositions of Gagné's DMGT included the qualitative methods of pattern matching, description, conceptual categorization, and case dynamics matrices (Miles & Huberman, 1994; Yin, 1984).

Within-case analysis of the themes from each case were followed by a cross-case thematic analysis and interpretation of the meanings gleaned from this process (Creswell, 1998). Triangulation of information via participant and parent interviews and test data and member checking with each participant and their parent were used to verify the trustworthiness and authenticity of the study with Stake's *Critique Checklist for a Case Study Report* employed to ensure quality (Stake, 1995).

Limitations of the Study

In case studies, the small number of participants makes it impossible to generalize the findings to the greater population, but findings are transferable and are a good beginning to understanding a phenomenon and identifying future research needs. Given the dearth of studies on gifted individuals with ADD/ADHD, this multiple case study will begin to address the needs of this population in terms of talent development.

Another limitation is any bias that I bring to this study. As with any directly involved researcher, there is a risk of preconceived notions or subjectivity clouding the results. My training as a special education teacher emphasized the deficits approach, and so I am more apt to look at certain characteristics as disabilities ignoring the possibility

that they could be other things, such as personality traits or characteristics of giftedness. Additionally, like many special educators, I have a tendency to see characteristics related to ADHD as negative. It was essential for me to look at the data objectively and allow it to lead me to conclusions based on the data, not on my assumptions.

My special education background has also trained me to want to improve a student's situation and give them tools to be more successful. It was imperative that during the study I did not give advice or interfere in any way with the situation the individual was confronting. During the study, I made every effort to unearth, confront, and report on my biases in addition to employing rigorous qualitative methods that helped to circumvent these biases.

Influences other than giftedness and ADD/ADHD, such as gender, are also likely to impact talent development (Arnold, 1994; Gagné, 2002; Sadker & Sadker, 1994). Sadker and Sadker studied the effects of gender on the middle and high school experiences of gifted girls and found that girls were steered away from courses and careers in math and science due to the gender biases of teachers, guidance counselors, and even some parents. In Arnold's study of high school valedictorians, results showed major differences in the achievement and self-perceived intelligence between gifted males and females. This study included three male and one female participant and thus no conclusions concerning the effects of gender can be drawn from such a small and limited sample.

Another intrapersonal catalyst that may influence a participant's talent development is the comorbidity of other disabilities with ADD/ADHD. Often, individuals with ADD/ADHD are diagnosed with comorbid conditions such as a learning disability,

behavior disorder, depression, or other psychological disability. Researchers have estimated the prevalence of comorbidity of other disabilities with /ADD/ADHD to be from 10% to 80% (Jakobson & Kikas, 2007; Smith & Adams, 2006). One participant did report a comorbid condition, depression. However, the study design does not allow for identifying the impact of comorbid disabilities on the talent development of gifted students with ADD/ADHD.

Three participants had fewer data sources than originally proposed which hindered making inferences on their experiences. This was due to the unavailability of professors and non-involvement in the DSTY. In those three cases, one professor was on a year-long sabbatical and the other two professors were on summer leave and unavailable by email and phone. Only two participants of this study were subjects in the DSTY, which provided archival data on additional assessments, and questionnaires from the participants and their parents. The other two participants were referred to the study by acquaintances and did not have the wealth of archival information available through the DSTY. Although this limited the extent of triangulation, triangulation for all of the participants was still possible through participant interviews, parent interviews, and an assessment conducted specifically for this study.

The design of this study requires participants to engage in retrospect and self-report. It should be noted that retrospective studies and self-report may have issues of reliability and validity (Gay & Airasian, 2000; Gall, Borg, & Gall, 1996). A strong study design, data collection linked to research questions, triangulation of data and rigorous analysis help to guarantee reliability and validity (Miles & Huberman, 1994; Yin, 1984).

Every effort was made during this study to adhere to those methods to ensure reliability and validity of the findings.

Delimitations of the Study

The purpose of this study was to build on the findings of the pilot study examining the effects of the confluence of giftedness and different disabilities. In the pilot study, the students with ADD/ADHD suffered more of an impact on their self-concept and school performance, which made me curious about the long-term effects of ADD/ADHD on gifted individuals. A review of the literature showed few studies on gifted college students with ADD/ADHD and no studies on gifted adults with ADD/ADHD or the talent development of this population. For that reason, this study will deal solely with gifted individuals with ADD/ADHD who have already graduated from college, hopefully on track to realizing their potential.

A second delimitation was the number of cases in the study due to the population being studied and the timeline of the study. This population consists of a small number of people because of the difficulty of identifying gifted students with ADD/ADHD. From over 600 students in the DSTY, only 12 (2%) subjects were identified ADD/ADHD. Furthermore, this population is not organized into a federal sub-group in schools, advocacy associations, or other groups, which would allow for easier access. Searching for participants in such an elusive population in a very limited timeline proved extremely difficult and yielded only four candidates.

Significance of Study

Schools have experienced a major increase in students identified with ADD/ADHD, and accommodations from elementary to college levels help these students realize their full potential. However, identification of gifted students with ADD/ADHD is lagging behind. Additionally, provisions for appropriate support and accommodations to maximize the potential of this twice-exceptional group are lacking. In order for this group of students to access the accommodations they so desperately need, educators need to be able to identify them and understand the types of strategies that insure their success. While there are many studies on either gifted students or students with ADD/ADHD, there are few studies on gifted students with ADD/ADHD, especially on individuals beyond the college level. In reviewing the literature, I found no studies on gifted adults with ADD/ADHD and only two studies on gifted college students with ADD/ADHD (Frazier et al, 2007; Trammell, 2003). This multiple case study provides a detailed description of gifted young adults with ADD/ADHD, strategies that facilitated their talent development as they advanced through school, obstacles that inhibited that talent development and a perspective on the effects of different approaches to working with this type of student. This information can help to inform educators on developing the talent of gifted students with ADD/ADHD at all educational levels.

Summary

In recent years, educational providers have come to recognize the existence of twice-exceptional students and the need for identification of and services for these students. Research has directed a bright light on the gifted child with learning disabilities, but the light is somewhat dimmer when it comes to the gifted student with ADD/ADHD.

Yet, gifted students with ADD/ADHD suffer similar negative effects related to academic success, social capability, emotional development, and talent development. In order to improve identification of and educational services for gifted students with ADD/ADHD, educators need to develop a deeper understanding of the issues confronting this type of student. Findings from this study will contribute to gifted education literature regarding gifted children with ADD/ADHD and help to inform practitioners on how to identify and serve this population. Furthermore, common themes emerging from the data analysis can be used to focus future studies.

CHAPTER 2

Review of Literature

A review of literature for this study encompasses several strands. The first strand examines the issues surrounding twice exceptionalities and lays the foundation for discussing gifted students with ADD/ADHD. The second strand looks at research on the talent development process to develop an understanding of the process and clarify further the conceptual framework of the study, Gagné's DMGT (2002). The third, fourth and fifth strands explore the research on the talent development of gifted individuals, individuals with ADD/ADHD and gifted individuals with ADD/ADHD, in terms of the different components of Gagné's DMGT.

Recognition of the Twice-Exceptional Population

The gifted population is just as complex and diverse as the general population, and yet, until the late 1980s, many practitioners in the field of education (Baum & Owen, 2004; Fox et al., 1983; Minner, Prater, Bloodworth, & Walker, 1987) did not seriously consider the notion of a gifted individual also having a learning or attention problem. Consequently, there was very little research conducted in this important area. Researchers have since worked hard to unmask the gifted child with learning disabilities (Baldwin & Vialle, 1999; Baum & Owen, 2004; Fox et al.), but uncovering the gifted child with ADD/ADHD is more complicated.

The similarities between the symptoms of ADD/ADHD and the behaviors of some gifted children serve to undermine the identification of the gifted individual with ADD/ADHD and can result in misdiagnosis of ADD/ADHD in gifted children (Hartnett,

Nelson, & Rinn, 2004; Webb et al., 2005). Many of the symptoms associated with a diagnosis of ADD/ADHD are almost identical to the characteristics of a gifted child bored with the standard curriculum or the characteristics associated with one or more of the overexcitabilities identified by Dabrowski in his Theory of Positive Disintegration (Dabrowski, 1964). In this theory of the social and emotional development of gifted individuals, Dabrowski proposes that for a gifted individual dominant in the psychomotor overexcitability, the huge amounts of stimuli they receive and are capable of processing are manifested as excessive energy, i.e. a need to move around, pacing, love of fast games, gesticulation, fast talking, impulsiveness (Piechowski & Colangelo, 1984). Since 2002, there has been a 319% increase in identification of students in the Other Health Impaired category of the Individuals with Disabilities Act, believed to be due to a growth in the identification of students with ADD/ADHD (President's Commission on Excellence in Special Education, 2002). Given this dramatic increase and the similarity in symptoms, the misdiagnosis of gifted individuals as individuals with ADD/ADHD is a significant concern of those in the field of gifted education.

A review of the literature reveals some of the more common characteristics shared by both the gifted population and the population of individuals with ADD/ADHD, and demonstrates how these characteristics may be manifested in a gifted individual with ADD/ADHD. However, the majority of studies focus on children at the elementary and middle school levels (DuPaul et al., 2001). More research is needed to identify effective interventions for high school and college age gifted individuals with ADD/ADHD.

The Talent Development Process

For centuries, theorists have debated whether or not the roots of outstanding talent lie in the nature of an individual, their personality and innate abilities or in how an individual is nurtured, their home and educational environment or training. Research on talent development has brought the opposing arguments closer together and some theorists have formulated a bioecological approach, which concedes that both factors are influential in developing talent (Dai & Coleman, 2005).

Three Perspectives on Talent and Eminence

Genetic perspective on talent. In early studies of giftedness, both Galton (1869) and Terman (1925) purported a fixed, genetic, psychometrically measurable concept of giftedness (discussed in Dai & Coleman, 2005). Terman studied over 1500 gifted children into adulthood, dispelling many of the myths surrounding giftedness while identifying factors that contributed to outstanding achievement. While Terman found that environment provided some support for development of eminence in study participants, his study provided compelling evidence for the contributions of genetic factors to the likelihood that individuals would attain eminence

Since Terman's groundbreaking work, other theorists have proposed a strong link between genes and giftedness. One such theorist, Simonton (2005), believes an individual's "gifts" and/or "talents" are genetic, dynamic, and emergent. In his theory of giftedness as multidimensional and emerging, Simonton states that the kind of genetic trait and the path of development of the genetic trait or traits determine the interventions needed to develop talent. For instance, a simple trait or gift, such as extraordinary height, would require less complex interventions to assist the individual in realizing his or her

potential as a basketball player then the more multidimensional set of traits involved in becoming a symphony conductor.

Simonton (2005) asserts that certain talents are more evident than others are at a younger age, as in a talent for chess compared to a talent for singing opera.

Environmental influences and personality traits add more layers of complexity to the emerging talent. Hence, talent development would have numerous approaches in order to take into consideration the dimensions of the genetic trait, the environmental influences, and the individual's personality. In general terms, Simonton's theory presents a view of talent and its development that would be sensitive to early talent and emerging talent, "fit a given kind of giftedness, but ...also comply with a person's unique trait profile" (p. 283).

Environmental perspective on talent. Bloom's (1985) seminal work on the talent development of 120 individuals ranked in the top 25 in their field supports the nurture aspect of talent development. Of the 120 outstanding achievers, Bloom considered only a few to be child prodigies or to possess outstanding ability. In reference to the early human potential of the subjects in his study, he states, "At this beginning stage of the learning no one was likely to view the child as likely to become one of the outstanding persons in the talent field" (p.540).

Through retrospective interviews, Bloom (1985) found the following three general qualities more essential to the development of outstanding talent than innate ability: 1) a strong interest and emotional commitment in the talent field on the part of the individual; 2) parents who instilled in their children and modeled a

strong work ethic and drive for excellence; and 3) a desire on the part of the individual to reach high levels of achievement in the field.

It may seem unsuitable to apply findings from studies of eminence to the work of developing the talent of gifted individuals who are not and may never be eminent. Bloom, himself, added a caveat that the findings of his study related specifically to individuals who became eminent in their field, specifically in the top 25 internationally, and that there were many more individuals who could attain a more modest level of achievement in a field with less commitment, effort, or family support (Bloom & Sosniak, 1981). However, research on talent development does support the notion that many of Bloom's findings transfer to the more general study of talent development. For example, in a qualitative study of the impact of a university honors program on the achievement of seven of its alumnae, Hébert and McBee (2007) found that a drive for self-actualization, excellent mentors or teachers, and strong parental guidance and involvement all had a major impact on talent development. Likewise, in a follow-up study of 31 Taiwanese physics and chemistry Olympians, Wu and Chen (2001) found the same qualities of strong parental support and good teachers to be major influences on the talent development and success of the Olympians.

Ericsson et al. (2005), in their expert-performance model, agreed with Bloom that there is no empirical evidence "for innate, unmodifiable gifts necessary for the attainment of high levels of performance, with the exception of height and body size" (p. 298). Furthermore, they make the case for deliberate practice and motivation as two key factors in achieving expert performance, regardless of the innate abilities of an individual. Ericsson and colleagues claim that the difference between average performance and

expert performance is the arrested development that comes from automaticity of a skill. Once most individuals have gone through the cognitive and associative phases of skill development and can perform a skill automatically, they cease deliberate practice, which in turn arrests skill development. The highly motivated individual will continue deliberate practice in order to perfect his or her performance, thus remaining in the cognitive and associative phases and eventually attaining expert performance.

According to Ericsson and Lehman (1996), early training of a perceived talent produces physical and neurological changes over time that improves the performance of an individual and, ultimately, distinguishes the expert from the merely accomplished performer. In spite of criticism of the expert-performance perspective from some of the leading theorists in the field (Gardner, 1995; Simonton, 2005), Ericsson and colleagues hold fast to the theory that “the instructional, motivational, and attentional factors, the prerequisites for sustaining daily deliberate practice for extended periods of time” can and do compensate for “the innate endowments of capacities, gifts, and talents” in the development of expert performance (p.305).

Bioecological perspective. The bioecological perspective represents a combination of the two previous theories. Proponents of this perspective on talent development suggest that the interaction of genes and environment produces exceptional talent in some and other behavioral outcomes in others. According to several researchers, the multiplier effect, where small inputs result in more than additive effects, is an integral part of the bioecological perspective (Dickens & Flynn, 2001; Ceci, Barnett, & Kanaya, 2003; Papierno, Ceci, Makel, & Williams, 2005). Dickens and Flynn described this phenomenon through a sports analogy of a young boy with a slightly better than average

genetic predisposition to playing basketball (height, coordination) and a father who enjoys basketball (environment). In terms of the multiplier effect, the father's interest in basketball will multiply the effects of the boy's physical advantages to produce a very good basketball player.

Another aspect of the bioecological model of talent development is the idea that people from advantaged backgrounds are more likely to have enriched environments, and this influences the gains they make in a particular endeavor. This phenomenon, sometimes referred to as the Matthew Effect, is different from the multiplier effect in that "the gain achieved by the initially advantaged is disproportionate to that of the initially disadvantaged" (Papierno et al., 2005, p. 318).

Csikszentmihalyi, Rathunde, and Whalen (1993) explored the areas of emotional commitment, motivation, and interest in their longitudinal study of 208 teens talented in art, music, science, mathematics, or athletics. In the study of "flow," an experience in which action and awareness seem to become one as a result of the balance of optimal challenge and skill, and the effects it had on interest and motivation, their results demonstrated that flow increased student interest. Further, student interest was positively correlated with several measures of success in the student's talent area: mastery level, teacher evaluations, and self-assessment of the level of engagement. Furthermore, teens who experienced flow in 50% of their talent activities in the first years of the study continued to practice their talent every day as seniors in high school, and planned to major in their talent area in college. On the other hand, teens who experienced flow in only 25% of their talent activities at the beginning of the study become disengaged from

their talent area by senior year. These findings support the proposition that increased interest and motivation are instrumental in talent development.

Gagné (2007) also espouses the interaction of natural ability with environmental factors as a model of talent development. While many researchers use the terms interchangeably, Gagné differentiates between gifts and talents, stating that gifts are natural abilities whereas talents are “systematically developed skills” (p.94). The qualitative difference between gifts and talents is the first guiding principle in Gagné’s approach to talent development. According to the DMGT, natural ability can be divided into four domains: intellectual, creative, socioaffective, and sensorimotor. The level of development a person achieves in a domain is linked to the person’s genetic endowment, with the term “gifted” used to describe achievement far beyond age peers. Talent is the application of one’s natural abilities to fields of human endeavor and development of skills related to those fields.

Talent Development in Three Groups: Gifted Individuals, Individuals with ADD/ADHD, and Gifted Individuals with ADD/ADHD

Gifted Individuals

Longitudinal study on gifted students. The Center for Talented Youth (CTY) at Johns Hopkins University has been conducting a longitudinal study, the Developmental Study of Talented Youth ([DSTY], Ablard, Hoffhines, & Mills, 1996), since 1993 with students from Northeastern and Western states who participated in the 1992 CTY Talent Search program. Of the 1992 Talent Search students invited to participate in the DTSY ($N = 1822$), 59 percent consented ($N = 1,071$) and 48 percent participated ($N = 868$) in the

Fall of 1993. The participants consisted of 611 students who qualified for the talent search summer programs by scoring in the top 0.5 percentile of their grade level on the Secondary School Admission Test (SSAT, Secondary School Admission Test Board) and 257 students who did not qualify for the summer programs (scored in the top 3 percentile of grade level on the SSAT). The participants were predominately male (62%) and white (87.1%) with the remaining students distributed among Asian/Pacific Islander (9.7%), Black (1.2%), Hispanic (1.0%) and Native American (0.1%) racial identifications.

Through parent and student questionnaires and the administration of personality, self-concept and other scales, researchers have gathered information on the academic development and psychosocial development of gifted students (Ablard, Mills & Hoffhines, 1996). Following is a synopsis of the findings from the Fall 1999 data from the longitudinal study:

1. The majority of parents felt either very good (65.2%) or good (19.7%) about their child's academic development, and very good (50.5%) or good (33.8%) about their social development. Parents also felt very good (46%) or good (37.4%) about their child's emotional well-being.
2. Parents reported that schools met their child's intellectual needs most of the time (66.8%) or all of the time (13.6%). Likewise, parents felt schools met their child's social-emotional needs most of the time (57.3%) or always (12.7%). Parents reported that schools never met their child's intellectual or social-emotional needs only 1.4% and 2.8% of the time, respectively.
3. Fifty-five percent of students reported being highly motivated in school most of the time, while 14.7% reported being highly motivated all the time. The

majority of students also reported working to full capacity most of the time (52.6%) or all of the time (16.6%).

4. Students reported reactions to their intellectual abilities were 94.3% positive from parents, 89.5% positive from teachers, 77.5% positive from friends, and 54.3% positive from peers. Negative reactions were minor (1% friends; 1.9% teachers) with the greatest being from peers (7.7%).

Intrapersonal catalysts that facilitate talent development in gifted

individuals. In a review of 14 studies related to talent development, the following personal traits were identified as being present in high achievers in a minimum of four of those studies: (a) resiliency, or the ability to deal with stress and overcome obstacles (Kerr, 1994; Olszewski-Kubilius, 2000; Subotnik & Steiner, 1995); (b) a high degree of persistence and perseverance (Bloom, 1982, 1985; Bloom & Sosniak, 1981; Cox, 1926; Csikszentmihalyi et al., 1993; Muratori et al., 2006; Wu & Chen, 2001); (c) a preference for spending time alone (Csikszentmihalyi et al.; Kaufman, 1981; Kerr; Olszewski-Kubilius; Subotnik & Steiner; Wu & Chen); (d) a high ability in a skill valued by society such as an artistic talent, verbal ability or mathematical ability (Csikszentmihalyi et al.; Feng, Campbell, & Verna, 2001; Muratori et al.; Oden, 1992; Perrone & Dow, 1993; Wu & Chen); (e) the ability to feel emotionally fulfilled through intellectual or artistic pursuits (Bloom & Sosniak; Csikszentmihalyi et al.; Hébert & McBee, 2007; Kaufman; Olszewski-Kubilius; Subotnik, Miserandino, & Olszewski-Kubilius, 1996); (f) a drive to excel or achieve self-actualization (Bloom & Sosniak; Cox; Hall & Hansen, 1997; Hébert & McBee; Kaufman; Muratori et al.; Olszewski-Kubilius; Subotnik et al.); and (g) a strong internal locus of control that includes strong intrinsic motivation and self-

discipline (Bloom & Sosnia; Cox; Feng et al.; Muratori et al.; Oden; Wu & Chen). Often individuals began their pursuit of excellence with a natural gift similar to others, but the specific traits mentioned made it possible for them to remain focused in the development of their talent when others could or did not.

The aforementioned studies found that both high achievers and individuals of eminence benefited from personality traits that allowed them to eschew the usual activities of others their age and engage for long periods in focused, isolated learning and practice of their talent. Talent development requires a great deal of solitary practice and the inability to work alone would limit progress, however, Muratori et al. (2006) reported the ability to collaborate with others as one of the traits that contributed to the success of two eminent mathematicians.

Intrapersonal catalysts that inhibit talent development in gifted individuals. Not all gifted individuals have the traits necessary to develop their talents to the optimal level and, on the contrary, may possess certain traits that inhibit talent development. In contrast to a preference for being alone is the sense of being different or isolated and a desire to conform to the beliefs and values of one's community was found most often in individuals whose talent was inhibited in some way (Hébert & McBee, 1997; Kaufmann, 1981; Kerr, 1994; Olszewski-Kubilius, 2000). Other traits identified as inhibiting talent development include (a) multipotentiality, the inability to decide which talent area to pursue (Hébert & McBee); (b) overexcitabilities, an intense manifestation of stimuli (Hébert & McBee); (c) low aspirations, failure to believe that one can achieve great things (Ambrose, 2003; Kaufmann; Reis, Colbert, & Hébert, 2005); (d) low academic self-esteem, a lack of confidence in ones academic abilities (Ambrose, 2003; Reis et al.);

(e) low self-efficacy, lacking in the belief that one can complete tasks efficiently (Ambrose, 2003; Reis et al.); and (f) a lack of perseverance, the inability to see a difficult task through to fruition (Reis et al.).

Environmental catalysts that facilitate talent development in gifted individuals.

An overwhelming majority of studies on talent development cited a good mentor or teacher as one of the most important factors in promoting talent (Bloom, 1982; Hall & Hansen, 1997; Hébert & McBee, 2007; Kaufmann, 1981; Kerr, 1994; Muratori et al., 2006; Subotnik & Steiner, 1995; Oden, 1992; Perrone & Dow, 1993; Wu & Chen, 2001). Other factors identified in the research literature included (a) the opportunity to connect with others who excel in one's talent field (Bloom; Muratori et al.; Wu & Chen); b) the opportunity to engage in research or competitions (Bloom; Hébert & McBee; Muratori et al.; Wu & Chen); (c) an educational experience that is high quality, rigorous and provides enrichment (Feng et al., 2001; Hébert & McBee; Muratori et al.; Subotnik & Steiner; Oden; Wu & Chen); (d) acceleration options (Muratori et al.; Wu & Chen); and (e) school programs that have an affective component that addresses the social and emotional needs of gifted individuals (Hébert & McBee; Wu & Chen).

Studies have found that family and friends have an effect on talent development. Good parental guidance and supportive families were found to be instrumental in the rise to eminence of many high achieving individuals (Bloom, 1982; Feng et al., 2001; Hébert & McBee, 2007; Muratori et al., 2006; Subotnik & Steiner; Perrone & Dow, 1993; Wu & Chen, 2001). Several studies cited the positive rewards of students mingling and working with other students who shared their passion for a subject area (Bloom & Sosniak, 1981; Muratori et al.; Wu & Chen).

Environmental catalysts that inhibit talent development in gifted individuals. The reverse of these factors serve to inhibit talent development: family dysfunction as opposed to family support (Csikszentmihalyi et al., 1993; Kerr, 1994; Olszewski-Kubilius, 2000; Peterson, 2001; Reis, Colbert, & Hébert, 2005); marginality, or isolation from the norm, instead of acceptance by peers (Ambrose, 2003; Hébert & McBee, 1997; Kerr; Olszewski-Kubilius); and pressure from peers to spend less time on developing talent and more time on activities more typical of age mates rather than collegiality in pursuing talents (Csikszentmihalyi et al.; Reis et al.; Oden, 1992; Wu & Chen, 2001).

Individuals with ADD/ADHD

One might assume that most traits associated with ADD/ADHD have a negative impact on talent development, and research on ADD/ADHD has overwhelmingly focused on the difficulties individuals with ADD/ADHD must endure as a result of their ADD/ADHD and the negative effects the disorder has on achievement. However, a few studies have identified behaviors and traits that have helped to develop academic talent (Gureasko-Moore, DuPaul & White, 2007; Kaminski, Turnock, Rosen, & Laster, 2006).

Intrapersonal catalysts that facilitate talent development in individuals with ADD/ADHD. Students with ADD/ADHD who are academically successful use learned behaviors as interventions that compensate for the symptoms of ADD/ADHD. Self-management skills (time management skills, study skills, organization skills), classroom preparedness behaviors (arriving to class on time, keeping eye contact with the teacher, having necessary materials), and attending to tasks are some examples (Gureasko-Moore, DuPaul & White, 2007; Kaminski, Turnock, Rosen, & Laster, 2006). Solanto, Marks, Mitchell, Wasserstein, and Kofman (2008) had a similar finding in their study of adults

with ADHD. Following an 8-12 week program targeting self-management skills, the participants showed a decline in inattention symptoms and an improvement in executive functioning skills.

In addition to learned behaviors, successful students with ADD/ADHD are likely to have innate traits such as a desire to be perceived as high performing and a high level of competitiveness, leading to increased motivation and achievement (Carlson et al., 2002). Other innate traits seen in successful students with ADD/ADHD are positive attitude, willingness to work harder and longer than others, and self-awareness (Kaminski et al., 2006). While these studies are limited by their focus on successful students with ADD/ADHD, and thus findings cannot be broadly generalized, they are highly relevant to my current study.

Trammell (2003) further emphasizes the importance of self-awareness for the success of college students with ADD/ADHD. In his study of the impact academic accommodations had on the achievement of college students with ADD/ADHD, he found that it was the appropriateness of the accommodations chosen by the students, not the frequency, that resulted in a significant increase in grades. Student self-awareness is essential for identification of the most relevant accommodations for themselves.

Intrapersonal catalysts that inhibit talent development in individuals with ADD/ADHD. Many studies have shown that the behaviors associated with ADD/ADHD (inattention, hyperactivity, disruptiveness, impulsivity) have a negative effect on learning and achievement across the life span (Barkley, 1998; Brand, Dunn, & Greb, 2002; Carlson, Booth, Shin, & Canu, 2002; Fabiano et al., 2007; Frazier, Youngstrom, Glutting, & Watkins, 2007; Halmøy, Fasmer, Gillberg, & Haavik, 2009; Reid, Trout, & Schartz,

2005; Volpe et al., 2006). In a recent meta-analysis of 72 studies on ADD/ADHD and achievement, Frazier et al.(2007) found that children with ADD/ADHD scored lower on measures of achievement in reading ($d = .73$, $p = .001$), mathematics ($d = .67$, $p = .001$), and spelling ($d = .55$, $p = .001$) compared to control groups. This finding identifies a major obstacle to talent development for students with ADD/ADHD, considering the importance of these skills in developing many talents.

Other studies have identified additional traits related to the symptoms of ADD/ADHD that negatively affect a person's performance and ultimately the development of their talent. Individuals with ADD/ADHD, both adults and children, are more likely to have low intrinsic motivation (Carlson et al., 2002; Rucklidge, Brown, Crawford, & Kaplan, 2007), another trait important to the development of talent (Bloom & Sosnia, 1981; Cox, 1926; Muratori et al., 2006; Oden, 1992; Wu & Chen, 2001). Students with ADD/ADHD are more likely to have low self-expectations and a tendency to be easily discouraged (Carlson et al.; Volpe et al., 2006), factors previously noted as having a negative impact on talent development in gifted individuals. Further, students with ADD/ADHD tend to lack enjoyment in learning, especially learning through reading (Brand et al., 2002; Carlson et al.), decreasing motivation to learn and limiting opportunities for learning.

According to achievement goal theory, students may adopt different approaches to learning and these may affect motivation. The three approaches are: (a) mastery - the goal of mastering information to develop competence; (b) performance-approach goal – the goal of demonstrating competence; or (c) performance-avoidance goal- the goal of avoiding demonstrating incompetence. In a study of the achievement goals of students

with ADD/ADHD, Barron, Evans, Baranik, Serpell, and Buvinger (2006) found that a group of students with ADD/ADHD (N=70) primarily adopted the preferred mastery approach to learning (M=4.32; M=4.50; on a 5-point Likert scale), but also adopted the least preferred performance-avoidance goal (M=3.47; M=3.10, on a 5-point Likert type scale). For this sample of students with ADD/ADHD, the performance-avoidance goal orientation was positively correlated to avoiding novel activities ($r = .31$). Students who avoid novel activities and limit academic risks may inhibit the development of their talent since both of these activities are linked to talent development.

The learning styles of students with ADD/ADHD may also have a negative impact on talent development. A study of the learning styles of 230 elementary and high school students with ADD/ADHD found that 80% of the sample had no distinguishable preference for how they processed information. Whereas, the majority of students (88%-90%) prefer to process information in a global way, simultaneously and through personal relevance, and the remaining students (10%-12%) prefer to process information analytically, in a sequential step-by-step approach, (Brand et al., 2002). According to Brand et al., students who do not have a preferred method for processing information will only learn a particular content when their interest level is high.

Several researchers point to ADD/ADHD as a contributor to emotional maladjustment, although there is disagreement and inconsistency in findings on this issue (DuPaul, Jitendra, & Tresco, 2006; Moon et al., 2001). Bagwell, Molina, Kashdan, Pelham and Hoza (2006) attribute the discrepancy in findings to the comorbidity of ADD/ADHD and other disabilities (learning disabilities, conduct disorders, etc.) and the changes in diagnostic criteria. In their study of 142 adolescents with childhood

ADD/ADHD, they found that rates of anxiety and mood disorders for the students with ADD/ADHD were not significantly higher than for a comparison group (N=100). However, Waas and Graczyk (1999) found that students who had external social problems, especially academic-disruptive behaviors similar to students with ADD/ADHD, were significantly more at risk for peer rejection and accompanying emotional difficulties.

The risks associated with emotional maladjustment for individuals with ADD/ADHD do not wane in adulthood (Mannuzza, Klein, & Moulton, 2008; Rucklidge, et al., 2007). On the contrary, in a study investigating the psychiatric and cognitive functioning of adults with ADD/ADHD, Biederman, Faraone, Spencer, Wilens, et al. (1993) found that compared to adults without the disorder the adults with ADD/ADHD were more impaired psychologically, socially, and cognitively. A later study (Biederman, Faraone, Spencer, Mick, et al., 2006) revealed significant impairments in the functioning of 500 adults with ADD/ADHD compared to a matched group of 501 adults without the disorder. Biederman, Faraone, Spencer, Mick, et al. (2006) found the adults with ADD/ADHD were less likely to have graduated from high school (83% vs. 93%, $p = .001$), have graduated from college (19% vs. 26%, $p < .01$), and be currently employed (52% vs. 72%, $p = .001$). Additionally, the adults with ADD/ADHD changed jobs more often than the adults without ADD/ADHD did over a 10 year period ($M = 5.4$ vs. $M = 3.4$, $p = .001$), and were more likely to be arrested (37% vs. 18%, $p = .001$).

Criminality due to antisocial behaviors and substance abuse is very strong for individuals with ADD/ADHD and is a serious impediment to realizing one's potential. Mannuzza, Klein, and Moulton (2008) found that in a follow-up in a longitudinal study of

white boys with ADD/ADHD ($n = 207$, ages 6-12), more of the adult men with ADD/ADHD ($n = 93$, age 38) were arrested (47%), convicted (42%) and jailed (15%) compared to the comparison group ($n = 93$, age 38, 24%, 14%, and 1%, respectively).

Environmental catalysts that facilitate talent development in individuals with ADD/ADHD. There are several factors specific to students with ADD/ADHD that positively influence talent development. Interventions such as academic accommodations, behavior modification and stimulant medication can support achievement in the classroom and are considered essential for aiding students with ADD/ADHD (Barkley, 2007; DuPaul, & Eckert, 1997). Federal regulations require all elementary, secondary (Individuals with Disabilities Education Act [IDEA], 1997; Rehabilitation Act of 1973) and post-secondary (Americans with Disabilities Act [ADA], 1990; Rehabilitation Act of 1973) educational institutions to provide academic accommodations to all students with disabilities, including students with ADD/ADHD (Hurtubis Sahlen & Lehman, 2006). For a student with ADD/ADHD this could mean extended time on tests, tests administered in a more individualized setting, taping classes (Trammel, 2003), assignments broken into smaller units, note-taking assistance, assignment notebook monitoring, or study skill/time management assistance (Evans, Serpell, Schultz, & Pastor, 2007).

Services and accommodations offered to students with disabilities at postsecondary educational settings have more recently come under scrutiny. According to the National Postsecondary Student Aid Study (National Center for Educational Statistics [NCES], 1996), 6% of undergraduate students reported having a disability. In a recent Postsecondary Education Quick Information System survey (NCES, 1999), 72% of

postsecondary institutions reported having enrolled students with disabilities and 98% of those institutions reported having provided at least one accommodation to students with disabilities. The most frequent accommodations offered were alternative test formats (i.e. large print, Braille, oral testing) or extended time (88%), followed by tutors (77%), classroom note takers or readers (69%), registration assistance (62%), assistive technology (58%), books on tape (55%), sign language interpreters/translators (45%), and course substitutions or waivers (42%). Considering the range of accommodations offered to college students, it is essential that students receive guidance in selecting the most appropriate accommodations.

Behavior modification and stimulant medication have been used effectively for many years as a means to decrease disruptive/inattentive behaviors and increase classroom work completion for students with ADD/ADHD (DuPaul, & Eckert, 1997; Evans et al., 2007; Gureasko-Moore et al., 2007). In a recent study exploring the most effective treatment for 48 students with ADD/ADHD between the ages of 5 and 12 years, Fabiano and colleagues (2007) found that low intensity behavior modification resulted in a significant decrease in classroom disruptions (effect size = .55, $p < .05$) and a 15%-21% increase in classroom seatwork completion. Medication, specifically methylphenidate at three different levels (0.15, 0.30, and 0.60 mg/kg), also showed significant beneficial effects on levels of both classroom disruption and classroom productivity. The researchers in this study explored the results of combining the two treatments and found that a combination of low dose medication and a simple behavior management program was just as effective for decreasing classroom violations and increasing seatwork completion as a high dose medication or a complex behavior modification program,

singularly or combined. This is a significant finding, considering the negative side effects of high doses of stimulant medication and the intensive training needed for complex behavior modification programs.

Treatment and early diagnosis are two of the longest lasting positive effects for adults with ADD/ADHD (Halmøy et al., 2009). Halmøy et al. surveyed 414 adults with ADD/ADHD and found that 24% were employed compared to 79% of the control group ($N = 359$). Of the unemployed adults with ADD/ADHD, more were diagnosed with combined type (inattention and hyperactivity/impulsivity), and had a history of substance abuse, depression, and other comorbid disorders. The employed adults with ADD/ADHD were more likely to have received a diagnosis and stimulant therapy treatment as children, the strongest predictor of employment as an adult.

Classroom environments have a significant impact on the achievement of students with ADD/ADHD, and findings differ depending on whether the program studied is elementary or secondary. Brand et al. (2002) found that while elementary students with ADD/ADHD preferred low lights, academics in the afternoon, a more kinesthetic approach, and structured classrooms, their high school counterparts preferred increased lighting, a more traditional instructional style, and auditory learning.

Environmental catalysts that inhibit talent development in individuals with ADD/ADHD. Instructional strategies that are passive in nature (e.g. lecture, silent reading) have been cited as resulting in decreased on-task behavior for elementary students with ADD/ADHD (Vile Junod, DuPaul, Jitendra, Volpe, & Cleary, 2006). Additionally, students with ADD/ADHD have to contend with problem behaviors, such as impulsivity, hyperactivity, and inappropriate social interaction that often bring on

negative reactions from teachers, family, and friends (DuPaul & Weyandt, 2006; Moon, Zentall, Grskovic, Hall, & Stormont, 2001). As previously mentioned, Waas and Graczyk (1999) identified externalized problem behaviors such as academic-disruptive behaviors (i.e., getting bad grades, cannot answer teacher's questions, talking during class, being too loud during class) and aggressive-antisocial behaviors (i.e., picking fights, being mean to others) as most likely to result in social rejection in students in grades 2-6. These antisocial behaviors and other psychological difficulties in early childhood have been linked to several social and emotional problems (dropping out of school, loneliness, depression, substance abuse, criminality, and incarceration) in adolescence and adulthood for individuals with ADD/ADHD and severely hamper their talent development (Dumas, 1998; Halmøy et al., 2009; MacPhee & Andrews, 2006; Mannuzza et al., 2008).

Gifted Individuals with ADD/ADHD

There are very few studies focused specifically on gifted students with ADD/ADHD. This may be due to a lack of interest on the part of the research community, especially in light of a belief that ADD/ADHD is misdiagnosed and over-diagnosed in individuals who are gifted (Webb et al.; Moon et al., 2001). However, identification of gifted students with ADD/ADHD is difficult, and this may limit opportunities for well-designed studies. Gifted students may be able to compensate for symptoms of ADD/ADHD (Chae, Kim, & Noh, 2003), and indicators traditionally used for diagnosing ADD/ADHD (i.e. Freedom from Distractibility on the KEDI-WISC-IV) have been found to be less reliable for diagnosing ADD/ADHD in gifted students (Chae et al.). A further complication is that comorbidity with other disorders with ADD/ADHD is common (Webb et al., 2005), creating a trifecta that reduces accurate identification of

twice-exceptional students. Given the high prevalence of learning disabilities comorbid with ADD/ADHD, findings from the literature on gifted students with learning disabilities will be included in this discussion on gifted students with ADD/ADHD.

Intrapersonal catalysts that facilitate talent development in gifted individuals with ADD/ADHD. Several intrapersonal catalysts identified by Zentall, Moon, Hall, and Grskovic (2001) could be considered as contributing to talent development in gifted students with ADD/ADHD. In a multiple case study of 8-9 year-old boys, Zentall and colleagues found this group to be highly motivated by math and science, reading with no demonstrated skill deficits, engaged in sports and activities, creative, and assertive in verbalizing preferences. The students also shared the sensitivity and self-awareness of their gifted counterparts, but in combination with the symptoms of ADD/ADHD, these attributes occasionally worked against them.

In related studies that examined traits of gifted students with learning disabilities, found to be comorbid with ADD/ADHD, several intrapersonal catalysts aided in the success of these twice exceptional students and adults (Hannah & Shore, 1995, 2008; Reis, McGuire, & Neu, 2000). Reis et al. found that high ability college students with learning disabilities learned compensation and learning strategies while in college in order to succeed. The compensation strategies included note taking, weekly or monthly organizers, time management, test taking preparation, use of computers and word processors and monitoring of assignments. Learning strategies used by the group were books on tape, mnemonics, rehearsal through flashcards, and chunking information into smaller units. In addition to strategies, some of the students developed the innate quality of a self-awareness of their strengths and weaknesses, which lead them to choosing a

major in their area of strength or one that did not depend on skills in their area of disability. Kaminski et al. (2006) found the same attribute of self-awareness in successful college students with ADD/ADHD in terms of choosing appropriate accommodations.

Another innate trait found to aid gifted students with learning disabilities is metacognition, the process of monitoring, revising, and evaluating one's thinking, commonly associated with higher level thinking. Hannah and Shore (2008) examined this process for reading and comprehending text in elementary and high school gifted students with learning disabilities, and found that the secondary students were more proficient at this skill, but both grade levels were more like gifted students than learning disabled students in the use of this process.

Giftedness, or a high IQ, may help to mitigate some of the effects of ADD/ADHD. Studies have shown that IQ is inversely related to the risk of psychiatric and other disorders (Koenen et al., 2009). However, Brown, Reichel, and Quinlan (2009) found in a study of 157 men with ADD/ADHD and IQs above 120 that 73% of the subjects were significantly impaired on more than five assessments measuring executive function, an incidence significantly higher than in the general population. This study suggests that gifted individuals with ADD/ADHD do experience symptoms of ADD/ADHD at the same levels as non-gifted individuals with ADD/ADHD, but it did not measure the prevalence of comorbidity with other disorders in this population. This is an area that needs to be explored further to support the supposition of cognitive reserve its function as a barrier for mental disorders.

Intrapersonal catalysts that inhibit talent development in gifted individuals with ADD/ADHD. Several findings came out of the study conducted by Zentall et al. (2001).

In addition to traits that facilitate talent development, Zentall and colleagues found that gifted boys with ADD/ADHD had more traits and behaviors in common with other students with ADD/ADHD than with other gifted students. The most pronounced were attention issues such as losing interest in activities or tasks, doing minimal work, failing to complete work, and difficulties attending to or following verbal directions. The gifted boys with ADD/ADHD also had difficulty with classroom preparation behaviors, as seen for other children with ADD/ADHD. In a separate paper, the same researchers (Moon et al., 2001) reported that this same group of gifted boys with ADD/ADHD had difficulties regulating emotions and problems with peer relationships. While most of the intrapersonal catalysts discussed by these researchers would be detrimental to talent development, high motivation, advanced academic skills, assertiveness, creativity and self-awareness appear to have a counterbalancing positive impact.

Environmental catalysts that facilitate and inhibit talent development in gifted individuals with ADD/ADHD. The type of instruction provided to gifted students with ADD/ADHD has been shown to have a major effect on their learning and practice and thus talent development and can be either a facilitator or inhibitor, depending on the approach. A deficit approach that focuses instruction entirely on weaknesses, usually in a drill and practice format, was found to lower performance levels, increase frustration, and engender defiant behavior in students with ADD/ADHD (Leroux & Levitt-Perlman, 2000; Zentall et al., 2001). In a case study of an 8 year-old gifted student with ADD/ADHD, Leroux and Levitt-Perlman recorded the following:

Now, grade 3, Jason has lost interest in school due to the frustration of unchallenging activities and peer rejection. His self-esteem is low and he

is performing at grade level, though group achievement tests have placed him significantly above average. Now Jason's teachers see no reason to consider giftedness or ADD/ADHD; they just look at him as a difficult child with an attitude problem. (p. 173)

Zentall and colleagues' study of three elementary aged gifted boys with ADD/ADHD (ages 8-9) and a mean IQ of 143 provides an additional example of these outcomes. The boys exhibited difficulty completing work with lower level skills or rote memorization. They much preferred work that was creative, cognitively stimulating, language-based (e.g. telling stories, using their imagination, dramatics), and related to their talent area. These students also preferred to work in groups, in contrast to gifted students without ADD/ADHD, who preferred working alone. They also were more aware of their teachers' perceptions of their poor work habits and performance, and had higher stress levels as a result. Educational programs that lack the flexibility to accommodate a variety of instructional formats may disproportionately impact gifted students with ADD/ADHD, due to their increased need for creativity and cognitively stimulating work, and their reduced ability to abide by social convention and tolerate disapproval.

On the other hand, educational programs that use a strengths approach, a variety of instructional strategies and teach compensation strategies to twice-exceptional students will have a positive effect on this population. Reis et al. (2000) found that post-secondary students attributed their success in college to the compensation strategies they learned in the college's program for students with learning disabilities. Furthermore, these students were dismayed that their elementary and secondary learning disability support programs did not teach and require them to use similar compensation strategies. The same

strategies the students in this study found so beneficial to their success are mentioned in the literature on successful college students with ADD/ADHD. Gifted students with disabilities

Summary

The gifted population is a microcosm of the general population with all its diversity and stereotypes, including learning disabilities and disorders like ADD/ADHD. While failure to recognize the possibility of gifted students also having disorders that affects their ability to learn has limited the research on optimal interventions for this population, some recent studies have begun to address this question. Overall, gifted students with ADD/ADHD have more traits in common with other students diagnosed with ADD/ADHD than they have with gifted students. This makes identification for gifted services even more difficult.

Talent development theories have gone from a genetic trait model to an environmental model to a combination of the two. The most current focus on a bioecological approach recognizes the contributions genetic traits and environmental catalysts make to the development of talent. Studies on talent and giftedness acknowledge external conditions and internal characteristics that both facilitate and inhibit talent development.

Table 1 shows the research studies that provide an understanding of the process of talent development in gifted individuals, individuals with ADD/ADHD, and gifted individuals with ADD/ADHD.

Table 1

Table of literature strand findings

Table of Literature Strand Findings		
Strand	Study	Key Findings and Concepts
Talent Development	Bloom & Sosniak	These studies found that 120 individuals with outstanding talent demonstrated a strong interest and emotional commitment to their talent, an innate desire for reaching high levels of achievement, a strong internal locus of control, intrinsic motivation and self-discipline.
	1981; Bloom, 1982,	
	Cox, 1926	Cox found that high intelligence along with good personal traits such as persistence of motive, strength of character, motivation, and self-confidence led the 300 male subjects to eminence. Environment was an asset to achieving eminence but not a determining factor
	Feng, Campbell, &	The factors contributing to the talent development of American Physics Olympians included a

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Verna, 2001	supportive and enriching home environment, parents who encouraged and modeled strong work ethics and discipline, challenging educational experiences, an awareness of the value of effort and ability, and prior ability in the field.
	Muratori, Stanley, Gross, Ng, Tao, Ng, & Tao, 2006	Two highly talented/ eminent mathematicians demonstrated an internal locus of control, a drive for self-actualization, a facility for creative synthesis, a high level of task commitment, focus and persistence, strong interpersonal and communication skills, and an ability to collaborate with others. External factors that facilitated their talent development were mentoring or a good teacher, good parental guidance, a high quality, rigorous high school experience, engaging in accelerative educational and enrichment options, cooperative schools, and connecting with intellectual and talent domain peers.
	Wu & Chen, 2001	In a follow-up of Taiwan physics and chemistry Olympians, this study found the Olympians were

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
		<p>all top university students majoring in physics or chemistry, first-born children in small families, in gifted classes at an early age, in the upper socioeconomic status, had supportive families and strong learning environments. The Olympians and their parents considered a good teacher to be the most important factor in developing talent.</p>
ADD/ADHD	<p>Bagwell, Molina, Kashdan, Pelham, & Hoza, 2006</p>	<p>This study found no difference in the rates of anxiety and mood disorders for two groups of adolescents, one group with ADD/ADHD and one without ADD/ADHD.</p>
	<p>Barron, Evans, Baranik, Serpell, & Buvinger, 2006</p>	<p>Students with ADD/ADHD more often demonstrated the less productive performance avoidance goal approach to achievement (goal is to avoid demonstrating incompetence) although some did exhibit the more preferred mastery goal approach to learning.</p>

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Biederman, J., Faraone, S. V., Spencer, T., Wilens, et al., 1993	Adults with ADD/ADHD are more impaired psychologically, socially, and cognitively than adults without ADD/ADHD.
	Biederman, J., Faraone, S. V., Spencer, T., et al., 2006	A group of 500 adults with ADD/ADHD were compared to a similar group of 501 adults without ADD/ADHD and found to have less likely graduated from high school or college or be employed; and more likely to have changed jobs more often and be arrested.
	Brand, Dunn, & Greb, 2002	Elementary students with ADD/ADHD lacked persistence and avoided tasks requiring sustained application (task completion), had an external locus of control (motivated by teachers and parents), disliked learning by reading, had no learning style framework (analytical/ sequential, or

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
		<p>global/simultaneous), had poorer academic functioning in the morning and preferred low lighting in the classroom.</p>
	<p>Carlson, Booth, Shin & Canu, 2002</p>	<p>Elementary students with ADD/ADHD exhibited low intrinsic motivation, an external locus of control, a preference for easy work, low self-expectations, competitiveness and a desire to be perceived as high performing (ADD/ADHD/Combined type). They also lacked persistence and a love for learning, avoided tasks requiring sustained application (task completion), and were easily discouraged and less cooperative than students without ADD/ADHD.</p>
	<p>DuPaul & Eckert, 1997</p>	<p>This meta-analysis of school-based interventions for students with ADD/ADHD found that contingency management and academic interventions were more effective in improving classroom behavior than cognitive-behavioral procedures.</p>

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	DuPaul, Jitendra, & Tresco, 2006	There were no gender differences in the impairment of academic functioning for boys and girls with ADD/ADHD, both were below peers in behavior, academics and social functioning. Also more than 50% of the subjects had comorbid behavioral disorders
	Evans, Serpell, Schultz, & Pastor, 2007	Secondary school students with ADD/ADHD improved grades, behavior, and social functioning following 15 psychosocial intervention sessions on assignment tracking, note taking skills, organization, problem solving, and conversation skills .
	Fabiano, Pelham, Gnagy, et al., 2007	Students with ADD/ADHD engaged in disruptive/inappropriate behavior, lacked persistence and avoided tasks requiring sustained application (task completion)
	Frazier, Youngstrom, Glutting, & Watkins,	College students with ADD/ADHD struggled due to academic deficits in reading, spelling, or math.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	2007	
	Gureasko-Moore, DuPaul, White, 2007	Students with ADD/ADHD had an inconsistent application of study, time management, and organization skills; increased performance and productivity when they learned and applied compensatory strategies; were more successful and productive when they demonstrated appropriate classroom preparation behaviors (arrived to class on time, sat quietly while maintaining eye contact with teacher, had the necessary materials).
	Kaminski, Turnock, Rosen, & Laster, 2006	College students with ADD/ADHD who were successful in college engaged in time-intensive effortful studying (working longer and harder than others), maintained a positive attitude and demonstrated self-awareness.
	Kaplan, Dewey, Crawford & Wilson,	More than half of 179 students with ADD/ADHD in this study had other comorbid disorders.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	2001	
	MacPhee & Andrews, 2006	Hyperactivity/inattention and conduct problems were significant predictors of depression.
	Mannuzza, Klein, & Moulton, 2008	Compared to a group of adult white men without ADD/ADHD ($n = 93$, age 38), more adult white men with ADD/ADHD ($n = 93$, age 38) were arrested (47% vs. 24%), convicted (42% vs. 14%) and jailed (15% vs. 1%).
	Reid, Trout, Schartz, 2005	Students with ADD/ADHD often engaged in disruptive/inappropriate behavior; lacked persistence and avoided tasks requiring sustained application (task completion); and improved productivity, and on task behavior with self-regulation interventions. Also, combining medication with self-regulation may be more effective than medication alone.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Rucklidge, et al., 2007	Adults with ADD/ADHD struggle more with depression, anxiety, childhood dissatisfaction, an external locus of control, and a maladaptive attributional style than adults without ADD/ADHD do.
	Solanto, et al., 2008	Adults with ADD/ADHD improved executive functioning skills (time management, organization, planning) and demonstrated a decrease in inattention symptoms following an 8-12 week therapy program targeting the aforementioned skills.
	Trammel, 2003	College students with ADD/ADHD were more successful if they were able to choose appropriate ADA academic accommodations.
	Volpe, DuPaul,	Students with ADD/ADHD exhibited low intrinsic motivation and lacked prior achievement in a

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	DiPerna, Jitendra, Lutz, Tresco, & Junod, 2006	domain.
	Waas & Graczyk, 1999	Children with academic-disruptive, anxious-depressed or aggressive-antisocial behaviors were more likely to experience peer rejection.
Gifted	Csikszentmihalyi, Rathunde, & Whalen, 1993	Gifted teens, when engaging in their talent domain, experienced “flow” and those who experienced flow more often during their talent activities continued in their talent fields for more years than those who experienced flow less often.
	Hall & Hansen, 1997	Gifted women were more self-actualized than Ivy League male graduates due to their altruism, volunteerism, idealism, risk taking and good role models.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Hebert & McBee, 2007	Gifted college students benefited from good teachers/mentors, good parental advice and high quality educational experience, and were unconventional in their attitudes, emotionally fulfilled by intellectual activities, and motivated by an internal locus of control and a drive for self-actualization.
	Kaufmann, 1981	Gifted individuals have a variety of traits such as a sense of being different or in isolation, a drive to excel or achieve self-actualization, the ability to feel emotionally fulfilled through intellectual or artistic pursuits, a desire to conform to the beliefs and values of their communities and low aspirations.
	Kerr, 1994	Gifted females demonstrated a high level of resiliency, a preference for spending time alone, a feeling of being different, and a desire to conform to the beliefs and values of their communities

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Marsh, Köller, Baumert, 2001	Students experienced a drop in academic self-concept upon entering a more selective program (big fish little pond syndrome).
	Perrone & Dow, 1993	The upper 2% of Wisconsin's 1988 high school graduates attributed their good grades in the first year of college to good instructors, good study skills, hard work and the support of family and friends.
	Peterson, 2001	Personality factors, role models, developmental task accomplishments, changes in location, and new challenging academic courses helped in reversing underachievement.
	Spiers Neumeister, 2004	Gifted students often experienced unhealthy perfectionism as a result of unchallenging academics and that there is a positive relationship between the perfectionist tendencies of children and their parents.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Yoo & Moon, 2006	Gifted children had counseling concerns requiring differentiated counseling services including educational planning, school concerns and psychosocial concerns.
Gifted/ADD/ ADHD	Chae, Kim, & Noh, 2003	Gifted children with ADD/ADHD performed similarly to gifted children without ADD/ADHD on the Test of Variables of Attention and higher intelligence in gifted children with ADD/ADHD may help them compensate for attention problems. Additionally, gifted children with ADD/ADHD showed no differences on the KEDI-WISC with the exception of the Coding subtest
	Hannah & Shore, 2008	Secondary gifted students with learning disabilities used metacognition in ways similar to gifted students in reading text. Elementary students were not as proficient at verbalizing their metacognition (checking, planning, predicting, monitoring, testing, revising, and evaluating their

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
		thinking).
	Hartnett, Nelson, & Rinn, 2004	This study of misdiagnosis of gifted students with ADD/ADHD found that 22 counseling graduate students, given a description of a student and diagnosis alternatives, diagnosed gifted and gifted with ADD/ADHD more often than the control gifted (effect size of .546, Cramer's V).
	Leroux & Levitt- Perlman, 2000	Gifted children with ADD/ADHD excel when given opportunities in school to pursue their interests, become defiant when faced with boring, unchallenging work and requires instruction that focuses on strengths not weaknesses.
	Reis, McGuire, & Neu, 2000	High ability college students with learning disabilities learned compensation (e.g. note taking, organizers, test taking preparation, books on tape) and learning strategies (e.g. mnemonics, rehearsal, chunking information) in college in order to succeed, in addition to choosing a major in their area of strength or one that did not depend on skills in their area of disability.

Table of Literature Strand Findings

Strand	Study	Key Findings and Concepts
	Moon et al., 2001	Gifted students with ADD/ADHD have difficulty regulating their emotions, experience problems with peers, and have families that are stressed.
	Zentall, Moon, Hall, & Grskovic, 2001	Gifted students with ADD/ADHD exhibited attentional problems, off-task behaviors, and poor classroom preparation behaviors; preferred working in groups and cognitively stimulating activities over drill and practice.

CHAPTER 3

Methodology

Background

In designing this study, I was guided by how individuals make sense of their world. I subscribe to the constructivist approach to reality, which suggests we all construct meaning in our lives based on our life experiences and our interactions with others (Gall, Borg, & Gall, 1996). To uncover the effects giftedness and ADD/ADHD have had on individuals as they interact with others, it is important to take an approach that will allow the different realities of these individuals to emerge. A case study is a research tool that is very conducive to a constructivist approach, allowing the questions of “how” and “why” to be answered in depth and detail. For that reason, I chose a case study design to examine the question of how the combination of giftedness and ADD/ADHD effects the talent development of an individual. In order to deepen the understanding of the phenomenon and increase transferability, the study includes multiple cases.

Pilot Study

The methodology of the current study is based on a pilot study I conducted with Dr. Jill Burrus (Burrus & Drummond, 2002), which focused on how giftedness and a disability influenced the academic and social lives of twice-exceptional students. The participants in the pilot study consisted of seven elementary to middle school aged gifted children with various disabilities, including physical disabilities, blindness, cerebral palsy, ADD/ADHD, learning disabilities, and Tourettes’s Syndrome). Data were

collected through open-ended interviews with parents, students, and the students' teachers. All interviews were recorded, transcribed, and analyzed within and across cases using coding, conceptual categorization, and the constant comparative method of ensuring rigor. One finding was that across age, gender, socioeconomic status, and family structure, ADD/ADHD was the disability that had the most negative influence on the participants' academic and social functioning (Burrus & Drummond, 2002). This finding led me to query what long lasting effects ADD/ADHD might have on a gifted individual's talent development.

Research Questions

To expand on the information gleaned from the pilot study, I decided to explore the long-term effects of ADD/ADHD on a gifted student's talent development at the post-secondary level. The questions I proposed to answer with this study are:

1. How does being gifted and having ADD/ADHD help or hinder the talent development process? (e.g. Does an individual's awareness of their twice exceptionality alter the effects in any way?)
2. How do internal characteristics such as motivation, volition, self-management, and personality affect the talent development process of gifted individuals with ADD/ADHD?
3. What are the effects of primary, middle school, secondary, and post-secondary educational settings on the talent development of gifted students with ADD/ADHD?
4. What is the role of families in supporting the talent development of a gifted student with ADD/ADHD?

Participants

The participants for this study were chosen based on two specific criteria:(1) an ADD/ADHD diagnosis given by a medical doctor or psychiatrist, which included an acceptable rating scale, and treatment that included either medication, or behavior modification through the schools; and (2) identification as gifted and participation in a program for gifted children. To find such a specialized group of participants, I met with the researchers at the Center for Talented Youth (CTY), Johns Hopkins University, to obtain the addresses of participants in their Developmental Study of Talented Youth (DSTY) also diagnosed with ADD/ADHD. Participants were invited to become involved in the study with a fifty-dollar compensation for their time and effort.

Two participants from DSTY returned my invitation to participate. Both participants were diagnosed with ADD/ADHD in elementary school and had documentation from a psychiatrist. They were identified as gifted in elementary school, and one participated in the local gifted program while the other participated in the CTY programs. One was diagnosed with ADD/ADHD – Predominately Hyperactive/Impulsive Type and the other ADD/ADHD- Predominately Inattentive Type. Neither of them received nor requested services for their ADD/ADHD while in school. They are 27-year-old White males with college degrees in computer science; one is married and the other is not. The unmarried participant, Daniel, grew up in a large city in an upper middle class family, attended private college in a large city, and now lives in a large city. He is starting his own computer processor business. The married participant, Thomas, grew up in a small college town in a middle class family, attended private college in the same small

town, and still lives nearby. He has a master's degree in computer science and works in the technology department of a small company.

The two other participants are graduate students from local universities. Both were diagnosed with ADD/ADHD as adults and have documentation from psychiatrists. They were identified as gifted in elementary school and both participated in school programs for the gifted. Both grew up in small rural towns, in families of modest income, and attended state colleges. One, Sean, is a 28-year-old White male currently in medical school in a large city, and the other, Karen, is a 36-year-old White female, who attended college in a small town and now works in a school system of a small city. Sean was diagnosed with ADD/ADHD – Predominately Hyperactive/Impulsive Type and Karen was diagnosed with ADD/ADHD – Predominately Inattentive Type. Table 2 shows a comparison of the participants by age, ADD/ADHD diagnosis, gifted identification, hometown, college entrance exam scores, and college and graduate school settings.

Instrumentation

A semi-structured interview process was used consisting of an interview guide of open-ended questions and accompanying prompts (see Appendices C-E) based on Gagné's DMGT and the research on talent development, gifted students, students with ADD/ADHD, and gifted students with ADD/ADHD. Questions in the interview were designed to prompt the interviewee to reconstruct experiences and explore those experiences for more meaning (Seidman, 1998). The interviews were recorded, scribed, and transcribed for analysis. Table 3 shows the relationship between the interview questions, conceptual framework, and research base

Table 2

Participants

Participant	Age	ADD/ADHD diagnosis	Gifted Identification	Hometown	SAT/ACT scores	College/grad school setting
Daniel	27	Hyperactivity/Impulsivity Kindergarten	Primary grade	Urban	V – 760 M-770	Private, large city
Thomas	27	Inattention Third grade	First grade	Small town	V-800 M-780	Private, small town/private small town
Karen	36	Inattention 34 yrs. old	Kindergarten	Rural	V-580 M-620	State, small town/state, small city
Sean	28	Combined Type 27 yrs. old	Primary grades	Rural	ACT-95 percentile	State, small city/private, large city

Table 3

Relationship of conceptual framework and interview questions to research base

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework	Interview questions		Research
Natural Abilities	S 1.	You have been told that you are gifted with	Csikszentmihalyi, Rathunde, & Whalen, 1993
Intellectual		ADD/ADHD. What does each of these mean to	Hebert & McBee, 2007
Creative		you?	Kaufmann, 1981
Socioaffective	S 9.	What have been the greatest facilitators to your	Kerr, 1994
SensoriMotor		talent development?	Marsh, Köller, Baumert, 2001
	P1.	You have been told that your son/daughter is	Perrone & Dow, 1993
		gifted with ADD/ADHD. What has this meant	Peterson, 2001
		for your child?	Spiers Neumeister, 2004
	P 9.	What have been the greatest facilitators to your	Yoo & Moon, 2006

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

child's talent development?

T 1. You have been told that [participant's name] is gifted with ADD/ADHD. What did each of these mean for [participant's name] as a student?

T 7. What do you think have been the greatest facilitators to [participant]'s talent development?

Catalysts

S 1. You have been told that you are gifted with ADD/ADHD. What does each of these mean to you?

Giftedness

Intrapersonal

Csikszentmihalyi, Rathunde, & Whalen, 1993

Environmental

Hall & Hansen, 1997

S 2. Were there any specific opportunities you had in college that were the result of your

Hebert & McBee, 2007

Kaufmann, 1981

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework	Interview questions	Research
	giftedness or ADD/ADHD? Please describe	Kerr, 1994
	them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)	Marsh, Köller, Baumert, 2001 Perrone & Dow, 1993 Peterson, 2001
S 3.	Were there any specific opportunities you had in elementary, middle or high school that were the result of your giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honors programs, mentorships, internships, nominations to special programs, etc.)	Spiers Neumeister, 2004 ADHD Bagwell, Molina, Kashdan, Pelham, & Hoza, 2006 Barron, Evans, Baranik, Serpell, & Buvinger, 2006; Brand, Dunn, & Greb, 2002 Carlson, Booth Shin & Canu, 2002 DuPaul & Eckert, 1997
S 4.	What do you feel are your greatest talents or	DuPaul, Jitendra, & Tresco, 2006

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework	Interview questions	Research
	your area of talent? Has your giftedness or	Evans, Serpell, Schultz, & Pastor, 2007
	ADD/ADHD had an effect on the realization or	Fabiano, Pelham, Gnagy, et al., 2007
	pursuit of your talent? How? (Probes:	Frazier, Youngstrom, Glutting, & Watkins, 2007
	practicing your talent, advancing your talent	Gureasko, DuPaul, White, 2007
	through learning, making connections with	Kaminski, Turnock, Rosen, & Laster, 2006
	people in the talent field)	Kaplan Dewey, Crawford & Wilson, 2001
S 5.	How have internal characteristics affected	MacPhee & Andrews, 2006
	your talent development? (Probes: motivation,	Reid, Trout, Schartz, 2005
	temperament, will power, focus, persistence,	Trammel, 2003
	good work habits)	Volpe, DuPaul, DiPerna, Jitendra, Lutz, Tresco, &
S 6.	What has been the role of your family in	Junod, 2006
	supporting your talent development?	Leroux & Levitt-Perlman, 2000

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

- | | | |
|-------|--|--|
| S 7. | How did your family support you during your K-12 educational experience and in college? | Moon, Zentall, Grskovic, Hall, & Stormont, 2001
Zentall, Moon, Hall, & Grskovic, 2001 |
| S 8. | What have been the greatest barriers to your talent development? | |
| S 9. | What have been the greatest facilitators to your talent development? | |
| S 10. | How have social or personal relationships effected your talent development, either positively or negatively? | |
| P 1. | You have been told that your son/daughter is gifted and has ADD/ADHD. What has this meant for your child? | |

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

- P 2. Were there any specific opportunities your son/daughter had in college that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)
- P 3. Were there any specific opportunities your son/daughter had in elementary, middle or high school that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honors programs, mentorships, internships,

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

nominations to special programs, etc.)

- P 4. What do you feel are your son/daughter's greatest talents or his/her area of talent? Has his/her giftedness or ADD/ADHD had an effect on the realization or pursuit of that talent? How? (Probes: practicing your talent, advancing your talent through learning, making connections with people in the talent field)
- P 5. How have internal characteristics affected your son/daughter's talent development? (Probes: motivation, temperament, will power, focus, persistence, good work habits)

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

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Conceptual framework

Interview questions

Research

P 6. What has been the role of your family in supporting your son/daughter's talent development?

P 7. How did your family support your son/daughter during his/her K-12 educational experience and in college?

P 8. What have been the greatest barriers to your son/daughter's talent development?

P 9. What have been the greatest facilitators to your son/daughter's talent development?

T 1. You have been told that [participant] is gifted with ADD/ADHD. What did each of these

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

mean for your student?

- T 2. Were there any specific opportunities [participant] had in college that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)
- T 3. What do you think are [participant]'s greatest talents or his/her area of talent? Has his/her giftedness or ADD/ADHD had an effect on the realization or pursuit of that talent? How? (Probes: practicing your talent, advancing your

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

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Conceptual framework

Interview questions

Research

talent through learning, making connections

with people in the talent field)

T 4. How do you think internal characteristics have affected [participant]'s talent development?

(Probes: motivation, temperament, will power, focus, persistence, good work habits)

T 5. What has been the role of [participant]'s family in supporting his/her talent development?

T 6. What do you think have been the greatest barriers to [participant]'s talent development?

T 7. What do you think have been the greatest facilitators to [participant]'s talent

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

development?

Developmental Process	P 4.	What do you feel are your son/daughter's	Giftedness
Informal/Formal		greatest talents or his/her area of talent? Has	Csikszentmihalyi, Rathunde, & Whalen, 1993
Learning and		his/her giftedness or ADD/ADHD had an	Hall & Hansen, 1997
Practice		effect on the realization or pursuit of that	Hebert & McBee, 2007
		talent? How? (Probes: practicing your talent,	Kaufmann, 1981
		advancing your talent through learning, making	Kerr, 1994
		connections with people in the talent field)	Marsh, Köller, Baumert, 2001
			Perrone & Dow, 1993
			Peterson, 2001
			Spiers Neumeister, 2004

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework	Interview questions	Research
		Bagwell, Molina, Kashdan, Pelham, & Hoza, 2006
		Barron, Evans, Baranik, Serpell, & Buvinger, 2006;
		Brand, Dunn, & Greb, 2002
		Carlson, Booth Shin & Canu, 2002
		DuPaul & Eckert, 1997
		DuPaul, Jitendra, & Tresco, 2006
		Evans, Serpell, Schultz, & Pastor, 2007
		Fabiano, Pelham, Gnagy, et al., 2007
		Frazier, Youngstrom, Glutting, & Watkins, 2007
		Gureasko, DuPaul, White, 2007
		Kaminski, Turnock, Rosen, & Laster, 2006
		Kaplan Dewey, Crawford & Wilson, 2001

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework	Interview questions	Research
		Leroux & Levitt-Perlman, 2000
		MacPhee & Andrews, 2006
		Moon, Zentall, Grskovic, Hall, & Stormont, 2001
		Reid, Trout, Schartz, 2005
		Trammel, 2003
		Volpe, DuPaul, DiPerna, Jitendra, Lutz, Tresco, & Junod, 2006
		Zentall, Moon, Hall, & Grskovic, 2001
Systematically	S 5. What do you feel are your greatest talents or area	Bloom, 1985
Developed Skills	of talent? Has your giftedness or ADD/ADHD	Bloom & Sosnia, 1981
	had an effect on the realization or pursuit of	Cox, 1926
	your talent? (Probes: practicing your talent,	Feng, Campbell, & Verna, 2001

Relationship of Conceptual Framework and Interview Questions to Research Base

S=Subject Interview Questions

P=Parent Interview Questions

T=Teacher Interview Questions

Conceptual framework

Interview questions

Research

advancing your talent through learning, making connections with people in the field) Muratori, Stanley, Gross, Ng, Tao, Ng, & Tao, 2006
 Wu & Chen, 2001

S 11. What work are you engaged in now? How is your current work consistent with your ambitions and talent area?

I summarized the results of the questionnaires and documents for the participants from the DSTY study into word processing documents. In addition to the questionnaires, other assessments available through the DSTY were the ACL, MSCS, and MBTI. All participants also completed the Clinical Assessment for Attention Deficit-Adult (CAT-A). Descriptions of the ACL, CAT-A, and MSCS follow:

Adjective Check List (Gough & Heilbrun, 1952)

The ACL is a self-report tool consisting of 300 adjectives used for assessing personality and psychological tendencies. The list of adjectives encompasses 37 scales that measure psychological needs, ego functioning, creativity and intelligence. Alpha coefficients (.60) for both males and females were, according to the author, in the range of acceptable reliability for similar assessments of personality and psychological tendencies. Construct validity was measured and supported through correlations with the California Psychological Inventory, the Minnesota Multiphasic Personality Inventory, the Terman Concept Mastery Test, and the General Vocabulary Test. (Dy-Liacco, 2002)

Clinical Assessment of Attention Deficit-Adult (Bracken & Boatwright, 2005)

The CAT-A is a standardized self-reporting behavior rating scale that assesses “clinical behaviors related to Attention Deficit Disorder with and without Hyperactivity” (Bracken & Boatwright, 2005, p.5). The assessment is divided into two sections, Childhood Memories and Current Symptoms, that provide indexes for the clinical behaviors of hyperactivity, impulsivity, and inattention in childhood and currently, then combine for a total index. There are additional clusters in each section that address the context and settings within which the behaviors occur: Personal, Academic/Occupational, Social,

Internal, and External. Internal consistency for the CAT-A indexes are high (.90 criterion). The scales within Childhood Memories and Current Symptoms also report high internal consistency; with the exception of one scale (Hyperactivity scale = .76), all exceed the .80 criterion. Internal consistency for clinical clusters are above the criteria of .70 except for one (Academic /Occupational = .68).

Multidimensional Self-Concept Scale (Bracken, 1992)

The MSCS is a self-reporting assessment measuring a person's self-concept in six domains: Social, Competence, Affect, Academic, Family, and Physical. Scores from the 25 Likert-type items in each domain are then calculated to give a measure of the respondent's global self-concept. Alpha coefficients demonstrate high reliability for the Total Scale (.97) and the individual scales (.87-.90). Concurrent validity was measured through comparisons with the Coopersmith Self-Esteem Inventory and the Piers-Harris Children's Self-Concept Scale. Correlations between the MCSC and the Coopersmith (.73) and Piers-Harris (.85) were high indicating that the MCSC is a valid measure of self-concept. (Anstey, 1999)

Data Collection

In order to provide a level of rigor to my study through triangulation of data, I collected data from multiple sources. Following the initial phone call, contact was made with each participant through email to gather the contact information for their parent and professor and set up appointments for phone interviews. The participants informed their sources that I would be contacting them by phone or email. I conducted a 45-120 minute phone interview with participants and one of their parents following an email exchange of the interview questions. Email was the preferred method of all the participants both for contact and for beginning the

interview process. By offering the questions electronically, I was able to target the phone interviews to dig deeper into the experiences of the participants and their parents. Only one former college professor and one academic advisor were available for one of the participants; Daniel, all other professors were on sabbatical or leave. I interviewed both the professor and advisor by phone and the resident advisor submitted answers to the interview questions by email.

I was able to gain access to documents related to each participant's grades and college entrance exam scores, but not documents related to their identification for being gifted. None of their schools had a formal identification system for giftedness. I was able to have access to the documents diagnosing ADD/ADHD for only one of the participants, Karen, the 36-year-old diagnosed as an adult.

The two participants and their parents from the DSTY gave permission for me to access the documents from that study. Those documents included (a) parent and student questionnaires for seven years, 1994-2000; (b) the Adjective Check List (ACL) completed in 1994 and 1999; (c) the Multidimensional Self-Concept Scale (MSCS); and d) school grade reports for seven years, 1994-2000. The questionnaires contained information on the participant's demographic history, family history, academic history, satisfaction with academic progress, and social and emotional development. For the two participants not in the DSTY study, I met with them in person and observed them in a place of their choice. Karen requested I observe her at work and Sean chose a venue where he was performing. After the observation, I compiled my notes into a word processing document.

Data on a current assessment of ADD/ADHD symptoms were gathered through the CAT-A. The CAT-A provided information on the childhood symptoms and current symptoms of each participant compared to a normed sample. The CAT-A also assesses the context and settings

most influenced by an individual's ADD/ADHD symptoms. I scored each rating form using the CAT-A Professional Manual (Bracken & Boatwright, 2005).

Study Design

After careful consideration of the different methods one might use to study the coincidence of giftedness and ADD/ADHD in an individual, I determined that a multiple case study was the best method. As a research strategy, case study has long been used to answer the questions of “how” and “why” when exploring or explaining a variety of phenomena that occur in real life situations (Yin, 1984). According to Yin, a case study “investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used” (p. 23). Many questions of an individual, organizational, social or political nature have been answered using the single or multiple case studies.

Case study allowed me to delve deep into the story of each participant's talent development, at times, uncovering beliefs and assumptions hidden even from the participant. The phenomenon of giftedness and ADD/ADHD in an individual is fraught with social and emotional issues that are difficult to examine quantitatively. These issues emerged from the data with patterns found within and across cases.

The design of this study included four case studies of purposely-selected participants, all meeting the criteria based on their ADD/ADHD and giftedness. Two participants were chosen specifically for their involvement in a longitudinal study, for the wealth of information collected in that study. The other two participants came to the study through word of mouth, and, surprisingly, offered a contrast to the first two in their demographic and medical histories.

Unfortunately, to some extent, case study still suffers from the characterization of being less rigorous, less objective and more biased; a weaker social science research method. In fact, when conducted properly, case study is very rigorous. The issue of rigor refers to the quality of the information gathered, researcher bias in analyzing the information, the reliability of the results, and validity of generalizing the results to other populations. The quality of information gathered depends greatly on the design of the study. I strove to develop well-defined research questions. Data collection and analysis methods were appropriately linked to the unit of analysis, the cases (Yin, 1984). Lastly, I used an innovative qualitative analysis software program along with traditional methods of analysis to add rigor to the analysis process (Miles & Huberman, 1994). Although the findings of qualitative research, with such small sample sizes, cannot be generalized to other populations, I believe the findings from this study provide a better understanding of the phenomenon as well as implications for practice and future studies.

Consistency, triangulation, and member checking were three methods I used in this study for establishing reliability and validity. Consistency in following case study protocol and documenting the procedures of the case study ensured reliability. “The general way of approaching the reliability problem is to make as many steps as possible as operational as possible, and to conduct research as if someone were always looking over your shoulder” (Yin, 1984, p. 40). Triangulating data, the “seeing or hearing multiple *instances* of [data] from different *sources* by using different *methods* and by squaring the finding with others,” (Miles & Huberman, 1994, p. 267) assured the reliability of the information gathered and increased construct validity. Another method I employed for increasing construct validity was member checking, which involved having participants review the results of the data analysis to see if the findings make sense to them.

Procedures

The first step was to find participants that met the criteria for the case studies. I obtained a list of names and addresses of six people from the database of participants in the DSTY who were identified in the 1997 Parent Questionnaire as having ADD/ADHD. I mailed letters to those six individuals explaining the study and inviting them to participate with follow-up post cards two weeks later. Only two individuals responded to the initial invitation and so I returned to CTY and was given six more names. I sent letters to the second group and received no responses. Further searches of the DSTY database resulted in no other possible participants. To find two more participants for the study, I contacted the disability learning centers of four local colleges and universities by email and requested that the directors of the centers share my letter of invitation, consent form, and an explanation of the study with criteria and requirements with students who met the criteria. No one from the learning centers contacted me about participating. Through word of mouth, I was put in touch with two other people who met the criteria, graduate students from two different universities, and they agreed to participate in the study.

After I received permission slips, I contacted each participant by phone to discuss the type of documentation he or she had for their ADD/ADHD and to gain the names and contact information for a parent and one former college professor/academic advisor. The two DSTY participants also signed a consent form along with their parents so that I could access the documents in their DSTY file. Three participants and their parents scheduled their interviews by email, and one participant's parent and professor scheduled by phone. I received verbal consent, in addition to the written consent, for recording prior to each interview and reviewed the safeguards, privacy commitment, and procedures with each interviewee. During the interview, I took notes and memos on what I thought were significant comments by the interviewee and later

transcribed them into word processing documents. Given my limited timeline, I had the audio recording transcribed professionally, securing a confidentiality agreement for each recording. I received electronic versions of the transcriptions, which facilitated the use of qualitative analysis software.

I made a third visit to CTY to copy the contents of the files of the two participants of the DSTY study. The results of the ACL and MSCS were not included in the file, and CTY did not have the manuals available, so it was necessary to purchase the manuals and score the assessments. I reviewed all of the documents in each file and transferred relevant information from the questionnaires and grade reports into word processing documents for analysis. To assess current symptoms of ADD/ADHD, each participant completed the CAT-A. Before sending the CAT-A to the participants, I discussed the assessment on the phone with each one, explained the purpose, and how they should be complete it. I mailed the CAT-A to each participant with a pre-paid return envelope and written instructions on how to complete it. I made myself available by phone and email during the time they were completing it in case they had any questions.

I imported all transcriptions of the interviews, email responses to the interview questions, summaries of questionnaires and grade reports, and field notes from observations and interviews into the NVivo 8 software for coding. Pre-established codes based on Gagné's DMGT were previously entered and new codes were added as they emerged from the data. Patterns and themes in the data emerged through the use of word and text searches, charts, matrices, and conceptual models. These analysis methods are all a function of the software program. I developed each case study first, establishing the themes and patterns across the sources, then looked for themes and patterns across all of the cases.

I referred back to Gagné's DMGT (2002) to frame each case study. Initial case reports of findings were sent to each participant to check for accuracy and allow for suggestions of changes to the language or interpretations of the findings (Stake, 1995). None of the participants requested any changes. Table 4 contains a timeline for procedures described.

Data Analysis

Analysis of the qualitative data was ongoing to ensure that important details and concepts were not lost in the wealth of data collected. For data analysis in this study, I used description, coding, pattern codes, memoing, conceptual models, and conceptually clustered matrices (Miles & Huberman, 1994; Yin, 1984). I reviewed four different qualitative software programs and decided that the NVivo program had the functions I needed and a display format that I preferred, simultaneous viewing of the codes and sources. Field notes and transcripts of the observations and interviews, and information from documents, contents from the longitudinal study, and observations were summarized and coded using the NVivo 8 software (QSR, 2009).

The coding process involved both emerging codes and pre-established codes developed from the conceptual framework (Gagné's model) and the research questions. Having codes ahead of data collection helped in managing the data and prevented loss of important issues or themes due to data overload. Additional codes were extracted from the data by reading and re-reading the interview transcripts, reducing the words to chunks, or phrases, and assigning codes to those chunks (Lincoln & Guba, 1985). From the initial coding process, themes and patterns emerged and formed into conceptually oriented sets of data. In the second level of coding, pattern coding, the chunks of data from the first level coding process were grouped into more theme-oriented sets of information for establishing overlap and relationships between the categories and cases. Charts, matrices and conceptual models were used to group the data.

Table 4

Timeline for completion of study

Action	Dates	Duration
Meet with researchers conducting longitudinal study to gain access to database of addresses of participants of DSTY	March 17, 2009	1 day
Mail letters of invitation to participate and follow up with post cards if needed	April 3-8, 2009	6 days
Select and contact five people to participate and gather consent forms	April 8-15, 2009	1 week
Conduct telephone interviews	May 1-21, 2009	9 hours
Transcribe interviews and enter information into the QAS	May 22-28, 2009	1 week
Collect assessments (CAT-A)	May 1-July 1, 2009	2 months
Analyze data and prepare initial reports	June 1-July 24,	6 weeks

2009

Get participant feedback June 25- July 24 4 weeks

2009

Prepare final report June 26- August 11, 3 weeks

2009

Send final report to committee chair August 11, 2009 2 hours

Defend study August 19, 2009 2 hours

During data analysis, I also employed memoing as a means of capturing questions and ideas about the relationships between the codes, the codes and the research questions, and the patterns that seemed to be emerging. As Miles and Huberman (1994) states, researchers can at times become

...overwhelmed with the flood of particulars – the poignant remark, the appealing personality of a key informant, the telling picture on the hallway bulletin board, the gossip after a key meeting. You find it nearly impossible to step back, to make deeper and more coherent sense of what is happening. (p.72)

Recording notes in the margins, and then within the software, during the coding process allowed me the opportunity to step back and react to the data on a conceptual level. I consider memoing to be the written outcome of metacognition. Some of the questions I asked myself were, “How are the codes working? Are they capturing the ideas to help me answer the research questions or should they be revised? What patterns are emerging? Am I seeing a relationship between this code and another code?” Memoing was crucial in developing the key conceptual categories as I worked through the coding process.

Following the development of the key conceptual categories, I displayed the data in clustered matrices. The software generated a matrix of columns and rows based on the codes. According to Miles and Huberman (1994), a clustered matrix facilitates conceptual coherence,

making comparisons and contrasts, and drawing conclusions. I repeated this process for cross-case analysis with a meta-matrix incorporating all cases.

Analysis of test results for two of the participants and the CAT-A for all of the participants were compared to the normative data on those measures. Each case study includes a descriptive analysis of the comparisons. Moreover, results were compared on key factors to the longitudinal study population. Appendix F-I contains test data for each case. Table 5 illustrates the relationship between the research questions, instrumentation, and data analysis.

Safeguards and Ethical Considerations

The well-being of participants in a study is the responsibility of the investigator and outweighs the importance of the study (Gay & Airasian, 2000). The following ethical considerations considered in the planning of this study are intended to ensure participant well-being. All participants were given a clear, detailed description of the purpose of the study, the data that would be collected, and how it would be processed and reported before they consented to participate. Participants were assured that participation was voluntary and that, if they chose to participate, they could withdraw at any time without penalty and with no explanation needed.

The participants of this study were at minimal risk; the only risk being privacy issues. I kept all materials submitted by the participants confidential, viewed only by me. I conducted all of the telephone interviews, and a professional transcriber who signed a confidentiality agreement transcribed the audio tapes of the interviews. The names of the participants and all identifying information were changed or withheld for reporting the findings of the study.

Table 5

Table of research specifications

Research question	Instrumentation	Data analysis
1. How does being gifted with ADD/ADHD help or hinder the talent development process? (e.g. Does an individual's awareness of their twice exceptionality alter the effects in any way?)	<ol style="list-style-type: none"> 1. Interview questions - participant (ques. S1, S8, S9,), parent of the participant (ques. P1, P8, P9) and professor/academic advisor of the participant (ques. T1, T6, T7) 2. 1997 Student Questionnaires (ques. 6, 15, 17, 19, 20, 21, 23) and Parent Questionnaires (ques. 2, 3, 5- 	<ol style="list-style-type: none"> 1. Qualitative – Summaries and coding (descriptive, pattern-matching, and memoing for conceptual categorization) 2. Content analysis of questionnaires from DSTY 3. Descriptive comparison of scores on CAT-A

Research question	Instrumentation	Data analysis
	7, 9, 10, 14, 18) from The Developmental Study of Talented Youth (DSTY)	
2. How do internal characteristics (i.e. motivation, volition, self-management, personality, etc.) affect the talent development process of gifted individuals with ADD/ADHD?	<ol style="list-style-type: none"> 1. Interview questions - participant (ques. S4, S5), parent of the participant (ques. P4, P5) and professor/academic advisor of the participant (ques. T3, T4) 2. Student Questionnaire (ques. 2-4, 6, 7, 9, 12-14, 18, 20-25) and Parent Questionnaire (ques. 8, 9, 10, 16-18, 20) 	<ol style="list-style-type: none"> 1. Qualitative - Summaries, coding (descriptive, pattern-matching, and memoing for conceptual categorization) 2. Content analysis of questionnaires from DSTY 3. Descriptive comparison of scores on ACL, MSCS and CAT-A with normative data

Research question	Instrumentation from DSTY	Data analysis
	3. Results from, ACL, MSCS]	
3. What are the effects of primary, middle school, secondary, and post-secondary educational settings on the talent development of gifted students with ADD/ADHD?	1. Interview questions – participant (ques. S2, S3), parent of the participant (ques. P2, P3) and professor/academic advisor of the participant (ques. T2) 2. Student Questionnaire (ques. 4, 5, 10, 11, 15, 17, 20) ,and Parent Questionnaire (ques. 2, 3, 5-8, 11-14) from DSTY	1. Qualitative – Summaries, coding (descriptive, pattern-matching, and memoing for conceptual categorization) 2. Content analysis of questionnaires from DSTY
4. What is the role of families in supporting the talent development of a gifted student with ADD/ADHD?	1. Interview questions - participants (ques. S6, S7),	1. Qualitative - Summaries, coding (descriptive,

Research question	Instrumentation	Data analysis
	<p>parent of the participant (ques. P6, P7), and professor/academic advisor of the participant (ques. T5) 2. Student Questionnaire (ques. 5, 8, 15, 17, 20, 22, 24, 25) and Parent Questionnaire (ques. 8, 11-18, 20) from DSTY</p>	<p>pattern-matching, and memoing for conceptual categorization) 2. Content analysis of questionnaires from DSTY</p>

Most qualitative researchers consider member checking to be the most logical and ethical way to confirm the validity of a study (Creswell, 1998; Lincoln & Guba, 1985; Miles & Huberman, 1994; Stake, 1995 Yin, 1984). To add rigor and ensure the reliability and validity of this study I asked each participant “to review the material for accuracy and palatability,” and “to provide alternative language or interpretation” for consideration for the final report (Stake, 1995, p. 115). I reviewed Miles and Huberman’s (1994) 23 queries on reliability and internal validity continuously throughout the process.

CHAPTER 4

Findings

Introduction

This chapter will present the case studies of the four participants and the themes and patterns that emerged from the data within each case and across the cases. I gathered information from multiple sources for each participant: interviews, emails, transcripts, school records, and the of Attention Deficit – Adults (CAT-A). Two of the participants also had the Myers-Briggs Type Indicator (MBTI), the Adjective Check List (ACL) and the Multidimensional Self-Concept Scale (MSCS). The participants and their parents and others provided detailed descriptions of their experiences and impressions that were used to arrive at the underlying themes and patterns.

Two participants came from the Developmental Study of Talented Youth (DSTY) and two participants were chosen because of their unique stories: All participants were identified as gifted in elementary school, but the two DSTY participants were diagnosed with ADD/ADHD as young children where as the third and fourth participants, who grew up in rural communities, were not diagnosed with ADD/ADHD until adulthood. This presented me with the opportunity to explore the phenomenon of ADD/ADHD at different stages of development.

I used several methods to allow for the emergence of themes within and across cases. For within case analysis, I first read all the sources noting questions, ideas, and possible codes in the margins as memos (Miles & Huberman, 1994). Then, using the qualitative software, NVivo 8 (QSR, 2009), I assigned all text from sources to pre-established and emerging codes (Miles & Huberman). Following coding, using the chart function of the software, I analyzed each source

through charts of the codes by percentage of source at each code and number of references at each code (Stake, 1995). To gain perspective across sources for a case, I developed a matrix of all sources for each case (see Appendices J-M) and, once again, analyzed coding by percentage of sources at each code and number of references at each code (Miles & Huberman; Stake). Finally, I placed themes into a display format (Miles & Huberman; Yin, 1984) using Gagné's (2007) DMGT (see Appendices N-Q). Within-case variables were placed in a variable matrix for each case (see Appendices R-U) and cross-case analysis and theme development were similar only using charts and matrices that included all the cases (Appendices V-X).

Each individual case will be presented in Part One, and Part Two will present the themes and patterns as they emerged within and across cases. All names and identifying information has been changed or omitted from the cases in order to protect the identities of the participants. I have structured the cases around the conceptual framework of Gagné's DMGT (2007), illuminating environmental catalysts and intrapersonal catalysts.

Case 1: Daniel

Daniel is a 27 year old male currently living in the western coastal region of the United States. He was raised in a west coast urban community rich in resources, where his parents sought out various educational, social and cultural opportunities for their children. Daniel attended private schools for nine years, and participated in summer camp, scouting, gymnastics, karate, skiing, and the local search and rescue team. As part of a high school organization that rebuilt old computers to bring to schools in third world countries, Daniel traveled to Tanzania to deliver and set up refurbished computers in "three different school sites...he had an incredible time culturally and they took the kids, you know, on safari" (1M-T).

When Daniel was in fifth grade, a national talent search program formally identified him as gifted when he scored above 95 percentile on an off-level test, the Secondary School Aptitude Test (SSATB). In contrast, Daniel began manifesting symptoms that led to a formal diagnosis of ADD/ADHD at a much earlier age, approximately three to four years old. As a result of this diagnosis, Daniel's mother, who holds a master's degree in Special Education and at one time worked as a Title I teacher and a state consultant for Special Education, decided to stay home to provide the care and guidance Daniel needed. The high-income career of Daniel's father, a well-known endocrinologist, provided an income level that enabled Daniel's mother to stay home while still allowing the level of medical and educational services Daniel needed. The family includes two younger siblings: a sister three years younger than Daniel, and a brother seven years younger. The age difference between siblings holds much significance in their relationships with Daniel, as you will see later in the discussion on family support and relationships.

Natural Abilities

Intellectual Giftedness

Daniel's mother recognized his intellectual talents at a young age: "Daniel was reading by the time he was in kindergarten and his math skills were just, you know, superb. So all along I knew that, you know, there was giftedness there" (1M-T). Daniel had a similar response to the question of his giftedness, saying he could "read terribly fast" and "pay attention to a number of things" (1D-T), although he struggled a bit trying to define giftedness beyond being able to read fast and multitask. Daniel had this to say about giftedness: "To me, gifted really, it leads the way...oh, let me rephrase that. I think it's very much, it's just like pornography, you know it when you see it" (1D-T). He then clarified this statement, echoing changes in the definition of giftedness currently embraced by the field: "Some things are more sensitive than others. It is

fairly easy to take a look at someone who got 1600 on their SAT and say, ‘Oh, you must be smart.’ It’s a little harder to figure out that there are these other skills that one can have that are sometimes more subtle” (1D-T). He did identify some of those other skills but they are more traits rather than natural ability: “[My] greatest talents are a willingness and eagerness to absorb material from a variety of different fields (neurobiology, math, economics, computer science, electrical engineering, history, languages) and memorize some things easily” (1D-T).

Daniel’s inquisitive mind was unmistakable. According to his mother, “He was just so bright and questions all the time. I mean it was just nonstop question, question, and question out of [Daniel] you know... I felt – there really wasn’t an issue at any point in time that he wasn’t gifted for me,” and “[Daniel] would sometimes just pull out a [Britannica Encyclopedia] volume and read it on his own. Just an incredibly curious mind” (1M-T). Following Daniel’s diagnosis of ADD/ADHD, his mother’s priority became finding an educational program able to meet both his behavior needs and his high academic needs. Daniel’s mother placed such importance on this search because, “we knew that he was not going to do well in a public school” (1M-T).

Creative Giftedness

Daniel’s natural abilities included not just the intellectual domain but also the creative domain, which includes problem solving ability. Daniel’s Resident Advisor (RA) in college described him as the “go-to-guy” (1RA-E) in their dorm for anyone needing help solving a problem related to computers. “He had a real aptitude for computers, always tinkering with computers. His computer skills were widely recognized on campus” (1RA-T). In addition to computer skills, Daniel had strengths in mathematics, another area dependent on problem solving ability. As a sophomore in college, Daniel went through a very rigorous application process to qualify for an upper level math course, Honors Analysis I. The professor who developed the

Honors Analysis course commented that the students in the course constitute the top young mathematicians in the country and qualifying for it demonstrated Daniel's "high ability" (1P-T).

Self-concept: Results of the Multidimensional Self-Concept Scale

As part of the Developmental Study of Talented Youth (DTSY), Daniel completed the MSCS when he was 17 years old. The MSCS ($M=100$; $SD=15$) has six scales based on different dimensions that interact, overlap, and contribute to a person's global self-concept: Social, Competence, Affect, Academic, Family, and Physical. On the Academic scale, Daniel scored in the average range (115 *SS*; 84 percentile, + 1 *SD*), although this score may have been skewed slightly by his response on two items. Being a highly gifted student, Daniel reported that he did not have to work hard in elementary through high school. On two positive items stating "I work harder than most of my classmates," and "I usually work very hard," Daniel responded strongly disagree (score-1) and disagree (score-2), respectively. Without these two items Daniel's Academic scale prorated score would be in the moderately positive range (119 *SS*, 89 percentile, $>+1$ *SD*). Comparing his non-prorated score on the Academic scale to his scores on the other MSCS scales (ipsative interpretation) reveals a relative area of strength (115 *SS*; +14 difference; $\alpha = .05$) in how he evaluates his performance in the academic domain.

Daniel's score on the Social scale on the MSCS was his second lowest score (Physical scale was the lowest). Compared to the norm ($M=100$, $SD=15$), Daniel scored at the low end of the average range (90 *SS*, 27 percentile, <-1 *SD*). Comparing his score on the Social scale to his scores on the other scales, Daniel's Social scale score was considered a relative weakness (-11 point difference, $\alpha = .05$). These scores support Daniel's feelings of inadequacy when it comes to social situations. His perception of his physicality may have contributed to his weakness in social self-concept. Daniel received his lowest score (89 *SS*, 23 percentile, <-1 *SD*) on the Physical

scale on the MSCS. Although his score was in the average range, it was considered a weakness when compared to his other scores on the MSCS (-12 point difference, $\alpha = .05$).

On the Family scale of the MSCS, Daniel scored in the average range (96 SS; 40 percentile; $< -1 SD$) compared to the norm. When comparing his score on the Family scale to the other five scales (ipsative interpretation), Daniel's score was in the average range (-5 point discrepancy, $\alpha = .05$), meaning that, at age 17, Daniel did not see his family as having either a positive or negative effect on his self-concept, nor did he perceive his family as a weakness or strength.

The Competence scale on the MSCS would most align with self-management. Bracken (1992) defined competence as the evaluation by children of how well they "succeed or fail in their attempts to solve problems, attain goals, bring about desired outcomes, and function effectively in their environments" (p.4). Daniel scored in the average range on the Competence scale (114 SS, 83 percentile, $< 1 SD$), his second highest score. Although not categorized as a strength in his ipsative profile, his score was 13 points higher than his average scaled score, (Competence scale critical discrepancy = 13, .05 alpha level).

Personality: Results of the Adjective Check List

Daniel completed the first administration of the ACL in 1994 and, out of a total of 37 scales, scored below the norm ($M=50, SD=10$) on nine scales and above the norm on six scales. Daniel's lowest score was in Communality (31SS) which addresses the kind of interpersonal relationships a person engages in. Low scorers on this scale may be "ambivalent in relating to others," have tendencies to be "contentious and defensive," or may find it "difficult to conform to the everyday expectations of interpersonal life" (Gough & Heilbrun, 1983, p.8). Other low

scores Daniel attained and the type of individual indicated by those low scores include (a) Abasement (37SS), “assertively self-confident and respond quickly;” (Gough & Heilbrun, 1983, p.14) (b) Intraception (39SS), “have a narrow range of interests and are less capable of dealing with stress or trauma;” (Gough & Heilbrun, 1983, p.10) (c) Succorance (40 SS), “independent, relatively unbothered by self-doubt, and effective in setting and attaining goals;” (Gough & Heilbrun, 1983, p.13), similar to his high score on the MSCS Competence scale, (d) Counseling readiness (37 SS), “less inhibited, more enterprising, and more confident of his abilities to attain goals and gain satisfaction;” (Gough & Heilbrun, 1983, p.15). (e) Self-control (35SS), “impulses defy management and interpersonal encounters involve a constant series of broken rules, contretemps, and altercations;” (Gough & Heilbrun, 1983, p.16). (f) Creative personality (40SS), “subdued, less expressive, more conservative;” (Gough & Heilbrun, 1983, p.22). (g) Nurturing parent (38SS), “temperamental, hard to predict, stifled by routine” (Gough & Heilbrun, 1983, p.22).

Daniel scored above the norm on six scales of the ACL in 1994. Daniel’s highest score was on the Aggression scale (70SS) which indicated an individual who is competitive with strong “often uncontrollable” impulses and “views others as rivals to be vanquished” (Gough & Heilbrun, 1983, p. 12). This score may reflect Daniel’s ADD/ADGD symptoms or may be a personality trait. Daniel’s other high scores indicated an individual who is “easily angered, skeptical, and counteractive” (Critical parent, 68SS), (Gough & Heilbrun, 1983, p. 22), “ambitious and assertive, impatient when blocked or frustrated, and stubbornly insistent on attaining their goals” (Masculine attributes, 60SS), (Gough & Heilbrun, p. 27), self-confident in pursuing goals (Dominance, 62SS), enterprising and impulsive (Free child, 60SS), and , in contrast, warm and affectionate (Heterosexual, 62SS).

Daniel had 13 scores below the norm ($M=50$, $SD=10$) in the 1999 administration of the ACL. Six of those 13 scale scores were also below the norm on the 1994 administration of the checklist and reflected an individual who is contentious and defensive (Communality, 31SS), temperamental (Nurturing parent, 37SS), and has difficulty dealing with stress (Intracception 38SS); however, he has a strong desire for independence (Succorance, 32SS), is self-confident (Abasement, 34SS), and impulsive (Self-control, 40SS). The remaining low scores indicate an individual who is detached and distrustful (Nurturance, 31SS), fears social interaction (Affiliation, 38SS), is intelligent and feels alienated (A-3 Origence-Intellectence, 31SS), and prefers autonomy (Feminine attributes, 29SS), but loves competition (Deference, 36SS) and stretching the rules (Military leadership, 40SS) (Gough & Heilbrun, 1983). It bears noting that on the second administration of the ACL(1999), Daniel scored below the norm on Heterosexuality (39SS), indicating someone who is reserved and inhibited in interpersonal life, and in contrast, he scored high (62SS) on the first administration(1994), indicating someone who is warm and affectionate and seeks out relationships with the opposite sex.

Daniel's highest score in 1999 was on the Autonomy scale (72SS), an item on the Needs Scale that assesses "the desire to act independently of others or of social values and expectations" (Gough & Heilbrun, 1983, p. 12). This may be an innate characteristic or a result of the social difficulties Daniel experienced in elementary through high school. All but one of the remaining six scores registering one standard deviation above the norm ($M=50$, $SD=10$), reflected aggressive tendencies. Four of these scales were also above the norm on the 1994 administration of the checklist (see above): Aggression (61SS), Critical Parent (63SS), Masculine Attributes (64SS), and Dominance (64SS). The other high scores, Exhibition (67SS) and Creative personality (63SS) reflect an individual who is forceful and impatient, with a "breadth of

interests and high cognitive ability” (Gough & Heilbrun, 1983, p. 18), respectively. It should be noted that Daniel’s score on the Creative personality scale in 1994 was below the norm (40SS).

ADD/ADHD: Results of the Clinical Assessment for Attention Deficit – Adult

To assess the status of Daniel’s ADD/ADHD, I asked him to complete the Clinical Assessment of Attention Deficit-Adult (CAT-A, Bracken & Boatwright, 2005) ($M = 50$; $SD = 10$). Daniel’s score on the CAT-A Clinical Index is in the Mild clinical risk range (CAT-A CI T score = 63, 91 percentile) denoting both a childhood history of symptoms (CM CI T score = 64, 92 percentile) as well as current symptoms (CS CI T score = 60, 87 percentile). Both the Childhood Memories Index and Current Symptoms Index are classified as a mild clinical risk for attention deficit.

A review of Daniel’s CAT-A Current Symptoms Clinical scales shows that Daniel is at mild clinical risk for hyperactivity (HYP T score = 66, 94 percentile) and in the normal range for attention problems (ATT T score = 56, 75 percentile) and impulsivity (IMP T score = 55, 73 percentile). Although these scores appear to be inconsistent with Daniel’s description of the severity of his symptoms, it may be that he has learned successful coping mechanisms that mitigate the effects of his ADD/ADHD.

According to Daniel’s scores on the Context clusters, his current symptoms cause him more difficulty personally (PER T score = 64, 92 percentile) than they do in the academic or occupational realm (A/O T score = 56, 73 percentile) or in his social interactions (SOC T score = 58, 80 percentile). The scores on the Current Symptoms Personal are in the Mild clinical risk range and consistent with his Childhood Memories scores (PER T score = 69, 96 percentile). Daniel’s scores on the Childhood Memories (SOC T scores = 46, 37 percentile) and Current

Symptoms Social cluster are in the normal range which is inconsistent with Daniel's reports of having serious social difficulties as a child and adult. This inconsistency could be due to several factors: (a) Daniel's limited number of friends were not affected by his ADD/ADHD; or (b) Daniel's social problems are not related to his ADD/ADHD; or (c) Daniel does not perceive his social problems as being related to his ADD/ADHD.

On the Locus clusters, Daniel scored Mild clinical risk on the External cluster for both Childhood Memories scale (EXT T score = 69, 96 percentile) and Current Symptoms scale (EXT T score = 62, 89 percentile). The External cluster represents outward behaviors that are disruptive and obvious to others: blurting things out, fidgeting, and interrupting others. These scores are consistent with both Daniel and his mother's reports of his childhood difficulties and Daniel's reports of current problems. However, they seem inconsistent with Daniel's scores on the Social Context clusters. Daniel's Internal Locus cluster scores for both clinical scales were in the normal range (CM INT T score = 58, 80 percentile; CS INT T score = 58, 84 percentile) and Validity scores were all Typical.

Catalysts

Environmental

School-based provisions: Gifted accommodations, ADD/ADHD accommodations, and curriculum. Daniel attended private school for pre-school, elementary, and middle school. The primary focus in determining which school he should attend was his ADD/ADHD. For elementary school, the family chose a school "where they really sort of allowed the kids to march to a different beat of the drum" (1M-T). Daniel's parents were very open about his ADD/ADHD but did not request special accommodations. However, according to Daniel, some

teachers and administrators may have made accommodations for his giftedness, his ADD/ADHD, or both:

I was not in a normal first grade class. I was in a class with third graders. One can hypothesize many reasons why this might be, but it could have been that I'm gifted, but I think it was probably a combination of that and I was being difficult. I think the reason that was done is that it made more sense because the third grade teacher was a much more talented one and well-regarded and better able to deal with my ADD/ADHD. (1D-T)

Daniel expressed no doubt that even though he was a first grader in a third grade class, the focus in his primary school years was more on "getting [him] to interact as a normal person and get to have a social life and just evening out [his] behavior problems..." (1D-T).

His first school only went to third grade and when it came time for Daniel to move on to another school, his mother found that due to his uncontrollable behavior, the private schools would not have "anything to do with him" (1D-T). Daniel's mother enlisted the help of a school placement specialist. After a change in medication brought about a positive shift in Daniel's behavior, he gained acceptance to a school for gifted children that addressed both his educational and behavioral needs. Although Daniel's parents did not request special accommodations, his teachers worked with his parents to modify his behavior, especially his anger and language issues: "When he would get angry and explosive it was just horrible....I remember we had consequential situations and reward systems for him set up" (1M-T).

Daniel attended a private religious middle school. Daniel's parents chose this middle school because of its small classes, elementary model (not departmentalized), advanced

curriculum, and individual approach to working with students. Once again, Daniel's parents informed the school of his ADD/ADHD but did not seek accommodations. Each teacher determined whether to give Daniel provisions for his giftedness or his ADD/ADHD. For instance, Daniel's sixth grade teacher gave Daniel and two other advanced math students an upper level math book to work through but then, that did not occur the following year: "We had a different math teacher and took a standard math curriculum and I just paid a lot less attention in class" (1D-T). Daniel stated that in his standard math classes in elementary and middle school, he often read a book or listened to music but then, "the older I got, the more the classes tended to meet some of my academic needs in that they had more advanced classes" (1D-T).

With his behavior "evened out" (1M-T), Daniel attended one of the top public high schools in his city, a magnet school for advanced students. Daniel undertook honors courses, Advanced Placement courses: "I took AP statistics, European History, American History, American Government, English, environmental science, and maybe one more class" (1D-E), and dual enrollment classes at the local community college during his junior year.. Even though Daniel was in very demanding courses, his parents continued their practice of not requesting accommodations for his ADD/ADHD: "Some of my teachers knew I had ADD/ADHD, I'm not sure how many. I definitely was competing against the smartest students and without anything to compensate for my ADD/ADHD" (1D-E).

Daniel graduated from high school with an excellent academic record and SAT scores of 760 in Math, 700 in Math IIC, 770 in Verbal and 750 in American History. He went on to a very prestigious college, ranked as one of the top 10 national universities by *US News and World Report* (Zuckerman, 2009) and well known for its mathematics department. As mentioned earlier, Daniel's talents and profile qualified him for a very rigorous upper level math course that

has a stated goal “to prepare young kids, freshmen and sophomores, for graduate study in mathematics at the top five or ten math departments in the country” (1P-T). Daniel’s high ability also enabled him to be a counselor for a program for talented high school mathematicians and qualify for an internship with an anti-trust law firm.

Although colleges must provide accommodations for students with ADD/ADHD, Daniel did not request accommodations or notify the college of his diagnosis. Daniel’s professor was unaware of Daniel’s ADD/ADHD, although he did remark “Was [Daniel] hyper? Absolutely. No question about that” (1D-T). The professor dealt with Daniel’s hyperactivity by telling him to be quiet, which, according to the professor, “always worked” (1P-T).

Persons: Parents, mentors and teachers. When I asked Daniel’s mother what she thought the greatest facilitator to his talent development was she simply, but emphatically, stated, “Me” (1M-T). As mentioned earlier, Daniel’s mother made the decision to stop working and stay home to tend to his needs. In the following comment, Daniel’s mother explains her belief in the importance of having a person dedicated to the role of facilitator for a child with ADD/ADHD:

I’m a stay-at-home-mom and at that point there was no choice. [Daniel] needed me and I stayed home and so I was able to take him to the psychologists, that I was able to spend all this time finding the right schools for him and working with placement counselors and arranging for things and supervising stuff for him and being there as much as I could for him and...I have to take credit for his success. You know, certainly he achieved his successes, but I was able to facilitate it for him and I cannot imagine an ADD kid being really successful without a mother who is a stay at home from three o’clock on. There is just too much going on, just

too much dynamics and friction and everything else that, you know, that just...they just have to be there for their kid or it doesn't work. (1M-T).

Daniel's view of his mother as an important person in developing his talent was evident when he related how she taught him to read, was very involved in his education, and acted as a mentor.

Daniel stressed the importance of having the "support of good physicians and psychologists," made possible by his mother's availability and the income provided by his father. He said this of his mother and father, "My mom was involved because she did not work; she did not have that luxury. My dad was less involved; he's a well-known physician and works fairly long, grueling days" (1D-T).

When I queried Daniel on who he regarded as a mentor, someone he would go to for advice, his first response was "Mom" (1D-T). Upon further discussion, Daniel mentioned two professors who, although they were not formal mentors, provided support and advice in different ways. The first was a professor Daniel would talk to about which classes to take or which professors he should try to have. The second was his professor from his Honors Analysis II course, a well-known mathematician and innovator in mathematics education, who Daniel respects a great deal. An anecdote Daniel related to me reveals the impact of Daniel's respect for this professor on Daniel's life. One late night, out of frustration and exhaustion, Daniel violated the honor code while completing a homework assignment for his Honors Analysis II course. His professor discovered Daniel's transgression and delivered a warning about the consequences if it ever happened again. The memory of this highly regarded figure's disappointment in Daniel has ingrained a more structured approach to organizing his time. He now plans ahead and builds "slack" (1D-T) into his schedule in order to avoid becoming too frustrated or tired to make good choices. Although Daniel's university does not have a formal mentor program, the close

relationships students form with their professors provides a similar outcome: an accomplished, respected person to learn from, converse with and observe.

Daniel had very positive things to say about some of his teachers. He commented on the “special attention and care” (1D-E) he received from his teachers in elementary and middle school. Daniel felt he had “made good connections with quite a few teachers, probably ten to twenty-five throughout [his] career in high school.” He commented that one his of his strengths in college was “building relationships with folks to mentor or guide [him] and keep [him] on the right track” (1D-E). In addition to the professors mentioned in the previous paragraph, Daniel also developed a close relationship with his RA of three years who offered support and guidance whenever needed.

Daniel spoke of several friends but the one who seemed to have the greatest influence on him was a college friend. Daniel’s friend “did fairly well at [college] by sheer dint of will and discipline....I got through first and foremost due to my innate intelligence and secondarily on my discipline and study skills. If I had his discipline, I would have been unstoppable” (1D-E). Daniel did not absorb the lesson of his friend’s discipline until after he left college, and even now, he occasionally falters; however watching his friend succeed on will and discipline left a lasting impression that he now attempts to emulate as he starts his own business.

Social milieu. Daniel’s social life came up often in my interviews with Daniel, his mother and his RA. Daniel’s mother believed his behavior in elementary school from kindergarten to third grade prevented other children from wanting to be his friend. Following Daniel’s medication change and enrollment in fourth grade at a new elementary school, his mother explained, “That was really the first school where he made any friends. Before that, I mean, he

was just too, you know, unpredictable for kids to really want to be close and friendly with him” (1M-T). Daniel’s memory of his social skills in elementary school mirrors his mother’s: “So I would say that the first real friend that I made was probably in about third grade and a couple when I was younger -- and so I would say that it [ADD/ADHD] affected my social skills; they were severely retarded in the sense of slowly developing. Part of that was [mainly] ADD/ADHD” (1D-T). Daniel’s perceptions of his social skills are supported by his scores on the Social scale of the MSCS. In terms of social self-concept, at age 17, Daniel scored in the low average range (90 SS, 27 percentile, <-1 SD); a relative weakness compared to his other scores. This score indicates Daniel compared himself less favorably to his peers in social interactions. Several scores on the ACL Daniel took as a senior in high school reflected feelings of alienation, distrustfulness, and a fear of social interaction. Several of his other scores on this measure indicated aggressiveness, impulsivity, and stubbornness. It could be these attributes are what made Daniel socially isolated.

On the advice of his psychologist, Daniel’s parents enrolled him in a social skills class in which he learned social norms, how to initiate conversations, and how to behave in different social settings. Daniel enjoyed the classes and took the instruction very seriously. Even so, he continued to have difficulty in college in some social settings. Daniel’s RA said this of his social skills, “In social settings, like house meetings, ADD/ADHD was a problem and evident. During finals when all other students were studying, Daniel would be wandering the halls trying to talk to people” (1RA-T). Although Daniel had many friends in college from varied groups of students, his current social life is “probably substantially different from the rest of the population” (1P-T) in that he has yet to be in a romantic relationship, much to the consternation

of his mother and grandmother. According to Daniel, this could be because he has not devoted a great amount of time to dating.

As mentioned previously, Daniel made his first close friend while in fourth grade, and they remain close friends to this day. Daniel's mother spoke earnestly of his loyalty to friends: "[T]he interesting thing about [Daniel's] friendship is that he's an incredibly loyal friend. You know once he gives his heart to a friend, it's a gift and it's a given and it's given without any question" (1M-T). Daniel also sees himself as a loyal person. On two administrations of the Adjective Checklist (1994, 1999), "loyal" was one of only 49 adjectives (n=300) he checked both times. Daniel's loyalty to friends and colleagues has been a helpful attribute as he works to develop his new company. He has surrounded himself with, and been able to rely on, friends and colleagues to build his company and make business connections:

And those connections I forged in the process of [writing for a technology web site] have been absolutely instrumental in the start-up going places. I mean we've gotten meetings with a few different companies that are instantly the result of my connections with folks at those companies. (1D-T)

Daniel's loyalty was evident in an administration of the Myers Briggs Type Indicator (Myers & McCauley, 1985) that Daniel completed in 1998, which stated, "Relationships are important to you, especially when it comes to loyalty and sincerity" (1DSTY-Doc).

Intellectual arrogance is often seen as a stereotypical characteristic of gifted individuals that can negatively affect their social relationships. Daniel did address this issue in an anecdote about one of his cousins who was the same age but "not particularly gifted...Whereas, I was rather obviously so..." (1D-T). He further explained his feelings on this issue:

I was a very intellectually arrogant person which no doubt turned off a lot of people...I'm not quite as intellectually arrogant as I used to be, but there's a difference between being proud of what you can do and what you have achieved and being arrogant. It really turns people off. I think there is certainly a potential, judging by my relationship with my cousin, that being talented and being gifted could negatively impact your relationships. (1D-T)

Family milieu. Similar to other categories, the majority of comments on family focused not on Daniel's giftedness, but on the impact of Daniel's ADD/ADHD, especially when he was young. In the following quote, Daniel's mother gives clear insight into Daniel's role in the life of his family:

Family, unfortunately or fortunately, has been defined by Daniel and so we had our second child, you know, three and a half years after Daniel. I was spacing it out. He was just too much of a handful and things were timed by him. You know, we have a time share condo that's three hours out of [the city] and when he was an infant, he would scream all the way in the car seat. So we had to plan the trip at night... when it was dark and it was just an example of planning around him for other activities. (1M-T)

Later, Daniel's mother noted how Daniel's behaviors associated with ADD/ADHD had caused Daniel's sister to resent him when she was young. In one incident, Daniel's mother remembers "talking and screaming" at Daniel, frustrated by his behavior, and then "I turned around to say something to [Daniel's sister] and I used the same tone of voice and she was very young and I literally saw her jump" (1M-T). Daniel's mother spoke of the guilt she felt for her

reactions to Daniel's behaviors that he may not have been able to control and for the residual effects on his sister. According to his mother, Daniel's brother, who was seven years younger, did not feel the same resentment: "He didn't really feel the effects of the impact that Daniel had on the family, and he had lot of interests like Daniel ... [like] computers" (1M-T). The resentment Daniel's sister felt for him decreased, as she got older, partly because of her developing a better understanding of ADD/ADHD. Daniel's relationship with his sister has improved and even though they live in different states, they keep in touch by phone.

Daniel's mother still carries guilt over the frustration and anger she and her husband felt in reaction to Daniel's ADD/ADHD-related negative behaviors ADD/ADHD. She commented that they would forget he had this "hidden handicap" (1M-T) and would react at times by losing their temper over something that "wasn't his fault" (1M-T). Daniel's mother emphasized the enormous stress of dealing with Daniel's behavioral issues continuously. Daniel's parents, who married later in life and had aging parents living in a different state, "didn't have the luxury of having any family member who'll say, let me take him for the weekend" (1M-T) to help relieve the frustration and anger.

In contrast, when asked about family, Daniel's comments were all positive and emphasized the support they gave him. He stated, "My family has been wonderfully supportive, both in terms of time/emotional support and financial support. I went to 9 years of private school, and a private university. Without my family's support, I would have been in a much worse situation. I think early years were especially critical." (1D-E). Daniel's score on the Family scale of the MSCS, which he took at age 17, reflected his perception that family interactions did not have a negative or positive effect on his self-concept. However, according to Bracken (1992), even though self-concept is believed to be a "stable construct" (p. 5), it is changeable over time.

Daniel's perception or evaluation of his family environment may have become more positive as his "environment change[d]" or as he "no longer function[ed] within [that] environment" (p.5).

Intrapersonal

The chance of having ADD/ADHD. As I went through the information gathered from all sources, it was evident that Daniel's ADD/ADHD demanded more attention than his giftedness. Daniel's mother began to see a difference in his behavior from that of his peers when he was very young. She took Daniel on repeated outings to the park with a friend whose daughter was eventually diagnosed as 90 percentile deaf. Daniel's mother described the recurring conversation she had with her friend: "[At] the park, Daniel would be running all over like a maniac...and we would look at each other and we would say, 'Why is parenting so hard for us?'" (1-M-T). Daniel's parents turned to books to try to find an explanation for their son's behavior, beginning with books on difficult children, then progressing to books on children with ADD/ADHD. After Daniel's pre-school teacher voiced concerns that Daniel's behavior was not age appropriate, his parents took him to a local psychologist to no avail, then to a psychologist who specialized in ADD/ADHD. This psychologist diagnosed Daniel with ADD/ADHD and prescribed medication, Ritalin.

As mentioned earlier, on the CAT-A, Daniel's scores indicated symptoms of ADD/ADHD in both childhood and currently. Daniel continues to take medication for his ADD/ADHD symptoms and this may have resulted in reduced symptomology, still he reported symptoms in the Mild clinical range for hyperactivity. Interviews with Daniel, his mother and

Resident Advisor corroborated the results of the CAT-A, noting the difficulty his hyperactivity caused him as a child and continues to cause him now, personally, and others in his life.

Daniel agrees that his ADD/ADHD was a primary focus in his young life, “I mean, like, the ADD/ADHD was really so disruptive that it was just absolutely a first order effect” (1D-T). It continues to be an issue in several ways: “I have problems focusing, paying attention and generally directing the right amount of attention at a given task...thanks to some obnoxiously dysfunctional brain chemistry” (1D-E).

The early identification of Daniel’s ADD/ADHD was paramount in Daniel’s mind. He talked of a recent visit to a Children and Adults with Attention Deficit/Hyperactive Disorder (CHADD) meeting:

I went to like a CHADD meeting recently and there were a bunch of people in there who had never been diagnosed until they were in their thirties. I can only imagine how horrible that would be. Not necessarily horrible, I mean they probably enjoyed their lives, but, you know, disadvantageous. It would be an egregious impediment to any expression of talent whatsoever, not being diagnosed. (1D-T)

Another theme that ran through several sources was the open approach the family took towards Daniel’s disability. In a spirit of full disclosure, Daniel’s mother shared the details of his ADD/ADHD with all service providers he met: teachers, scout leaders, gymnastic coaches, karate instructors, camp counselors, and so on. As she stated, “ [we had a] tape on ADD and so we would hand the tape to whatever auxiliary teacher he had... so that they could understand what was going on with [Daniel] and, you know, we never, never hid his condition” (1M-T). The

open attitude Daniel's parents had about his disability not only raised others' awareness but also raised Daniel's self-awareness. Daniel's college RA said this about Daniel's self-awareness:

“What I can say is that Daniel was very self-aware about his ADD/ADHD and tried quite deliberately to develop successful coping mechanisms. He was not one to pretend like it didn't exist or like he didn't need to deal with it” (1RA-E).

Self-management: Concentration, work completion, and study habits. Daniel finds his self-management skills (concentration, work habits, scheduling, time-management, and study skills) to be lacking and attributes this mostly to having ADD/ADHD but also believes being gifted contributed to a poor work ethic. He commented that his work habits are poor, that he lacks discipline (“struggle to study rather than play”), hates to do “menial or boring work,” and, due to a lack of introspection, “it takes me longer to understand what works (for me) and what doesn't (in terms of study habits)”(1D-E). Yet, as a senior in high school, he perceived his ability to “function effectively within his environment” (Bracken, 1992) to be in the high end of the average range (Competence scale, 114 SS, 83 percentile). It is possible that Daniel feels competent in one environment more than another. Daniel's RA in college stated that Daniel did have a tendency to procrastinate when he should have been studying for finals (1RA-T).

Regarding a lack of work ethic and its relationship to giftedness, Daniel shared this thought: “When you could complete all of your math homework in half an hour in middle school, it doesn't support a strong work ethic. I mean you just blaze through your homework and go play Nintendo” (1D-T).

Contrary to what most people believe, Daniel credits his ADD/ADHD with several positive effects. He believes his ability to multitask and hyper focus (1D-E) are related to his ADD/ADHD. In high school and college, Daniel saw multitasking as a valuable skill because it

allowed him to read in boring classes and do homework, play computer games or send instant messages at the same time. Multitasking now carries a different importance as Daniel embarks on starting his own company. In the work world, multitasking and the ability to hyper focus allow him to be more productive. Daniel shared this recent incident on the benefits of hyper focusing:

There was a conference in which [a company] arranged to put me in touch with some engineers and architects ahead of time and to give me basically advanced information. It was very nice. And I was subsequently, over the course of the next twenty-four hours, able to bang out something like a six or eight thousand word article that was extremely detailed and extremely well received ...the only thing I was focused on was that, that was where 90 % of my attention went...some people with ADD/ADHD have the ability to hyper focus which can be handy. You know you can get a lot done when you have all that focus. (1D-T)

Personality: Temperament, attributes, and self-concept. Separating certain personality traits from symptoms of ADD/ADHD is difficult. Daniel's mother referred to his ADD/ADHD as a "hidden handicap" (1M-T), which is understandable because symptoms of the disorder (e.g. distractibility, fidgeting, inattention, impulsivity, etc.) are often confused for innate personality traits, instead of symptoms. However, Daniel's RA stated that Daniel displayed behaviors that were "pretty obvious" and led others to recognize "pretty quickly" that Daniel had ADD/ADHD (1RA-T). In my conversations with Daniel, he seemed to think he had a good understanding of which personality traits were directly related to ADD/ADHD and which were not. Although there was some overlap, in this section I will attempt to tease out personality traits that were not a result of his ADD/ADHD.

One trait Daniel mentioned was a lack of introspection concerning his study habits, which he described as the ability to think about and understand what worked for him and what did not. However, this lack of introspection did not carry over into other areas. There were incidences described by Daniel, his mother, and his RA that emphasized Daniel's self-awareness and ability for self-examination. Daniel related one such incident about when an interviewer asked him a question he did not know how to answer. Daniel responded that he did not know the answer because "...you should never try to fudge your way through things. It's really worthless when you're in the room with a bunch of people who are experts in the subject matter and they will see through it immediately, so you'll end up looking like an idiot" (1D-T). It is possible that the lack of introspection with regards to study habits may be one of those traits related to his ADD/ADHD, while his self-awareness and self-confidence are more his personality.

Daniel was also aware of his place in the intellectual hierarchy of the very prestigious university he attended. Although Daniel is very gifted and talented, he stated, "there were a lot of people who are/were way smarter than me" (1D-E). Daniel's professor and his RA agreed that Daniel was "considerably talented" (1P-T) but that he was not the "most brilliant" (1RA-E) student at the university. This self-awareness impressed Daniel's RA:

Daniel is very smart and very good with numbers, but he does not have an academic temperament. By finding ways he could play to his mathematical ability without trying to become a mathematician, Daniel I think has made very effective use of his talents while avoiding some of the worst difficulties that his ADD/ADHD might have created. (1RA-E)

From a very young age, Daniel has struggled with social situations. His different solutions to his social difficulties can also be traced to his self-awareness and persistence. Daniel's mother recounted two incidents in which he used these traits to his advantage. Realizing he needed help in choosing the right outfits while in high school, Daniel took his sister clothes shopping with him, questioning her on each purchase, so he could replicate the process on his own. In preparation for beginning his company, Daniel consulted an image specialist to assist him in correcting or developing the right behaviors for his image of an up-and-coming entrepreneur (1M-T).

Another trait that may be an overlap between an innate characteristic and a symptom of ADD/ADHD is Daniel's assertiveness or anger. In our conversations, Daniel did express anger and used a few obscenities when talking about frustrating situations. Daniel's mother had this to say about his temperament "He had a problem with, I mean, he still has a problem with four letter words. His language was just terrible. When he would get angry and explosive, it was just horrible" (1M-T). In the previous section on natural abilities, it was noted that Daniel did register aggressive tendencies on the ACL (Aggression scale, 61 *SS*, $M=50$, $SD=10$). His profile on that measure reflected a person who is insistent, dominant, and easily frustrated when blocked from achieving his goals.

Daniel's mother believes that "because of the negative impact of the other kids, [Daniel] built up a real hard shell emotionally...a shell around his emotional being" (1M-T). Daniel's RA did comment on the progress Daniel made in college in fitting in and making friends: "what was impressive about Daniel ...was how well integrated he was socially, despite these challenges. Daniel was not universally loved...but.... He had a broad network of likeminded peers with whom he studied and socialized" (1RA-E). The picture emerging is of a young man who has

found how to fit in on his terms. Daniel chooses his friends according to his interests while maintaining his independence and sense of autonomy. The decision to start his own business and be his own boss fits into this picture nicely. According to Daniel:

I think being self-employed is a wonderful thing and it has a lot of up sides, a lot of benefits. I think ultimately it is beneficial and I think there are a lot of things in my personality that could be somewhat predisposed to that. (1D-T)

Daniel also reflected a strong sense of autonomy on the ACL, registering his highest score on the Autonomy scale (72SS, $M=50$, $SD=10$). Several other scales indicated his desire for independence and control over situations (i.e. Dominance, Masculine Attributes).

Motivation and volition. Motivation is defined as “the act of giving somebody a reason to act; a feeling of enthusiasm, interest or commitment that makes somebody want to do something; or forces determining behavior – biological, emotional cognitive or social forces that activate and direct behavior” (Encarta, 2007). Daniel was motivated by competition in high school but when he got to college that changed. Daniel shared these feelings about what motivated him:

Desire to compete and be the best. This is a very, very good thing. Although, at college, this tendency died, since it became quickly apparent that there were a lot of people who are/were way smarter than me. So I settled into being comfortable with being a small fish in a big pond, but it did decrease my drive to compete.

(1D-E)

I then asked Daniel how he motivated himself to work in college and he said, “Oh, well maybe I was motivated more by what I was interested in and learning stuff. I guess the [college] attitude had rubbed off on me” (1D-T).

The notion of interest being a motivator for Daniel came up several times. For instance, Daniel noted “I can be very persistent on things I’m interested in, but I’m not nearly persistent enough on things that I find tiresome or boring (e.g. apartment hunting, shopping)” (1D-E). Daniel’s mother told me of how Daniel’s interest in something made him “tenacious about delving into it. Everything, you know, whether it was dinosaurs or castles or Celtic warriors...” (1M-T). A more current example of Daniel’s tenaciousness in things that interest him is found in this anecdote, told by his mother, about his start-up company:

They have a product and he knows that he needs to get patents on it. A normal person would go and get a patent lawyer and have them file out 20-30 patents, all over, from Hong Kong to China, you know, the United Kingdom [Daniel] did it himself. He researched it up, he learned how to file patents and he filed 20 or 30 of them. (1M-T)

Volition, or the ability to exercise will or to make conscious decisions (Encarta, 2007), may be a personality trait that is negatively influenced by Daniel’s ADD/ADHD. Daniel commented that: “I have trouble sticking to ‘flexible’ deadlines, even ones I set myself” (1D-E). Daniel spoke of his difficulty with exercising his will power and in making decisions. One incident shared by Daniel and his mother involved Daniel bringing a knife to school during his junior year. Daniel was a member of the state emergency search and rescue team and used the knife during his after school activities with that organization. On the bus ride home from school

Daniel, influenced by some other students, cut up a bus seat. School policy did not allow knives in school and Daniel was threatened with being expelled, which was later reduced to a two-week suspension. Daniel displayed a poor lack of judgment in bringing the knife to school and poor decision-making in cutting up the bus seat: It is likely that Daniel's behavior was influenced by his ADD/ADHD. Daniel decided that: "There were cases where I can see that both associating with folks who had no discipline and problems, or negatives, led to poor behavior on my part and that's something that I probably need to be careful of" (1D-T).

Systematically Developed Skills

Technology

Daniel became interested in technology as a teenager when he was trying to get a computer that was better for playing an online game: "Back in high school my family had always used Macintoshes..., and I needed a PC because I wanted to play this game. So I needed to build a PC" (1D-T). He found a web site on microprocessors "that was about the only place where, when you ask, 'Why is A faster than B?' you can actually get a full explanation of why that was" (1D-T). Daniel enrolled in the web site and used it often from 1997 until 2001, when he approached the owner of the website with an offer to write articles that would attract a "more general audience" (1D-T). The owner agreed and Daniel has been using this job as a "tool of self-education and self-promotion ever since. We have been quoted in, not The New York Times yet, but Reuters, which is a pretty good start, and the San Jose Mercury News" (1D-T).

Daniel's academic history in college was predominately focused on courses in math, physics, computer programming, architecture, and economics. He supplemented his course work with the practical experience of helping fellow students solve computer hardware and software

problems and researching articles he wrote for the website he co-owned. Daniel's opinions of his talents in the technology field are:

I am fairly well known in the area of computer architecture, although more as a skilled and talented observer, rather than a practitioner (so far). I'm also very good at evaluating and thinking about technologies from a very detailed level and a relatively high level. (1D-T-E)

Daniel is currently seeking to turn his collected experiences and learned skills into "a company that is working on novel techniques to make microprocessors easier to program, more power efficient and more powerful" (1D-E).

Business

Along with his computer skills, entrepreneurship is a skill that Daniel has been developing since high school. The personality report he received as a 16 year old focused on his "ability to conceive new ideas for the future of a business," and stated he "would make a much better executive or entrepreneur than someone who works for others" (1DSTY-Doc)-DSTY). As mentioned earlier, Daniel's score on the Competence Scale on the MSCS was his second highest score, demonstrating that he had confidence in his ability to "solve problems, attain goals, [and] bring about desired outcomes..." (Bracken, 1992, p.5).

Daniel has been preparing himself for starting his own business since his venture into internet journalism in 2001:

So what I managed to generally do in my journalistic career in my website is sort of guide myself to not get in front of like executives, sales and marketing executives But I actually talk to the kind of engineering managers and the

architects and the guys who designed microprocessors. So they actually know me and they don't look at me as though, 'This guy is going to design awesome microprocessors because he's a journalist?' But they are like, 'Oh, okay. He definitely thinks about these things in the same way I do, and understands a lot of the tradeoffs, and so if you said something and it looks like a good idea, it is worth a couple of hours of my time to pay attention to it for sure.'" (1D-T)

Daniel's RA synthesized the many skills and intrapersonal catalysts that have come together to make Daniels' choice the right choice in his mind:

Clearly, Daniel is particularly adept with computers and math. I think it is revealing, though, that he has chosen to pursue the business side of this after graduation, rather than, say, going for a Ph.D. in computer science. Daniel was always very good at math and computer science, though perhaps never the very best. I suspect that at least some of that may have been related to his ADD/ADHD. Academic research tends to require prolonged periods of uninterrupted concentration, never Daniel's strong suit. On the other hand, his ability to "multi-task" was never in doubt and that is an essential skill in business. So by becoming a tech entrepreneur, Daniel has managed to combine his academic talents with an occupation that minimizes the challenges posed by his ADD/ADHD. (1RA-E)

Talent development

Barriers

Out of 12 direct references from multiple sources on the issue of barriers to talent development, all identified Daniel's ADD/ADHD as his major barrier (1D-T; 1D-E; 1M-T; 1RA-E; 1RA-T). Daniel stated, "ADD/ADHD probably handicapped me a bit in college and would have made graduate school...difficult, I expect. Concentrating is damn hard unless deadlines are coming up fast and hard. Checking work for tiny mistakes is also tricky" (1D-T). Daniel and his mother commented that, due to his ADD/ADHD, he "perseverated to a degree and that he couldn't transition easily from one activity to another" (1M-T). Daniel shared with me his reaction to this problem while starting his own company:

It is kind of like the normal symptoms of ADD/ADHD which are spending too much time on certain irrelevant [stuff] or not quite relevant stuff. And you are able at a higher level to say, 'Oh hey, wait, this is only 30 % of the problem, I actually need to move on to something else.' which I think is sort of a more typical ADD/ADHD behavior. (1D-T)

This type of behavior could block Daniel's development in many life areas, as a student as well as an entrepreneur.

References coded in the *Disability – ADD/ADHD* category inferred a barrier to talent development, as all 49 references to barriers were about Daniel's ADD/ADHD. With the exception of one outlier, all inferred that the symptoms and outcomes of ADD/ADHD had a negative influence on Daniel's development from age three to adulthood (1D-T; 1D-E; 1M-T; 1RA-E; 1RA-T; 1P-T). From this analysis, the following symptoms of ADD/ADHD were found to be barriers to Daniel's talent development: (a) lack of concentration and attention to tasks

(1D-T; 1D-E; 1RA-T, 1M-T); (b) lack of discipline (1D-; 1D-E; 1RA-T; 1P-T); (c) “inability to ‘start’ complex tasks” or procrastination (1D-E; 1RA-T; 1Doc-DSTY); (d) “occasional poor judgment”(1D-T; 1D-E 1M-T); and (e) perseverance and inability to prioritize (1D-T; 1D-E; 1M-T). The outlier was Daniel’s statement about the positive benefits of being able to multitask and hyper focus, positive skills he attributes to his ADD/ADHD.

The analysis revealed two issues surrounding giftedness that research identifies as being potential barriers to talent development. The first is the notion of gifted students becoming lazy academics because they do not have to work very hard or learn study skills. Daniel referred to himself as lazy on several occasions and said that this was an issue for him (see p. 18). In the interview, Daniel explained to me that all through elementary and middle school he could get through his homework so quickly he never developed a good work ethic. Later in our conversation, though, he did say that he developed better study skills as he went through AP classes in high school and during his first upper level math course at college. Even so, Daniel felt that if he had better study skills he “would have been unstoppable” (1D-E; 1D-T). He also said of developing good work habits:

You may have some folks who are smart enough that they put the amount of effort required to get an A and that’s about it and that won’t necessarily build up the discipline, the execution capability that you actually really need to succeed in the real world. (1D-T)

The second issue is that of the big-fish-little-pond syndrome identified by Marsh (2001). Daniel spoke openly about feeling like a “small fish in a big pond” (1D-T; 1D-E) when he arrived at college from high school, where he and his friends were the top achievers. Daniel

reacted to this change by dampening his motivation: “I settled into being comfortable with being a small fish in a big pond, but it did decrease my drive to compete” (1D-T). Prior to this Daniel had stated that his “drive to compete” was something that enabled him to develop his talent; it motivated him. I asked Daniel how this affected his motivation and thus his talent development. His response was:

I would say probably in some ways, it may have [dampened my drive or motivation]. Certainly, it wasn't enough to be satisfied with a 3-point Grade Point Average (GPA). That's not in my standards, but it's more or less not possible to get a 4.0 in GPA in [my college]. So, just like I said, there's no point in trying and that forces you to focus your energy on different places. (1D-T)

In spite of his decreased drive to compete, Daniel continued to take the most challenging math courses and, as stated earlier in this chapter, he adopted the [college] attitude by becoming more interested in what he was learning than on his grade point average (GPA).

Facilitators

Factors that facilitated Daniel's talent development ranged from a person that supported Daniel to Daniel's personality traits and skills. Daniel's mother felt that without her devoted attention to his medical and educational needs he could not have been successful (1M-T), identifying herself as a major facilitator of his talent development. Daniel agreed that his family's support was invaluable to his development in several ways: (a) early diagnosis-“It would be an egregious impediment to any expression of talent whatsoever, not being diagnosed. Your parents are the people who are in the best case to diagnose you” (1D-T); (b) academic support – “My parents taught me some valuable study skills” (1D-E); (c) emotional support –

“and dealt with my awful behavior (and helped modify it) quite well” (1D-E); and (d) financial support – “I went to 9 years of private school, and a private university” (1D-E).

Other sources identified characteristics as the facilitators of Daniel’s talent development. Daniel’s RA said that Daniel was very adept at “finding areas that played to his strengths,” and that “Daniel was very self-aware about his ADD/ADHD and tried quite deliberately to develop successful coping mechanisms” (1RA-E). Self-awareness about ADD/ADHD was a theme that was repeated by Daniel’s RA, his mother, Daniel, and his MBTI report (insightfulness). I have referred several times to Daniel’s reaction of amazement when, attending a CHADD meeting, he came across adults who had not been diagnosed with ADD/ADHD until their thirties and the effect this had on their lives. This circles back to his appreciation for the support his family gave him. Their early recognition of his ADD/ADHD and their openness about his diagnosis allowed him to develop self-awareness about the syndrome, and good coping mechanisms to deal with them. Daniel’s self-awareness of his disability and its effects on him has gained even more importance as he works with the co-founder of his start-up, who also has ADD/ADHD:

Even my ADD/ADHD has kind of come in handy as my cofounder is
ADD/ADHD and I have a reasonable understanding of how that works and I am
able to support him and him to support me and hold his [hand] to the fire on
things that he needs, although I wish I was able to do that a little more effectively.
(1D-T

Daniel and his RA identified multitasking and hyper focusing as instrumental to his achievement in business. Multitasking has allowed Daniel to focus on many different activities and subjects at one time, and hyper focusing has allowed him to do that exclusively and efficiently. Daniel's mother also talked of his ability to multitask while in grade school which allowed him to "listen to the first and second grade next door" (1M-T) and absorb all that was going on in each lesson.

Daniel's ability to make connections was also recognized as a facilitator to his talent development (1D-T; 1M-T). The connections he has made through his web site and internet journalism "have been absolutely instrumental in the start up going places" (1D-T). This seems contradictory considering his social issues, but several things may have helped Daniel to develop in this area. Daniel's family was supportive in helping him develop his social skills. They enrolled him in a social skills class, found schools that fit his needs, encouraged his participation in activities such as scouting, and continued to push him to participate in and learn how to behave in many different social situations. One school that was a particularly good fit, according to his RA, was Daniel's university. Daniel's RA described the university as one that "prides itself on being a school of intellectualism," and he believed Daniel fit very well into the culture of the school (1RA-T).

Within Case Thematics

Two main themes emerged from Daniel's case. First was the level and layers of family support Daniel experienced. To begin with, Daniel's parents were open to listening to his pre-school teacher's concerns and immediately acted on the early diagnosis of his ADD/ADHD. They supported Daniel by educating themselves, him, and all his service providers on the symptoms of ADD/ADHD and ways to deal with them. Daniel's mother took a two-pronged

approach to supporting Daniel as he grew up. First, she sought out schools that were a good fit for him socially and academically; second, she made sure he had access to the best social and emotional care in the form of psychologists, psychiatrists, and social skills training, as well as making herself available to respond to teachable moments. Daniel's father provided financial support for these services through his income and emotional support by reading with his son and enjoying other casual activities. Although Daniel's mother shared her regrets and guilt over frustration and anger she expressed when Daniel was younger, Daniel only related his appreciation for his parents' putting up with his behavior, perhaps only remembering the positive.

The family support given to Daniel encouraged in him a strong self-awareness, the second theme noted. Due to the early identification, education, and treatment made possible by the family, Daniel developed an acceptance of his ADD/ADHD and a strong awareness of how to navigate life with this disability. There is no way of determining how much of Daniel's self-awareness was influenced by his personality traits and how much by the treatment and training his parents provided, but the strength of his self-awareness was evident across sources. Daniel's self-awareness helped him to accept himself, recognize his strengths and weaknesses, and select an appropriate focus on business instead of mathematics or an advanced degree.

It is difficult to say if being a part of a longitudinal study had an influence on Daniel or his talent development. Did filling out the ACL, MSCS, or the study surveys increase his introspection, reflection, or self-awareness? How much was his decision to become an entrepreneur influenced by the MBTI report that discussed his leanings towards entrepreneurship and his personality traits that supported this career path? These types of questions can be

addressed to an extent by identifying situations that may have created similar influences for the other student from the DSTY study.

Case 2: Thomas

Thomas is a quiet 27-year-old young man who grew up in a small town in the northeastern United States. During our conversation, Thomas was very polite but succinct; he did not elaborate often. He did share with me that he married his college girlfriend five years ago and is currently working as a programmer and systems administrator at a small business. Thomas attended a small, but well-known and respected liberal arts college in his hometown. Both of Thomas's parents work at the college, his father as a professor and his mother, a former professor, now the archivist. Thomas has a younger brother, a graduate student in physics, and a younger sister with a degree in Medieval Renaissance Literature (2M-T).

Thomas's parents assumed he was gifted from the time he was very young (2M-T). Thomas can remember receiving gifted services as far back as the first grade. In contrast, his ADD/ADHD symptoms went unnoticed until the birth of their second son, when Thomas's "troubling behavior started to be more obvious" (2M-T). Then, in third grade, Thomas's teacher recommended his parents have him assessed for ADD/ADHD. They took him to a psychiatrist who diagnosed ADD/ADHD-Combined Type and prescribed Ritalin. A year after the diagnosis of ADD/ADHD, Thomas's parents had him take the qualifying test for a national talent search program in order to have "documentation of his giftedness" (2M-T). Thomas, who always enjoyed taking tests, scored in the 98 percentile and the results were used by his parents to secure additional services for his giftedness.

Natural Abilities

Intellectual Giftedness

As mentioned above, Thomas's parents were well aware of his giftedness when he was very young. He began "talking fluently" (2M-T) at age two and reading at age three. There were many other indicators as Thomas grew up: among them were earning a score of 690 on the Math SAT I test in a national talent search program as a seventh grader, attending a summer course at the local college as an eighth grader as a result of that high score, and teaching himself eighth grade math over the summer. According to his mother, Thomas ranked first on the National French Exam due to "his innate intelligence for language acquisition" (2M-E).

Thomas's response to being gifted was quite simply, "To me, 'gifted' means that I have above average mental ability in various areas" (2T-E). When I asked Thomas when he first became aware of his giftedness, he said:

I don't know when I, well I mean, before my parents became aware of it I guess. And I'm not sure, when it was....I think it was more just sort of, I mean, I don't think I was any more aware of it than a fish was of water. It was just part of the way things were. (2T-T)

Learning came easy for Thomas and as a result he did not have to study much in school or even in college: Instead, he “mostly just picked up the material [he] was taught in class” (2T-T).

Creative Giftedness

In addition to his strong fluid reasoning abilities and verbal memory, Thomas also demonstrates strong innate problem solving, imagination, and originality, all components of creative intelligence. Thomas commented that his greatest talents include “my creativity, which I largely express through stories, of which I have roughed in the broad outlines of several; my problem-solving skills; my ability with language, and my ability with computers.” (2T-E).

Thomas’s mother agreed and mentioned his creative talent several times:

He has many other talents as well--creative, musical, dramatic--which he expresses in various ways through science fiction fandom, church choir, and occasional musical theater performances. Much of his creative energy recently has been channeled into his master's project, the development of a computer game. (2M-E)

Thomas participated in problem solving clubs in both middle and high school and placed fourth in the state one year. He noted in several questionnaires for the DSTY study, “I do math puzzles for fun,” and “Math activities are fun” (2DSTY-SQ).

Self-concept: Results of the Multidimensional Self-Concept Scale

On the MSCS, Thomas's total score, indicating his overall self-concept or social and emotional adjustment, was average, (101 *SS*, 52 percentile, $<1SD$) compared to the norm ($M = 100$, $SD = 15$). Other scores in the average range were on the Affect scale (93 *SS*, 33 percentile, $<-1SD$), measuring Thomas's reactions to his affective behaviors, the Family scale (99 *SS*, 48 percentile, $<-1SD$), his perceptions of his interactions with his family, and the Physical scale (91 *SS*, 27 percentile, $<-1SD$), measuring his self-concept of his physical attributes.

Two scores were above the norm ($M = 100$, $SD = 15$) and in the moderately positive range, Competence scale (117 *SS*, 87 percentile, $+1SD$) and Academic scale (117 *SS*, 87 percentile, $+1SD$). Thomas's score on the Competence scale suggests he feels above average in his ability to function successfully in his many environments (Bracken, 1992). The same score on the Academic scale shows that Thomas perceives his achievement and functioning in school in a positive light.

Thomas scored in the moderately negative range on the Social scale (83 *SS*, 13 percentile, $-1SD$), which measures "the extent to which children are approached in positive ways, and their ability to achieve their goals and objectives through successful social interactions" (Bracken, 1992, p.4). Compared to his scores on the other MSCS scales, Thomas's score on the Social scale was a significant weakness (-17 point difference, $\alpha = .05$). These results coincide with Thomas's concerns about his lack of friends and social awkwardness.

Personality: Results of the Adjective Check List

In sixth grade (1994), Thomas completed the ACL, scoring below the norm ($M = 50$, $SD = 10$) on six scales, three of which relate to social relationships: Number of favorable adjectives

checked (36 *SS*), Communality (34 *SS*), and Deference (38 *SS*). A low scorer on the Number of favorable adjectives checked scale “reflects an authentic self-evaluation as deficient in socially desirable attributes” (Gough & Heilbrun, 1983, p.6). The Communality scale measures the kind of interpersonal relationships a person engages in. Low scorers on this scale experience negative interactions with others such as (a) an “ambivalence in relating to others”; (b) a tendency to be “contentious and defensive”; and (c) difficulty “conform[ing] to the everyday expectations of interpersonal life” (Gough & Heilbrun, 1983, p.8). The Deference scale measures a person’s desire to be subordinate in relationships with others. Low scorers on this scale enjoy “competition”; and “are headstrong and impulsive, frequently leading to conflicts with others” (Gough & Heilbrun, 1983, p.18). Other low scores reflected an individual who is assertive and self-confident (Abasement, 36*SS*), prefers autonomy (Feminine attributes, 35*SS*) and likes stretching the rules (Military leadership, 36*SS*).

Only one score on Thomas’s sixth grade ACL was above the norm, the Aggression scale (61*SS*). High scorers on the Aggression scale are competitive and aggressive with “impulses that are strong, often under controlled, and tend to be expressed with little regard for the courtesies of conventional society” (Gough & Heilbrun, 1983, p. 13).

Thomas’s 12th grade (1999) scores below the norm were on the Heterosexual scale (27*SS*), Masculinity scale (39*SS*), and the Origence-Intellectence A-1 scale (36 *SS*). Thomas’s score on the Heterosexual scale suggests “someone who keeps people at a distance, fears the challenges and opportunities of interpersonal life and falls back on a too narrow and restricted role repertoire” (Gough & Heilbrun, 1983, p. 11). A score of 39*SS* on the Masculinity scale suggests Thomas is kind, gentle, and “values inner feelings and an intuitive evocation of

identity” (Gough & Heilbrun, 1983, p. 20). These attributes match Thomas’s comments of being an introvert and being unsure of how to initiate conversations in social situations (2T-T, 2T-E).

The Origence-Intellectence scales assess the cognitive styles of individuals based on the work of George Welsh (Gough & Heilbrun, 1983). Individuals who score below the norm ($M = 50$, $SD = 10$) on the A-1 scale (36SS) are considered to be low in origence (creativity) and high in intellectence (intelligence) and possess the following attributes: “Low scorers are prudent, vigilant, and programmed; they plan ahead and avoid intemperance and the undue expression of impulse....[They] take a firm stand on ethical issues and look askance at those who violate society’s conventions” (Gough & Heilbrun, 1983, p. 25). Thomas’s low score is consistent with his high intellect, but seems at odds with his impulsivity. It may be that, as Thomas has said, his symptoms were well managed through medication and his own determination.

On the ACL Thomas took in 1999, there was only one scale above the mean, Number of adjectives checked (69SS). Thomas’s score on that scale represents a person who is expressive, “eager to explore the world” (Gough & Heilbrun, 1983, p. 6), but who is impulsive and inconsistent in how they react to it.

ADD/ADHD: Results of the Clinical Assessment for Attention Deficit – Adult

As part of this study, Thomas completed the Clinical Assessment of Attention Deficit-Adult (CAT-A, Bracken & Boatwright, 2005). Thomas scored in the normal range ($M = 50$, $SD = 10$) on the CAT-A Clinical Index (T score = 53, 64 percentile). This score combines his Childhood Memories Clinical Index score (T score = 55, 72 percentile) with his Current Symptoms Clinical Index score (T score = 52, 59 percentile) and reflects neither a childhood

history of symptoms of ADD/ADHD nor evidence of adult symptoms. This is in contrast to Thomas's earlier diagnosis of ADD/ADHD in third grade.

Thomas's scores on the CAT-A Childhood Memories Clinical scales reveal a score in the Mild clinical risk range for inattention (T score = 60, 86 percentile), and Normal range for impulsivity and hyperactivity (T score = 51, 56 percentile; and T score = 45, 61 percentile, respectively). These scores are consistent with Thomas's impression that his childhood ADD/ADHD was mild and mostly inattention.

An examination of Thomas's scores on the Current Symptoms scales shows all three scores to be in the Normal range: Inattention (T score = 53, 63 percentile), Impulsivity (T score = 51, 51 percentile), and Hyperactivity (T score = 52, 58 percentile). Although Thomas did recall recent symptoms related to his ADD/ADHD after prompting, specifically a lack of focus on projects (2T-T), he stated more than once that he has learned to cope with his symptoms and they cause him little concern (2T-T, 2T-E). This may be the reason for the results of the CAT-A. The lack of symptoms at this time could also be indicative of having more choice in his activities or as his mother noted, the severity of ADD/ADHD symptoms could be related to the context within which a person operates (2M-T).

In terms of context, the CAT-A also examines the context most affected by the symptoms. On the Childhood Memories Clinical scales Context clusters, Thomas scored in the Mild clinical risk range on the Personal cluster (T score = 60, 86 percentile), reflecting that "the consequences of the behaviors are most often experienced by the individual with ADD/ADHD" (Bracken & Boatwright, 2005, p. 28), and on the Academic/Occupational cluster (T score = 60, 83 percentile), suggesting symptoms were problematic in his academic setting as a child.

Interestingly, Thomas scored in the average range on the Social cluster (T score = 41, 14 percentile), which deals with behaviors related to social interactions, an area of concern for Thomas when he was young.

On the Current Symptoms scale Context cluster, Thomas scored in the Mild clinical risk range on the Personal cluster (T score = 67, 96 percentile), and normal range for the Academic/Occupational and Social clusters (T score = 44, 23 percentile; T score = 43, 21 percentile, respectively). As mentioned before, Thomas noted an improvement in his ADD/ADHD symptoms and feels he has learned to manage them, especially when he is doing something he has a high interest in and enjoys working with, like computers, his current occupation (2T-E).

Catalysts

Environmental

School-based provisions: Gifted accommodations, ADD/ADHD accommodations, and curriculum. Thomas attended the local public schools from elementary through high school. However, he spent six months at a private school in another country in 10th grade. His mother commented that “Both the schools [abroad] and here have been flexible and accommodating for [Thomas]” (2DSTY-PQ). Thomas’s parents did have concerns about “having him learn enough diligence and organization to do justice to his intelligence,” but felt the local schools had “been good all along placing him with teachers who would both challenge him intellectually and deal gently with him” (2DSTY-PQ). This was proven a legitimate concern by the results of Thomas’s CAT-A which showed his childhood symptoms of inattention (e.g. attending, managing details) in the risk range in academic settings. Thomas also felt the schools and teachers were

accommodating and accepting of his intelligence. On surveys he completed in 8th and 10th grade, he noted that reaction from his elementary school teachers to his intellectual ability was positive; and that he was “challenged most of the time,” but by 12th grade classes had become only “occasionally challenging” (2DSTY-SQ).

In addition to informal accommodations for his giftedness, Thomas was also receiving services through a gifted program in elementary school as well as accelerative opportunities designed especially for him

In elementary school, I was in at least three separate Gifted & Talented programs (not simultaneously; the nature of the school's program changed a few times while I was there). I advanced by two grades in math during middle school, and was in all the honors classes that were available and several AP classes in high school. (2T-E)

Thomas did not elaborate on the curriculum or benefits of the gifted program, and his mother’s impression was that it was “mostly for children who were both gifted and difficult (because [they were] bored?)” (2M-E). As much as Thomas’s mother could remember, it was a once a week pull-out program with little substance in terms of curriculum (2M-E,2M-T).

Advanced curriculum appears to have been a priority for Thomas’s parents. They successfully negotiated his grade acceleration in math following his performance on a national talent program’s qualifying test. In the summer after fifth grade, Thomas’s mother helped him to master the sixth grade math curriculum so he could go into an honors seventh grade math class

as a sixth grader (2DSTY-SS, 2DSTY-PS, 2M-T). The following summer, he taught himself eighth grade math and then took ninth grade math during his eighth grade year. The extracurricular program Math Counts was an outlet for his math skills during middle school as well as a means of meeting like-minded students. Thomas participated in the annual competition on the state level during seventh and eighth grades and placed fourth in the state one year.

The press for continuous acceleration enabled Thomas to enroll in Math 12 Honors in ninth grade: a curriculum consisting of pre-calculus, real number system, algebra, trigonometry, and plane, spatial and coordinate geometry. He then went to the college in town to take math courses for 10th and 11th grade. In addition to his acceleration in math, Thomas also “took pretty much all the honors, AP, and [dual enrollment program] courses that were available in high school and took several additional courses up at the college during his junior and senior years in high school” (2M-E). Thomas took so many college courses during high school that he was able to graduate from college in three years. It is no wonder that Thomas scored above the norm in academic self-concept on the MSCS his senior year. All of the above experiences support his belief that he was highly capable of functioning successfully in an academic setting.

Thomas scored 800 in the verbal and 780 in the math portions of his college entrance exams, gaining him acceptance to a college rated in the top 25 liberal arts colleges in the nation, according to *US News and World Report* (Zuckerman, 2009), known for its rigorous curriculum. In terms of accommodations for gifted students at Thomas’s college, there were no formal programs, internships or mentorships, but his mother emphasized that the college did allow Thomas to graduate in three years and “At a small liberal arts college like [this college], everyone gets individual attention and mentoring by professors” (2M-E).

All of this acceleration took place without the schools offering any formal accommodations to Thomas for his ADD/ADHD. Thomas's parents never requested nor were offered special education services. Furthermore, when I asked Thomas and his mother if he had an IEP or 504 plan, both said they were not sure what those terms meant (2T-T; 2M-T). Instead of a formal plan, Thomas's mother wrote his teachers a letter at the beginning of the school year, "explaining his ADD/ADHD and asking for assistance" (2M-T). Thomas's mother said that requesting assistance was justified since, "It wasn't his fault. He wasn't a malingerer" (2M-T).

The college Thomas attended also did not provide accommodations for his disability. When I asked Thomas if he told his professors about his ADD/ADHD he said, "It might have come up with some, but I didn't go out of my way to share it" (2T-T). I explained to Thomas the law regarding students with disabilities in higher education and asked him if he would have sought accommodations had he known about the law. He answered, "I doubt it. Largely because I learned to just manage it with regard to the school work. And I think to some degree that the giftedness and the ADD/ADHD balance each other out" (2T-T). Perhaps, Thomas's responses in this conversation may be reflecting the results of the ACL he took in 1994, which indicated a desire for autonomy.

Persons: Parents and mentors. Parental support was the third highest coded theme for all of Thomas's sources. As I mentioned when introducing Thomas, his family enjoyed doing things together and shared many interests. Thomas's parents were and still are supportive and accepting of both his gifts and his disability. In terms of support for his giftedness, his mother says of their efforts to help Thomas in other aspects of his talent development:

In other areas, we encouraged Thomas's trombone playing in band and singing in school choruses, participated in many singing opportunities with him outside school, and performed together in theatrical productions. And when he expressed interest in Tae Kwon Do (after several years of AYSO soccer), we took him to classes for years (he's now a black belt).(2M-E).

Parental support was not just given in actions but also in a belief system that encouraged learning, not just getting good grades: “The family's culture of support for intellectual endeavor” (2M-E). Thomas’s parents scored only 3 out of 11 statements about school success a 5 (*very true*) on a DSTY survey. Those statements were

- The main reason to do work in school is to learn.
- My son should like schoolwork best when it makes him think.
- My son should feel most successful in school when he learns something he didn’t know before

Other statements by Thomas’s parents on questionnaires articulated similar beliefs on what it means to be successful academically. Thomas’s father expressed this academic goal for his son, “I hope he can learn to love learning as much as I do, to find knowledge its own reward, and gain the thirst for new knowledge that will keep the world always a new and interesting place” (2DSTY-PQ). Thomas’s mother offered this on how she would help her son reach his academic

goals, “I try to find out what he wants to do and then encourage him to carry it through. I have to be careful not to push him towards my goals if they turn out not to be his goals” (2DSTY-PQ).

This family belief system on academic goals and school success may be the reason Thomas was able to separate his feelings about his intellectual abilities from how he sometimes performed academically. On a DSTY survey about success in college, Thomas scored himself a 4 on a 7 point scale (1 = *strongly disagree*, 7 = *strongly agree*) on the statement, “Compared with others I think I’m a good student,” but then a 6 on “I’m certain I can understand the ideas taught in college; and, compared with other students I think I know a great deal,” and a 7 on “I know that I will be able to learn the material in college” (2DSTY-SQ).

Thomas may not have been in a formal mentoring program, but while he was growing up, he did have someone he regarded as filling that role. In a survey, Thomas was asked, “After the 7th grade, have you worked on math or science coursework or a project outside of school with someone you might consider to be a mentor” (2DSTY-SQ)? He responded, “Yes. Parent (father); science fair project” (2DSTY-SQ). Thomas’s mother also emphasized the role her husband played in mentoring Thomas as Thomas developed his knowledge and skills with computers:

[Thomas] followed in his father's steps in computer knowledge (in his physics courses, [his father] teaches his students to build computers; he also writes a lot of software), so that's certainly a factor. We provided computers, we encouraged play with computer programs and physics and math puzzles. (2M-E)

In terms of a more formal mentoring situation, Thomas concurred with his mother's assessment of the small liberal arts college culture of "individual attention and mentoring" (2M-E). Thomas said that he would go to certain professors more than others, but mostly to talk about the subject content and not really for advice (2T-T).

Thomas's parents also provided help in dealing with his ADD/ADHD. In addition to bringing him to specialists, making sure he took his medication, and contacting the schools when needed, Thomas's mother emphasized that they were consistent in supervising his homework: "we always had [Thomas] do homework at the dining table, so someone (usually me) was around to keep him on task" (2M-E). Thomas's parents were always looking for ways to support him. When Thomas expressed an interest in Tae Kwan Doe, his parents researched it and found that it was helpful for children with ADD/ADHD and so signed him up (2M-T, 2M-E, 2DSTY-PQ). Thomas advanced to a black belt in the sport (2M-E).

One other person who has supported Thomas's talent development as an adult is his wife: "Since I met my wife, she has always been extremely supportive of my development of my talents, particularly my talent for computers, when I was seriously considering pursuing physics instead, even though I have less aptitude for it" (2T-E).

Family milieu. Thomas's family was "caring and supportive" (2DSTY-SQ). They did many things together, among them, attending Shakespeare plays, visiting museums, and traveling abroad (2M-E). Thomas's mother also spent time at events at his schools and hosted school events at their home (2T-E, 2DSTY-PQ). Thomas and his parents shared many interests, like performing in musical theatre, writing, reading, and computers (2T-T, 2M-E, 2T-T). The family often read books aloud together, and, as Thomas said, "one summer I basically spent

going to the college with my father to practice programming during the day” (2T-T, 2M-E). All the siblings got along with Thomas’s younger brother, but Thomas and his sister “set sparks off” (2M-T). However, from all sources came the same picture of a close, supportive family, with typical minor problems and disagreements. One cannot help but wonder about the effects this type of support might have on an individual’s internal characteristics. On the second administration of the ACL (in 1999), Thomas’s scores indicated someone who is kind and gentle and who values inner feelings. That profile was quite different from his results several years earlier, which reflected an assertive and aggressive personality who preferred autonomy.

Thomas’s ADD/ADHD did have an effect on the family in two ways. Thomas’s mother shared with me that the behaviors related to Thomas’s ADD/ADHD did affect her parenting (2M-T) and Thomas commented that his parents have “always been very supportive in general, if sometimes frustrated with me” (2T-E). Even so, there was no mention by Thomas or his mother, in any of the sources, of any serious or long-lasting negative effects from Thomas’s ADD/ADHD on the dynamics of the family. Thomas’s mother shared this insight on her children: “Our children will be great grown-ups. They will be leaders as grown-ups. They were not great children, not good cogs in a schools' wheel. ADD is part of that. ADD is not necessarily bad itself, it’s the context” (2M-T).

Social milieu. Thomas’s concerns about his social interactions surfaced immediately when I asked him about what it was like being gifted. His response was, “Nobody likes a smart kid” (2T-T). During my conversation with Thomas’s mother, she used the same exact words, “no one likes the smart kid in class and so some of his social problems were due to his giftedness” (2M-T). In subsequent queries, Thomas revealed a social life plagued by both his giftedness and his ADD/ADHD. Although Thomas seemed able to separate the effects of his giftedness and

ADD/ADHD on his intellectual development, he was less able to separate them when it came to his social development. He expressed uncertainty over the source of his social difficulties in this way:

Well I think to some degree the ADD/ADHD probably helped to exacerbate some of the problems because I might not have reacted to various taunts in the best ways. I don't know that it, I don't know that I would have been that different. I don't know how much was the ADD/ADHD and how much was just my personality (2T-T).

Thomas's mother related to me an example of an incident at school when Thomas reacted to another child's teasing "by whacking the kid with his backpack" (2M-T). These behaviors usually resulted in a "talking to" (2M-T) from school officials but more importantly carried "social repercussions" (2M-T). Thomas had few friends up until high school, which may have been a result of his impulsive, aggressive behavior, or, as Thomas alluded to, a result of his giftedness. As mentioned previously, in sixth grade, Thomas did report himself as aggressive on the ACL, which may be an innate personality trait, because his CAT-A childhood scores do not indicate externalized behaviors in the above norm range. What is consistent is that Thomas felt socially isolated, whether it was due to innate traits, ADD/ADHD or giftedness. The importance of close friends for Thomas was evident when he noted on a sixth grade DSTY questionnaire that his best friend had moved away two years earlier and that was an "important and stressful change" for him (2DSTY-SQ). On the same questionnaire, in response to a query on what he

would change about himself, Thomas wrote, “I would get rid of my Attention Deficit Disorder because it sometimes gets me into trouble,” (2DSTY-SQ).

On a parent questionnaire, Thomas’s mother responded *strongly agree* to the statement “My child spends a lot of time alone,” and *strongly disagree* to “My child is accepted by peers” (2DSTY-PQ). However, Thomas’s mother found two benefits to his solitude: It may have advanced Thomas’s talent with computers because he had more time to devote to his interests, and his parents never “had to worry about peer pressure” (2M-T; 2M-E). Thomas agreed with his mother that his tendency to be a “loner... may have led [him] to an interest in computers” (2T-E).

Thomas’s social situation improved as he grew older and by high school, he had found a group of friends through his interests, and in college one very special friend. According to Thomas:

By high school, I sort of attached to a small group of other relatively geeky boys who were also, they were more or less the ones that went to Math Counts and Mathletics themselves. And they were, to some degree at least, interested in computers. But in college, by the time I was in college, I had met the girl, who was to become my wife, and I never really spent, I never really made any friends in college largely because I spent a lot of time with her. (2T-E)

Thomas's mother echoed his willingness "to embrace the idea of geekdom" (2M-E) and seemed very pleased that he "was happily married" (2M-E). By high school and college, Thomas was more content with his social situation, although he would have preferred his "friends more numerous and more friendly" (2DSTY-SQ). Interpersonal relationships were difficult for Thomas due to the combination of his intelligence, ADD/ADHD, and possibly, his personality.

Intrapersonal

The chance of having ADD/ADHD. Thomas's ADD/ADHD was mild and managed through the medication he took until he was 18 years old, along with his efforts and the efforts of his parents (2T-T, 2M-T). ADD/ADHD is not something that devastates him: "I don't find that it causes me serious problems, so I don't see any reason to be upset about it" (2T-T). Just like being gifted, ADD/ADHD was "just part of life for [him]" (2T-T). Thomas's approach to his ADD/ADHD is accepting and understated. His recollection of when he first learned he had ADD/ADHD was "I mean my parents talked to me about it..., but I, before then I certainly hadn't thought of myself as being, you know, having any kind of disorder or anything like that" (2T-T).

In contrast to what most people believe, Thomas feels there is a positive outcome to having ADD/ADHD. He said his distractibility prepared him for the multitasking needed in the information age: "I think that, if nothing else, the tendency to be distracted earlier in life has prepared me well for the need to switch back and forth very quickly from one thing to another. By practice if nothing else" (2T-T).

Thomas and his mother said the type of ADD/ADHD he was diagnosed with was Combined Type; however, Thomas felt it might have always been more inattention with the

hyperactivity present when he was younger (2T-T, 2M). The two symptoms of ADD/ADHD that came up most often in the data were (a) impulsivity, “I’d make myself less impulsive” (2DSTY-SQ) and “This [ADD/ADHD diagnosis] explained many things, like his lack of impulse control” (2M-E), and (b) distractibility, “I am highly distractible and frequently unable (or less able) to focus on a given task” (2T-E). The results of Thomas’s CAT-A do not indicate a diagnosis of ADD/ADHD either in childhood or currently. The results indicate that Thomas was experiencing mild inattention symptoms in school and personally when he was a child and now experiences mild problem behaviors personally (e.g. losing things). The lack of an indication of significant symptoms could be the result of three options: (1) Thomas has minimized the effects of his symptoms on the self-report; (2) Thomas’s symptoms have responded to medical treatment and learned compensatory strategies; or (3) Thomas was misdiagnosed as a child and his problem behaviors were due to either innate traits or the overexcitabilities associated with giftedness. This issue cannot be resolved in this study.

Self-management: Concentration, work completion, and study habits. Even though Thomas’s mother stated in several sources that his ADD/ADHD primarily affected his social interactions (2M-E, 2M-T, 2DSTY-PQ), there was ample evidence in the data that showed it also had a negative effect on his schoolwork. Thomas gives this account of what it was like trying to complete his homework:

I mean, at the time, I would sit down to try and do my work, and I would get through some of it and somebody else, somebody else in the house would distract me or the television would be on and distract me or I would drift away for a bit,

and they'd shoo me back to work, and I'd do some more of it. Rinse. Repeat. (2T-E)

In reviewing Thomas's report cards from middle to high school, I found that for sixth through eighth grade the majority of comments (16 out of 21) were positive, such as "Pleasure to have in class," "Outstanding effort" and "Shows enthusiasm and motivation toward learning" (2DSTY-Doc). Then in 9th grade, there was a dramatic change and 7 out of 11 comments were negative: i.e. "Student not meeting standards of an honors level course" (English Honors), "Student does not do homework consistently" (Biology Honors, Math 12Honors), "Student has not completed lab write ups" (Earth Science), "Student is missing several assignments" (French II) (2DSTY-Doc). Thomas noted that he could usually learn all he needed to know from listening in class and so never developed good study habits (2T-T). It appears that worked fine up until 9th grade when possibly the workload increased or teachers expected homework to be done and turned in for a grade. Thomas's mother mentioned in our conversation and on questionnaires for the DSTY study that Thomas had difficulty completing and turning in his homework, at times "he would do homework, but then carry it around in his backpack for days rather than handing it in" (2M-E). He also did score in the Mild clinical risk range for experiencing inattention problems in his academic setting as a child.

For part of 10th grade, Thomas went abroad to school and found that educational system friendlier to his temperament. All of the comments on his report card praised him for his achievements. Thomas's mother commented that Thomas was allowed to work at his own advanced pace, and he liked that educational system better (2M-T). Thomas returned to the

United States for 11th and 12th grade. There are no comments on his report cards for those grades but, to address Thomas's study habits at that time, I found a 2000 questionnaire (2DSTY-SQ) asking students about their learning strategies. Thomas answered that he had no method or strategy for: (a) learning or remembering information discussed in class, (b) helping him plan and write a paper, (c) checking his work, (d) preparing for tests, (e) taking tests, (f) motivating himself to complete homework and avoid distractions, and (g) finding a place to study. The only strategy he did describe was what he would do if he did not understand a math problem. He said, "Try to reason through from what I do understand" (2DSTY-SQ).

Motivation and volition. Motivation, specifically intrinsic motivation, helped Thomas to overcome his lack of will power, or volition. When his interest in an activity was high, he was more motivated to do it, which increased his persistence. Thomas put it this way:

While I am often well motivated, particularly at the start of any project, my willpower is often not, what it could be, and I tend to get distracted and lose focus on the project at hand. However, as I very much enjoy learning languages and working with computers, I have had much better luck in developing those talents, since I am much more able to stay focused on them. (2T-E)

The symptoms of Thomas's ADD/ADHD would surface and pull him away from work or activities that he had no or low interest in (2T-T, 2M-T, 2M-E). Thomas loved to write stories but not papers. Thomas mother recounted her efforts to get him over this obstacle: "There were problems with persistence in writing papers, certainly (I remember the M&M per sentence

bribes)--but not in writing stories or doing computer stuff" (2M-E). That anecdote demonstrates how Thomas's motivation was specific not just to disciplines but to intradisciplinary skills as well. Another example of this is Thomas's approach to language courses in college:

In college, he could choose his own courses, so his interest was high. An example of what would happen if interest wasn't high- For instance, he liked learning the [French] language but when it advanced to analyzing French literature, he stopped taking [French] courses. (2T-T)

Personality: Temperament, attributes, and self-concept. Thomas did not bring up his personality in our conversation or email exchange, except for one reference, but there is enough overlap with social interactions, giftedness and symptoms of ADD/ADHD to warrant discussion. Thomas took two assessments that can shed some light on his personality traits, the MSCS and ACL, measuring perceived self-concept and self-evaluation of personal attributes, respectively.

On the MSCS, Thomas scored in the average range ($M = 100$, $SD = 15$) on overall self concept (101 *SS*), Affect self concept (93 *SS*), Family self concept (99 *SS*), and Physical self concept (91 *SS*); meaning his feelings and evaluations of how he interacts in these domains were within the norm. Thomas's evaluations of his competence (ability to attain his goals) and academic abilities were above the norm, (both 117 *SS*). The only score below the norm was in Social self concept (83 *SS*) which coincides with Thomas's reports of feeling isolated from his peers and socially awkward.

Thomas and his mother reported impulsive, aggressive behaviors in elementary school that got him into trouble and inhibited friendships in several sources (2T-T, 2M-E, 2M-E, 2DSTY-SQ, 2DSTY-PQ). On the ACL that Thomas took in sixth grade his scores indicated difficulty with social interactions (i.e. contentious, headstrong, impulsive) and his only high score was in Aggression (61 *SS*, $M = 50$, $SD = 10$). However, Thomas's mother recounted that there was a decrease in his troubling behaviors as he grew older, which was confirmed by the results of the ACL he took in 12th grade. Thomas's personality seemed to be less aggressive, even softening a bit, but still inhibited in social situations. There was only one score above the mean (Number checked, 69 *SS*, $M = 50$, $SD = 10$) reflecting an eagerness to explore the world and three scores below the mean that indicated a kindness and valuing of inner feelings (Masculinity, 39 *SS*, $M = 50$, $SD = 10$), a high intellect but low creativity (A-1, 36 *SS*, $M = 50$, $SD = 10$), and a fear of interpersonal relationships (Heterosexual, 27 *SS*, $M = 50$, $SD = 10$).

Systematically Developed Skills

Academics

Thomas excelled in math at a very young age, yet when I asked him what his greatest talents were he stated "my problem-solving skills; my ability with language" (2T-T). He added that he was writing several stories and his favorite genres were fiction and fantasy. His love for and ability in languages came up in our conversation several times. Thomas is nearly fluent in French and speaks some German and Japanese (2T-T). As mentioned earlier, Thomas placed first on the National French Exam and won a trip to Paris for him and his teacher. I was curious how his love of languages intersected with his current work with computers and he quickly

responded, “the linguistics aspect does make writing programming languages easier I think (2T-T).

Thomas was accelerated in math from fifth grade through high school. By 10th grade, he was taking his math courses at the local college. Given his advanced mathematical reasoning (690 on the SAT I Math in seventh grade), it was a sound educational decision. Thomas did well in his math classes while in high school with grades in the high 90’s. In math courses he took at the college, he received grades in the 80’s. By his last college math course though, a 300 level course, Thomas claimed, “math was tying my brain in knots. But at that point I had already more or less decided that I was going for computer science, so math at that level was not necessary” (2T-T).

Technology

The circumstances of how Thomas developed his talent in computer science have been covered in several other sections, but I will provide a brief summary here. Thomas’s interest in computers began when he was young, partly because he was shy, and partly because his father was a college professor who taught a class on building and programming computers (2M-T). His acceleration in the field began with a summer spent with his father at work learning to program and an Introduction to Computer Science course at the college when he was in eighth grade (2T-T). In 10th grade, Thomas took a computer graphics course and electronics course at the private school he attended abroad and received high praise from his instructors for his work (2DSTY-Doc). Other courses, like physics, helped lay the foundation for an understanding of computers. Thomas took two more computer science courses at the liberal arts college during his junior and senior years (2DSTY-Doc). The course acceleration, along with the opportunities provided at home, produced advanced computer skills for Thomas by the time he left high school.

Talent Development

Barriers

The major barrier to Thomas's talent development according to Thomas and his mother, were the symptoms related to his ADD/ADHD (2T-T, 2T-E, 2M-T, 2M-E, 2DSTY-SQ, 2DSTY-PQ). High distractibility hampered Thomas's academic career and a lack of will power and focus continues to intervene on work projects (2T-T). Although social interaction was a concern for Thomas as he was growing up, he is now happily married and in a profession that does not demand highly developed social skills or a tremendous amount of social interaction. Social difficulty was the one problem that Thomas attributed to his giftedness. As discussed earlier, Thomas had difficulty fitting in with his age peers due to his intelligence, and had problems making friends because of social awkwardness, which he believed was due to being hyper sensitive.

Facilitators

Thomas's response to the question of what facilitated his talent development was, "My determination and willingness to just keep putting one foot in front of the other (literally and figuratively)" (2T-E). It seems from Thomas's story that he did just that: accelerating in math one year after another, taking college courses one after another, continuing to show up at school, friends or not, one year after another, always putting one foot in front of the other. Certainly, there were things and people that helped him along the way. His amazing intellect and wise parents cleared the path for his course acceleration, and the schools obliged. His solitude and shyness provided space and time for developing his talent with computers and writing. A family culture that encouraged intellectual pursuits, siblings who joined him in those pursuits, and

family activities that emphasized intellect all smoothed the way for Thomas to continue to put one foot in front of the other. Finally, years of struggling with distractibility prepared him for a work environment that requires multitasking.

Within Case Thematics

Thomas's ADD/ADHD was never his or his parent's focus. His identity was defined more by his giftedness. This theme was evident as I listened to Thomas and his mother during our conversations, and then read the emails, transcripts, documents, and questionnaires. The emphasis was on Thomas's intellect that enabled his math acceleration, ability for languages, and advanced computer skills. Yes, he had ADD/ADHD, and he was diagnosed and received treatment. It made him behave impulsively at times and got him in trouble with other children and school officials, but it did not define him. He did not like it and wished he could change it, but through determination, he learned to cope with it. Now that he is out of the school environment, he says, "I don't find that it causes me serious problems" (2T-T). Thomas's ADD/ADHD, by his account, was mild, and that could have been a reason it was not the focus for him and his parents. Still, it created problems and obstacles for him, required medication, and compelled him to learn to cope with it.

The second theme is the "family culture of intellectual endeavor" (2M-E). This family culture paved the way for Thomas's acceleration in math, computer science, linguistics and writing, in addition to instilling in him a love of learning. From surveys on the DSTY questionnaires, I was able to discern from Thomas's responses that he did not feel pressured to get good grades (2DSTY-SQ), but there was a parental expectation that he would do well in school. Thomas's parents wanted him to do well in school and to love learning. His parents supported his passions and provided opportunities for him to engage in informal educational

activities like museums, plays, and traveling. They also engineered his subject acceleration in math and computer science. At home, he did math puzzles for fun, played math games with his brother, and learned about computers as a hobby. The early identification and nurturing of the talent area was essential. Thomas's parents recognized his talent for math and problem solving very early on and provided opportunities for advanced learning at home while collaborating with his schools to do the same. Thomas, like many gifted individuals, is multi-talented, and his parents took the same approach for his linguistic and writing abilities, being careful not to push him into a talent area based on their own preferences. He was allowed to pursue what interested him at his own pace and ability level.

A third theme in Thomas's case was his social awkwardness. His feelings of being different and socially inhibited came through in every assessment (MSCS, ACL) and in each source. Thomas attributed this partly to his giftedness ("Nobody likes the smart kid.") and partly to his ADD/ADHD (impulsive aggressive behaviors). Thomas's lack of friends caused stress for him but also enabled him to pursue and practice his talent at a rate that increased his achievement level beyond his peers.

Appropriate identification and treatment of the ADD/ADHD, a strength approach instead of a deficit approach in respect to education, a supportive home environment emphasizing learning, time to practice his talent and accelerated curriculum in the talent area are the things that ensured Thomas's talent development.

Case 3: Karen

Karen is a single 36-year old female living in a metropolitan area of the Mid Atlantic region of the United States. She grew-up the youngest of five in a rural community in the same region. Karen's father, who died unexpectedly when she was 16 years old, worked in a

government agency as an engineer and her mother is a homemaker. Karen attended a highly regarded, very selective state university, graduating with a degree in English. She currently works as a guidance counselor in an elementary school in a city school district. All but one sibling attended and graduated from highly selective state universities. Karen's sister is a homemaker, one brother is an engineer, one a businessperson, and her brother without a degree works as an artist.

During our in-person interview, Karen was very pleasant, cheerful, and open. She was insightful in her comments and demonstrated her intelligence in her humor, creative thinking and verbal expression. She appeared preoccupied, looked around her office often, moved files and papers as we talked, and stood, then sat, then moved again before finally settling into one chair. It was the end of the school year, and she may have been thinking about last minute issues that needed to be resolved before she could take leave. Karen paused often while speaking, appearing to be searching for words or organizing her thoughts. Her comments went off the subject at times, but then she would stop herself and get back to the subject.

Karen's kindergarten teacher identified her ability to read and had her reading to the other children in class (3M-E). School personnel administered a reading test and determined that Karen was academically ready to accelerate to first grade but Karen did not want to and her parents and teacher supported her in that decision (3M-E). However, she did accelerate a grade level the following year. Karen began receiving services in the gifted program in fourth grade.

In contrast, Karen's ADD/ADHD was not diagnosed until she was in her late twenties. The symptoms were there while she was growing up, but the disorder was unknown to her parents and unidentified by school personnel (3K-E, 3K-T, 3M-T). Karen, although hampered by her symptoms, also did not associate her behaviors with ADD/ADHD. A friend suggested she

might have ADD/ADHD (3K-E). Upon the suggestion, Karen went to a psychiatrist for an assessment and was found to be ADD/ADHD – Inattentive type. She is currently on medication and considering counseling or obtaining an ADD/ADHD coach to help deal with the disorder.

Natural Abilities

Intellectual Giftedness

Karen does not have any testing to document her intellectual giftedness. She was accelerated in school based on grade level assessments and teacher recommendations. Karen's mother reported that she did not know Karen could read until Karen explained that a gold star she received was for reading to her kindergarten class. Karen's mother believes Karen picked up reading from being read to every night at bedtime. In May of kindergarten, Karen achieved an 89% on the end of the year first grade reading assessment. At the beginning of first grade, the teacher discovered Karen had already mastered the first grade math curriculum and that November Karen was moved to second grade.

Karen received grades of A for all of elementary school but then her grades dropped to B's in junior high and high school. Karen's diagnosis is for Inattention Type, and this type of ADD/ADHD is known to have a negative impact on school achievement. Junior high and high school students are required to do much more reading than elementary school students do. The symptoms of ADD/ADHD Inattention Type certainly would have an effect on a student's ability to read and understand large volumes of reading. In spite of the undiagnosed and untreated ADD/ADHD, Karen managed to score 580 (90 percentile) on the verbal portion of the SAT I, and 620 (86 percentile) on the Math section. Her Test of Written English, which was a basic knowledge test of English, was in the 92 percentile. This was achieved on her first attempt,

without preparation or accommodations. Although, Karen's scores are above average, they are not in the percentiles normally associated with giftedness (95percentile and above). It is possible that Karen is an above average student that appeared gifted in the primary grades in a small rural district. She is the youngest of five siblings and this may responsible for her having learned to read and do math early. This is all speculation and cannot be determined within this study and without further assessments. For the purposes of this study, Karen met the criteria by being identified gifted in her elementary school and there is anecdotal evidence to support this suggestion. Karen touched on several issues when expressing her thoughts on being gifted:

When I was younger, being gifted meant that adults were always complimenting me and teachers liked having me in their classes. It also meant I would say things that would make other kids laugh at me – not in a mean-spirited way, but just laughing at my word choices, the way I put things. It let me know that I couldn't just be myself around some people – I would try to “dumb down” my language. To me, being “smart,” or “gifted”, means that I have some quirky talents that don't necessarily translate to real-life success. When you think of the word “gifted” as meaning I have a gift, I sometimes don't know what the gift is. (3K-E)

Karen's mother did not answer the question about what she thought it meant for her daughter to be gifted. During the interview, instead of using the term 'gifted' she would describe her daughter's abilities: “[Karen] has lots of creativity,” “when it turned out she was, um, learned to read and do math early,” and “[Karen's] really creative with a good imagination” (3M-T).

Creative Giftedness

Although there is no evidence that Karen was functioning in the gifted range in creative abilities, it is her perception and that of her mother's that this domain was an area of strength. Karen demonstrated creativity from the time she was very young. Her mother recounted how Karen wrote and illustrated a story about a seed family when she was only four years old (3M-E). Throughout elementary school, Karen was choreographing dance routines at school and home, illustrating stories she had written, making up stories to tell to other students, and impersonating teachers and celebrities (3K-T, 3K-E, 3M-T, 3M-E). During junior high, Karen enjoyed participating in all the school plays; she even had parts written specifically for her. Then as Karen grew older, she began comparing her products and performances to other students and lost confidence in her abilities. As Karen explains it, "I don't know if I give up things because I'm not good at them or if they become too hard" (3K-T). The outcome was that Karen did not continue practicing most of her talents to the point of expertise, except for two, piano and sewing.

Karen's mother encouraged Karen to continue with piano lessons for 10 years and believed she "was pretty good and would've been better if she had practiced more" (3M-T). Karen finally told her mother not to waste money on lessons anymore, knowing she would not practice enough to rise to the next level of playing (3K-T). Karen became interested in sewing for a very practical reason: In high school, she wanted to make her own clothes to be different. She continued to sew, made her own patterns and developed it into a part time job, in part, because it was "something she didn't have to practice every day to be good at" (3K-T). Until just recently, Karen sewed table runners, chair covers and wedding canopies from her own patterns for two local wedding planners (3K-T).

Karen's mother is a very practical person, and Karen was always willing to take her advice (3K-T, 3K-E)). While Karen was growing up, her mother advised her to seek an occupation that would provide an income. In her mother's words, "Karen always had her head in the clouds and I kept her feet on the ground" (3M-T). Whether she was following her mother's practical advice, acknowledging she did not have enough talent, or giving in to insecurities about her talent, Karen decided not to pursue a career in the arts. She has not completely abandoned her artistic pursuits, just pushed them to the sideline of her life. She has taken various lessons and been engaged in different visual and performing arts hobbies, but each time she gets beyond novice, her interest declines: "I see this wall of learning ahead..., and it's not fun anymore. I get discouraged and quit" (3K-E). Still, Karen's mother wonders what her daughter could have done with her creative abilities if not for the obstacles she encountered:

If [Karen] didn't have to be on drugs and didn't have to make a living, maybe she'd be a very creative, messy person, throwing paint at the wall and screaming while she did it. Maybe civilization is destroying her inner genius. It's like turning an Arabian into a plow horse. (3M-E)

ADD/ADHD: Results of the Clinical Assessment for Attention Deficit – Adult

I asked Karen if she would take the CAT-A as part of the study and she agreed. The results from the CAT-A showed Karen's symptoms to be in the Mild clinical risk range on all three indexes: CAT-A Clinical Index (CAT-A CI T score = 65, 96 percentile), Childhood Memories Clinical Index (CM CI T score = 62 percentile, 90 percentile), and Current Symptoms Clinical Index (CS CI T score = 67, 95 percentile). These scores confirm Karen's previous

diagnosis of ADD/ADHD and are evidence that she was experiencing the disorder as a child, also.

An examination of the Childhood Memories scale shows a Significant clinical risk for attention problems (ATT T score = 79, 99 percentile) which would explain Karen's reading difficulties and distractibility in classroom settings. Karen's scores on the Impulsivity scale (IMP T score = 49, 43 percentile) and Hyperactivity scale (HYP T score = 51, 51 percentile) are in the Normal range.

The Personal Context cluster score for Karen is in the Mild clinical risk range (PER T score = 64, 91 percentile) reflecting her forgetfulness as a child and other behaviors that had an impact on her personally. Also in the Mild clinical risk range is Karen's score on the Social scale (SOC T score = 62, 94 percentile) which is interesting, given Karen's report of several good friends while growing up and no significant social problems. This inconsistency prompted me to review the items Karen scored the highest (4) on this scale. Of the three items scored the highest, two are related to inattention: "I easily recalled the names of people I met," was scored *strongly disagree*; and "I forgot to watch for the ball when playing games," was scored *strongly agree* (Bracken & Boatwright, 2005). One other item related to attention on the SOC scale was "I did not pay close attention when others spoke to me" which Karen scored *agree* (3) (Bracken & Boatwright, 2005). Karen's inattention problems appear to have affected her social interactions also. In terms of academics, Karen had above average success in school with grades of A and B and an academic history that gained her admittance into a selective college which is consistent with her score in the Normal range on the Academic/Occupational scale (A/O T score = 58, 78 percentile).

Karen currently struggles with a lack of concentration and a habit of beginning new things and then giving them up quickly, once the “newness” is gone (3K-E, 3K-T). Her scores on the Current Symptoms-Inattention (T score = 77, >99 percentile), and Current Symptoms-Impulsivity (T score = 71, 99 percentile) scales show that she is at the Significant clinical risk for inattention and impulsivity, but no risk for hyperactivity (HYP T score = 37, 9 percentile).

Karen’s ADD/ADHD is affecting her in all contexts, personally (PER T score = 69, 98 percentile), occupationally (A/O T score = 62, 89 percentile) and socially (SOC T score = 64, 93 percentile). Karen’s complaint of being forgetful and disorganized at work and the negative effects of these behaviors on her social interactions (3K-T) is consistent with a Mild clinical risk classification for these clusters. Her concerns over how others view her and comment on her unpreparedness at work (3K-T) coincide with her score on the External Locus cluster at the Significant clinical risk (EXT T score = 76, 99 percentile). In terms of the Validity scales, all were in the Typical range.

Catalysts

Environmental

School-based provisions: Gifted accommodations and curriculum. Karen was identified as needing acceleration in her first year of school. As mentioned earlier, her kindergarten teacher discovered she could read and the school began efforts to accelerate her one grade level. The following year, Karen accelerated from first grade to second grade when her teacher realized, in addition to reading above grade level, Karen already knew the entire first grade math curriculum. In third grade, Karen was placed in the top reading group but began to have difficulty:

In around the 3rd grade, I was put into some competitive reading group, where we read books and competed against other teams to answer questions about the books. (At least that's how I remember it.) However, I was pulled out of that [advanced reading group] after a short time because I wasn't keeping up with the reading. (3K-E).

Karen was enrolled in the gifted program when it began two years later. In the pullout program, children had the opportunity to “do special projects, like write and perform plays, [and] do behavioral experiments with chicks” (3K-E). The group received “special treatment” (3K-E) and were allowed to miss class time to complete their projects.

Karen lived in a small town with limited resources and a population of between 3,500 and 5,500 (City Data, retrieved July 9, 2009). The schools were organized on the junior high model, which meant that Karen was in elementary school up to sixth grade and then junior high from seventh to ninth grade. In seventh grade, Karen and two other seventh graders were placed in an advanced math class. The class was a multi-grade class with students learning Algebra I, Algebra II, and Geometry, all at the same time with one teacher. The teacher would begin the seventh graders on their lesson then move to the eighth graders then the ninth graders. Students were expected to work on their own or with their respective grade peers to solve problems. Given Karen's childhood score in the Significant risk range for inattention on the CAT-A, this class structure would be especially difficult for Karen as evidenced by her comment:

My junior high math class...required us to be somewhat self-directed and independent. Unfortunately, I was not very self-directed (my ADHD probably had a lot to do with that), and I got behind rather quickly. I think my teacher just gave me A's & B's even though I didn't know what I was doing. (3K-E)

Karen was in this math class with the same teacher for three years covering Algebra I, Algebra II, and Geometry. Karen was much happier with her experience in the eighth and ninth grade advanced English class. The teacher for that course was exceptional and took a special interest in Karen. As the director of the school plays, the teacher made special parts for Karen, and in class, she encouraged Karen in her writing (3K-T).

In high school, Karen was placed in the advanced math class in 10th grade. She began to falter very quickly, earning a D for her first quarter grade (3K-E). School officials decided to place her back in Algebra II, which Karen was very happy about: "When they sent me back to Algebra II it raised my self-esteem. I said, 'Hey I am good at math.' In Trigonometry and Calculus, I got all A's. It was pretty easy" (3K-T). Karen continued to challenge herself by taking several AP courses and scored a three or below on the end of year exams. Karen began her senior year in AP Calculus B class with good grades, then, "relaxed, got behind and ended up with a D and a three on the exam" (3K-T).

Karen attended a highly selective state college; ranked in the top 10 of public colleges and in the top 50 of all national universities by *US News and World Report* (Zuckerman, 2009). She was not in the honors program at her college, and believed she "was in the bottom half

intellectually” (3K-T) at her school. Karen did not receive any accommodations for her giftedness or her undiagnosed ADD/ADHD while in college.

Persons: Parents, teachers, and peers. It is difficult for me to determine the people who were most influential in developing Karen’s talent, because, as Karen will admit, she never pursued one talent long enough for it to develop. It is possible this had more to do with Karen’s undiagnosed ADD/ADHD and, to a lesser degree, her multipotentiality. My approach for this section will be to describe the influence those closest to her had on her life.

Karen’s parents were supportive and caring. They attended her plays, were enthusiastic about her interests, helped her with her homework, and drove her back to school for things she forgot (3K-E, 3M-E). However, as Karen’s mother commented, their support did not include “...pressure or special classes. We cooperated instead of pushing” (3M-E). Karen remarked, “My mother is more practical and my father was more supportive of the creative and artistic things we children did” (3K-E). Karen’s mother confirmed this, adding that she was a “hands-off mom” (3M-T). Karen’s mother stated that, as parents, their role in her talent development was “To approve of Kate, to let her know that what she doing was a good thing. But we didn’t take a really active role in [her talent development] (3M-E). Karen’s mother did discourage the arts as an occupation for Karen, and reflecting on this stated, “I wonder if I did her a disservice by discouraging her to be an actress” (3M-E).

Teachers played an instrumental role in Karen’s content acceleration and early ventures into acting. Karen’s kindergarten teacher discovered she could read, brought it to the attention of school officials, and provided some acceleration (3K-T, 3M-E, 3M-T). Her first grade teacher continued to monitor her and arranged for her to accelerate from first to second grade (3K-T,

3M-E, 3M-T). Karen's eighth grade teacher nurtured her interests in writing and acting, and Karen developed a special relationship with this teacher, a relationship that most resembles a mentor relationship. Karen spoke often of how much her English teacher's attention and efforts on her behalf meant to her. Through Karen, her entire family developed a close relationship with her English teacher. During our interview, Karen's mother praised the teacher for her exceptional ability, creativity and dedication to her students (3M-T).

Peers have had an extraordinary influence on Karen's life. They have encouraged her to do things, discouraged her from doing things, kept her on track, and even identified her symptoms as ADD/ADHD. This is what one friend meant to Karen:

My friend Debora was a huge help. I often wish we still lived in the same city because she kept me on track. I said earlier that I only took piano lessons, but there were a handful of lessons here and there that I can thank Debora for getting me involved in. Growing up, I was her only friend, and when she wanted to do something, she would get me involved. She is so creative and energetic and she dragged me into so many things that I ended up loving. She brought me to my first ballet class.... Together we also went to two drama workshops, tennis lessons, and came up with so many creative things together. She kept me on track at school – she was the person who reminded me to bring in my money to take the SATs on the last possible opportunity. Whenever we got together, it was to do things, not just sit around. We made up dance routines, built things, created art, went fishing, and even drove to California and back one summer. (3K-E)

As much as Debora was an inspiration for Karen, other friends unintentionally discouraged her from pursuing her talents. Karen loved acting, was very involved in junior high and had been cast in small parts in the plays in high school. During one high school audition, while performing with a very talented friend, Karen compared herself to her friend and decided her friend was much better (3K-T). Karen decided that she was not a talented actor after all, and resolved to stop acting after high school. Finally, as mentioned in an earlier section, a friend suggested to Karen that the behaviors that were major obstacles for her at work and elsewhere might be from ADD/ADHD. After this was brought to Karen's attention, she went to a psychiatrist and was diagnosed with ADD/ADHD. It bears mentioning that at the time, Karen was receiving counseling for depression from a Licensed Clinical Social Worker who not only did not diagnose the ADD/ADHD, but also discouraged Karen from exploring it (3K-T).

Family milieu. Karen spoke lovingly of her large, close family. In one anecdote, she tells of the type of support her family always gave her: "I remember one night that my entire family of seven was seated around the dining room table helping me finish a project that was due the next day" (3K-T). The family lived in a small historic town surrounded by a rural county. There were not many opportunities for lessons and a culture that did not emphasize extra-curricular lessons for children. Karen remembers, "I don't know of anyone who did that [took lessons] when I was growing up partly because of the time [1973 – 1989], and probably a lot because of where we lived also. There weren't that many types of lessons available in [town]" (3K-E).

Karen's family shared the culture of the town, and, as a one income family, lacked the funds to provide lessons for their five children (3M-E, 3M-T, 3K-T, 3K-E). As Karen stated:

Financially speaking, my parents were extremely responsible and frugal with money. With five children and only my father working, they had limited financial resources. But they saved enough money for all five of us to go to college. Those were their priorities, so there wasn't a lot of money for dance lessons or summer camps. (3K-E)

Karen's mother believes Karen "would have loved dancing, singing, and acting classes" (3M-T) and regrets not being able to provide those things.

Karen and her siblings were expected to behave and do well in school. According to Karen's mother, her children knew what was expected and did it; she never rewarded or punished her children, grounded them, or gave or took away privileges (3M-T). All of the children were in the gifted program for math and several for language arts, also. The children's study habits did concern Karen's mother but not because they were deficient, on the contrary, she thought the children were perfectionists and studied too hard, trying to get A's; all but Karen, who was "happy-go-lucky and didn't spend four or five hours a night doing homework" (3M-T).

Karen's parents were "not actively involved in making school decisions" (3M-T), instead, they left those up to the children, their teachers and guidance counselors (3M-T). They felt the school personnel were trained educators and "knew what they were doing" (3M-T). When the children left for college, they were then considered adults and "had the freedom to study what they wanted to study and take courses they wanted to take" (3M-T).

Three of Karen's siblings attended selective state colleges and graduated with degrees with practical applications: engineering, science, and business. The exception to this was the second oldest in the family: He had a full scholarship to attend an art institute in a large city, but left after a year. He received another scholarship to attend a second art institute in a city closer to

home. Again, he left after a year. Karen believes the schools were not a good fit for his more practical and down-to-earth personality, compared to the “wild and weird art students” (3K-T).

Karen attended a prestigious state college and graduated with a degree in English. Upon graduation, her mother suggested she stay in school to get a degree in nursing with the rationale that the government was paying for her education until she was 22 years old and nursing would provide a good income (3M-E, 3M-T, 3K-T). Karen started the program but left after a year realizing she was not interested in becoming a nurse (3K-T).

The year before Karen left for college, her father died unexpectedly. Karen’s siblings reacted differently to their father’s death, one had a severe reaction, losing weight and falling into a deep depression, but Karen said, “At the time, I didn’t feel that bad about it” (3K-T). She refused to let anyone talk to her about it, telling him or her she was fine. At about the same time, Karen began to wear black clothes and listen to depressing music. Furthermore, she “dropped her longtime best friend for a more superficial friend who always joked around” (3K-T).

Social milieu. Karen has very well developed social skills. As a young child, she understood she had to “dumb down” her language for her peers and knew how to make other children laugh with her stories and impersonations. In our conversations, she discussed her many friends while she was growing up and how they would “talk and flirt with the ninth grade boys in math class” (3K-T). At work, Karen’s easy-going personality and, once again, her ability to impersonate others have made her popular with her coworkers (3D-O). Karen’s mother described Karen as “happy-go-lucky” and “a leader” (3M-T, 3M-E).

Intrapersonal

The chance of having ADD/ADHD. Karen’s mother told me she was “not convinced that Karen has ADD/ADHD” (3M-T). She went on to explain that she had not grown up with

knowledge of the disorder and was unfamiliar with the terminology until Karen told her about it. She expressed her skepticism further by noting, “My sisters and I were all forgetful, always losing things, so now I make lists. The fact that Karen is forgetful and doesn’t get things done, well, I don’t know how far from the norm she is” (3M-T).

Unfortunately, Karen’s symptoms are more than being forgetful or not getting work done. She has suffered from at-risk levels of inattention and impulsivity since childhood. Karen shared several anecdotes that indicated the presence of these symptoms and the impact they had on her. For example, after being accelerated to second grade for her advanced reading skills, a year later, Karen was pulled out of the advanced reading group because she could not keep up with the reading. When I asked Karen about this, she explained how she experienced reading in this way:

I don’t like to read because I don’t have the patience. It’s like a chore. Part is the concentration but also I’ll read a paragraph over and over before getting it, then stop and daydream about the character or setting and what it might like to be that character or be at that place. I like to spend time with the characters. And so reading a book is such a big commitment for me that I’m really critical of the authors. If they do something I don’t like at the beginning of the book, I just put it down, and I won’t read it. (3K-T)

Karen’s other symptoms of ADD/ADHD may have been responsible for her poor performance in several other classes, especially math classes. Her inability to stay on task in her Algebra I, Algebra II, and Geometry classes resulted in her being placed back a grade in math as a 10th

grader. As a senior, Karen's lack of focus caused her to fall behind in Calculus B and end up with a grade of D. Although Karen's scores for the academic cluster of the CAT-A were not above the norm, it should be noted that they were in the Mild risk range within the 90% Confidence Index. With this in mind, it is likely her significant inattention created barriers to achievement in the academic domain.

According to Karen, these unexplained scenarios for a child with so much promise created internal turmoil for her when she was young. She began to lose confidence in her ability to do things she thought she was good at, such as math, art, and acting. She reported experiencing severe panic attacks when she was 14 years old, so severe she felt she could not go on unless they stopped (3K-T). Karen's mother does not remember Karen having panic attacks as a child or her suffering from inattention, impulsivity or low self-esteem: "Karen told me she was depressed as a child. I didn't see it. Karen's like a cat, always landing on her feet" (3M-T). Karen continued to suffer with her undiagnosed ADD/ADHD as an adult. The following quote encapsulates the effect ADD/ADHD has had on her self-image:

I think I am more comfortable with the label of ADHD than I am with the gifted label, because it fits more with my image of myself. Often I don't feel smart at all. But I always feel ADHD. Once I was diagnosed, everything made a lot more sense. All of the things that I had struggled with throughout my life made sense.
(3K-E)

Karen completed the Copeland Symptom Checklist in December 2000 at the request of her psychiatrist, and scored in the clinical range for ADD/ADHD Inattention Type. She began taking Aderal, but found it wore off too quickly, and changed to Vivance.

Self-management: Concentration, work completion, initiative, and study habits.

According to Gagné, self-management “is the capacity of learners to plan and execute their training/learning program with a minimum of outside pressure from parents and teachers and to assume full responsibility for their progress or lack of progress” (Gagné, 2007, p.100). Karen was partially successful at this. In elementary school, her intelligence made it possible for her to earn A’s without strong study habits, but after rising to junior high, she began to get B’s and struggle to keep up with class work. Still, Karen was doing above average work in a rigorous curriculum. Karen believes the structure the school setting provided compensated for her inability to manage her own work completion:

I only seem to succeed with the help of externally imposed deadlines and direction. School wasn’t too hard for me because of those deadlines and directions. I knew what I had to do and I knew when it had to be finished. I was able to make myself ‘buckle down’ and work, knowing that the end was in sight for a particular paper or project. I think I had pretty good work habits and persistence in school. But without those outside rules and directions, I feel lost, and get easily overwhelmed and discouraged. (3K-E)

Karen's mother shared that "As a child, [Karen] wasn't organized" but that it was not necessary to "pressure her to do her homework" or monitor her to insure that it was completed (3M-E, 3M-T). As discussed earlier, Karen and her siblings knew what was expected of them and they complied.

College offered many choices for Karen, which was difficult due to her many interests, talents and indecisiveness. Of course, her difficulties could have also stemmed from impulsivity, a scale on the Current Symptoms scale of the CAT-A in which Karen scored in the Significant clinical risk range. At first, Karen thought she might want to be a psychology major but decided she did not like that department. She tried other subjects and finally ended up an English major. Her mother describes how Karen approached this situation:

In college, she was somewhat scattered in her choices, but she said she wanted to get educated, wanted to see what there was to learn. In a searching mode, not decided on where she wanted to go in life. Wanted to explore different subjects - philosophy, languages, anthropology. When she graduated, she was an English major. It's hard when you have so many choices. (3M-E)

Although Karen's mother practiced a "hands-off" (3M-T) approach with her college age children, she did intervene when Karen needed direction after graduating and suggested Karen complete the nursing program. Karen started but never finished. As Karen said, "I always feel like I could have been good at something by now, if I had stuck with it. Even if I didn't devote my life to it – just given it a little bit of my time. (3K-E)

Karen still struggles with finding a direction, and “planning and executing her training” (Gagné, 2007, p.100). She chose her current profession because she decided she did not want to teach and her friend’s mother was studying to become a school counselor. She got her current job without applying when the previous counselor called her and asked if she was interested. She took the position at the elementary school and has remained there for six years. Karen would rather be working with high school students. Like the teen novel, she began and never finished, her “life lacks direction and is completely disorganized” (3K-T).

It is unclear whether these problems stem from Karen’s giftedness, ADD/ADHD, or personality. Karen acknowledges that sometimes “Being school-smart only takes you so far in life. When school comes easy for you, you might not learn to work hard” (3K-E). However, she also believes that “ADD/ADHD has affected my whole confidence level. I have a pattern of starting things then dropping them. When I realized the pattern, I just stopped starting things” (3K-T).

Motivation and volition. Karen believes her motivation was stronger when she was younger but that fear prevented her from trying new things (3K-E, 3M-E). As an adult she is no longer afraid to try new things, but “Now I find that the motivation is waning because I am so aware of my negative characteristics that keep me from succeeding, that I have lost confidence in myself. I have no self-direction” (3K-E, 3K-T)

Karen’s motivation has also been influenced by the pattern described in the earlier section, never finishing what she starts. She calls this pattern an “overarching issue” (3K-T) and is concerned because she is not sure if she gives up on things for lack of motivation (interest) or lack of volition (will power). She expressed her concern in this way:

I don't know if I give up things because I'm not good at them or if they become too hard. When something gets hard, I don't like it anymore, so I don't go very far with it. I love starting a new hobby because going from being a novice to a beginner is so quick and fun. That "newness" is my favorite feeling in the world. It's what makes me feel alive. (3K-T)

Becoming overwhelmed, losing interest and giving up on pursuits were themes that ran through our entire discussion.

Personality: Temperament, attributes, and self-concept. Karen has a very pleasant personality and is well liked by her co-workers (3K-T, 3D-O). Her mother describes her as "happy-go-lucky" (3M-T). In her position as a school counselor, the children seek after her, and the adult staff come to her with their problems (3D-O). Although Karen is successful in certain parts of her job, she has difficulty with the parts that require organization; she becomes overwhelmed with large projects and does not know "how to break them down" (3K-E). This causes a great deal of stress for Karen and affects her self-efficacy and self-esteem.

Karen is now considering that she may be a perfectionist, a trait she might share with her siblings (3M-T). She attributes her procrastination to her perfectionism, "I am beginning to see that I am a perfectionist, which for me has meant that because I can't do things perfectly, I do them half-way. This has also made me have a huge problem with procrastination" (3K-E). I had the pleasure of observing Karen at work over several days and found that she did appear overwhelmed at times and had procrastinated on several important projects, which only served to

increase her stress and decrease her self-efficacy (3D-O). She did complete her projects but well past the time they were due (3D-O). These behavior may also be due to her inattention and impulsivity, rather than perfectionism. An inability to concentrate, focus or manage details, hallmarks of inattention, in addition to an inability to plan and self-monitor behaviors (impulsivity) could also lead to procrastination. Karen scored in the significant range in these areas and in the cluster of externalized behaviors on the CAT-A, meaning these are behaviors that can be seen by others to a significant degree.

Systematically Developed Skills

Academics

Karen completed a bachelor's degree in English and a master's degree in School Counseling. She had difficulty pinpointing one particular academic area as a talent, instead saying, "I'm above average but not stellar in any one area" (3K-T). Karen's standardized test scores seem to reveal the same above average ability in all areas but no outstanding ability in one area: SAT I score range 86 percentile - 92 percentile; Graduate Record Examinations (GRE, Educational Testing Service, 2009) score range, 82 percentile-85 percentile (3K-Doc). Karen showed potential as a writer in high school, but then received only B's in English in college (3K-T). She attempted to write a young adult novel, struggled with the organization and character lines, became frustrated and gave up (3K-T). Karen does feel she is "pretty good" with foreign languages and has studied but not mastered French, Spanish, Russian, and Italian (3K-E). As mentioned earlier, given this evidence, it is possible that Karen is above average instead of gifted.

Arts

Visual and performing arts were other areas where Karen showed potential. As a young girl, Karen was always “making up stories, drawing pictures” (3M-E, 3K-T) and entertaining family and friends with her vivid imagination and impersonations. She was active in school plays from junior high to high school and even dabbled in community theatre, but ended her acting career after high school. She now pursues artistic endeavors through her hobbies, such as ballet, ballroom dancing, music (piano, guitar, and flute) and painting (3K-E). She has continued entertaining her friends with impersonations and says, “I have a talent for picking up different accents. I can imitate more foreign accents than anyone else I know, if you can call that a talent” (3K-E).

Technology

One talent that Karen has not abandoned is sewing. She mastered this trade and turned it into a lucrative part-time business. Sewing began as a means to express her individuality in high school, but recently, she developed her own patterns and began working for two wedding planners sewing articles for the receptions they were planning (3K-T). Her work is in such demand that this part-time business has become more than she can keep up with and she has decided to stop for a while (3K-T).

Talent development

Barriers

Karen referred to her “personal weaknesses” (3K-E) as a major barrier to her talent development, specifically, “I get discouraged easily, I give up easily” (3K-E). Karen’s mother commented that she might have discouraged her daughter in pursuing her acting, and that she

and her husband “didn’t take a really active role in [Karen’s talent development]” (3M-E). Lack of a continuous mentor or facilitator, in addition to someone actively discouraging talent development, may have contributed to Karen’s behavior of giving up easily. It may also be a symptom of her ADD/ADHD.

Symptoms of ADD/ADHD that Karen mentioned as barriers were being in love with the “newness” of an activity but then becoming overwhelmed with all the learning that lay ahead, and the difficulty of breaking large tasks into manageable ones (3K-T, 3K-E, 3M-T, 3D-O). In observing Karen at her job, I was able to see how she put large difficult tasks aside instead of tackling them (3D-O). This behavior has led to Karen’s assertion that “I am a perfectionist, who for me has meant that because I can’t do things perfectly, I do them half-way. This has also made me have a huge problem with procrastination” (3K-E). This last statement is in contrast to Karen’s mother who believed she was the only one of her children who was not a perfectionist (3M-T). Karen’s mother also worried that Karen’s drug treatment for ADD/ADHD may be interfering with her expressing her talents (3M-E).

One barrier both Karen and her mother agreed on was lack of money (3K-E, 3K-T, 3M-T, 3M-E). Karen stated that her parents were financially frugal; consequently, she did not have the opportunity to take lessons to nurture her potential (3K-T, 3M-E). Her mother agreed that the family did not have the finances to support lessons, nor was it the culture of the area at the time Karen was growing up (3K-T, 3M-T).

Facilitators

Karen believes her high school friend Deb was the greatest facilitator to Karen’s talent development (see pg. 9). Deb took her along to lessons, introduced her to new activities and

ideas, and joined her in expressing her creativity (3K-E). The problem is Karen and Deb parted ways after high school, and, although they are still friends, they live in different cities and contact is less frequent.

Karen's mother stated that good teachers were most instrumental to her talent development (3M-E, 3M-T). Karen commented on one teacher in particular who encouraged her acting and writing, her eighth grade English teacher (3K-T, 3K-E). This teacher wrote parts in every play specifically for Karen and praised her writing. The English teacher also involved the family in developing scenery and other items for the plays (3M-T).

The two talents that Karen has continued into adulthood are playing the piano and sewing. She said she owes the continued engagement in piano to her mother's dedication to Karen learning to play and her joy in being able to play (3K-T, 3K-E). Sewing remained an interest and her mastery continued to grow because it did not require constant practice and had a very practical application (3K-T).

Within Case Thematics

Karen identified the overarching theme in her life as her inability to follow through on things (see p.4, 3K-T). I agree that this is a theme in her life and believe it stems from the unrecognized symptoms of her ADD/ADHD, the late diagnosis of ADD/ADHD as an adult, and the lack of confidence these circumstances produced. Karen suffered through many symptoms of ADD/ADHD as a child such as inattention, irritability, daydreaming, disorganization, and distractibility. These symptoms put obstacles in the way of her completing tasks, which in turn set up a habit of failure (3K-T, 3K-E, 3K-Doc). This pattern of failure eventually affected her self-esteem and caused her to give up starting activities all together (3K-T). Karen's lack of confidence permeates her life as evidenced by her comments about being "above average but not

stellar in any one subject,” “a good writer when she was younger but then average in college,” and “easily swayed by others’ opinions” (3K-T, 3K-E).

The second theme in Karen’s story is lack of support from a mentor or advocate. A person dedicated to motivating you to continue your pursuits can overcome lack of confidence. Karen had such an advocate in seventh and eighth grade when her English teacher ensured she had a part in every play and encouraged her to write (3K-T, 3M-T). When she reached high school, she no longer had that advocate, and when faced with rejection, her lack of confidence won over and she stopped pursuing her acting. Karen does better with external motivators and these were missing in her talent pursuits and, at times, in her academic pursuits (3K-T, 3K-E).

The third theme in Karen’s case is the confluence of the characteristics of her ADD/ADHD and giftedness. It is difficult to say how much of Karen’s lack of talent development has to do with the unregulated symptoms of her ADD/ADHD or the unregulated multipotentiality and perfectionism of her giftedness. Karen commented: “I also think that there are far too many choices. I am so envious of people who find their ‘thing’ that they love to do or are good at. I could choose from 100 things” (3K-E). An inability to choose a specific talent domain, lack of confidence, and procrastination brought on by perfectionism are obstacles that together may be insurmountable for anyone, especially if there is no one to mentor you through to completion.

Case 4: Sean

Sean is a 28-year-old medical student at a world- renowned medical school in the United States. He grew up in a rural community in the Midwest, graduated valedictorian of his high school class, and earned a full scholarship to a state university (4S-E). Sean’s father recently passed away, which caused him a great deal of stress and necessitated a leave of absence from

medical school (4S-T). Sean's mother has a college degree and works outside the home. He has an older brother and sister, both college graduates.

Sean was identified as gifted in elementary school and attended the gifted program through middle school (4S-E, 4M-E). He struggled with impulsivity and hyperactivity from childhood into adulthood but was not diagnosed with ADD/ADHD until recently (4S-T). His difficulty in sitting still to study for his medical classes prompted him to seek the services of a psychologist who diagnosed his ADD/ADHD and prescribed medication for his symptoms (4S-T)

Natural Abilities

Intellectual Giftedness

Sean was identified for the gifted program in elementary school based on his strong academic abilities and his accelerated learning pace. According to Sean, his talents include "The ability to learn a new skill set or system quickly" (4S-E). His mother commented on Sean's inquisitive mind and ability to generalize his learning: "From a very young age, when he asked a question, he required a full explanation. He was then able to apply that knowledge to other situations" (4M-E).

Sean excelled in school, graduated valedictorian and achieved in the 95 percentile on his college entrance exams (4S-E, 4M-E, 4M-T). Sean attended college on a full scholarship and graduated Magna Cum Laude Honors with a degree in Bio-medical engineering. He attributes his success in this field to his outstanding "ability to think abstractly and creatively...and his expert analytical computation skills" (4S-E). Sean was accepted to do research in an innovative biological engineering laboratory during his junior and senior year in college. He was third

author on a published paper before graduating. Upon graduation, Sean was accepted into one of the most selective medical schools in the country.

ADD/ADHD: Results of the Clinical Assessment for Attention Deficit – Adult

The results of Sean's CAT-A support the diagnosis he received recently. His scores emphasize the tremendous obstacles he has been trying to overcome. Sean's score on the CAT-A Clinical Index score is in the Significant clinical risk range (T score = 77, 99 percentile) which indicates a childhood history of ADD/ADHD (CM CI T score = 67, 94 percentile) as well as current symptoms (CS CI T score = 83, >99 percentile). Sean's childhood symptoms are in the Mild clinical range and his current symptoms are in the Very significant range. This increase could be due to his current context of medical school or the fading of memories of his childhood experiences.

Sean's report of anxiety and restlessness as a child coincides with two of his scores on the Childhood Memories scale: Impulsivity (IMP T score = 77, 99 percentile), in the Very significant clinical risk range; and Hyperactivity (HYP T score = 70, 96 percentile), in the Significant clinical risk range. His score on the Inattention scale is in the Normal range (ATT T score = 49, 43 percentile).

During childhood, Sean's symptoms were more significant to him personally (PER T score = 72, 92 percentile) than academically (A/O T score = 60, 83 percentile) or socially (SOC T score = 66, 93 percentile). Sean reported frustration, anxiety, and restlessness as a child, which may account for the Significant clinical risk in the Personal context. His ability to compensate for his symptoms with his high intelligence may be the reason he reported symptoms in the Mild clinical risk for the Academic and Social contexts.

Sean's scores in the Locus clusters indicate external behaviors at a Significant clinical

risk (EXT T score = 70, 96 percentile) and internal behaviors at the Mild clinical risk (INT T score = 62, 87 percentile). The score on the external scale are supported by Sean's report of an inability to sit still as a child and his mother's report of his tendency to engage in dangerous activities.

All of Sean's scores on the Current Symptoms scale were above 98 percentile. Sean's scores in the Significant clinical risk range on the Inattention scale (ATT T score = 72, 98 percentile) and Hyperactivity scale (HYP T score = 74, 99 percentile) are consistent with his complaints of distractibility and irritability when trying to work. His highest score at the Very significant clinical risk range on the Impulsivity scale (IMP T score = 83, >99 percentile) reflects his dangerous risk taking from impulsive decisions (4S-T). As an example of this, Sean shared an anecdote of how he scaled a brick wall and climbed into a friend's third floor window because the friend would not answer Sean's calls (4S-T).

Every score in the Context cluster was above 99 percentile indicating that the troubling behaviors of Sean's ADD/ADHD are impacting all contexts of his life: personally (PER T score = 79, Significant clinical risk), academically or occupationally (A/O T score = 81, Very significant clinical risk), and socially (SOC T score = 78, Significant clinical risk). Sean's higher score on the academic cluster reflects the difficulties he is experiencing in studying for his medical courses.

Sean's scores on the Locus cluster reflect that he is experiencing the symptoms of his ADD/ADHD internally in the Very significant clinical risk range (INT T score = 83, >99 percentile), a significant increase (>1 SD) from his Childhood Memories score (INT T score = 62, 87 percentile). His score on the External cluster (EXT T score = 79, >99 percentile) is in the Significant clinical risk range, less than one standard deviation from his Childhood Memories

score (EXT T score = 70, 96 percentile). These scores indicate Sean is experiencing an increase in internal stress from his symptoms, but has been able to limit the increase of external expression. The Validity scores were all classified as Typical.

Catalysts

Environmental

School-based provisions: Gifted accommodations and curriculum. Sean was in a gifted pullout program in elementary school and then honors classes at the middle school level. Even so, the curriculum of these programs did not sufficiently challenge him, and he often found himself off task in class. Sean stated, “I could very often absorb the main point of the lesson before tuning out” (4S-E). His mother explained further, “In school, he learned what was required and then pushed forward on his own to learn more while the other children were working to master the basics” (4M-E). Sean’s childhood CAT-A scores did not register inattention above the normal range but his impulsivity and hyperactivity scores were in the significant risk , which could account for his “tuning out” in class. Extracurricular activities, such as the school’s Math League program, provided additional academic challenges for Sean. In high school, Sean enrolled in honors and AP classes and became a leader on the school’s academic bowl team (4S-T, 4M-E).

Sean attended a state college, ranked in the top 50 of state universities and top 100 of all national universities (Zuckerman, 2009). He was accepted into the honors program at the state college and received many beneficial services. The top 15% of undergraduates at the college were a part of the honors program, which included small seminar-type classes taught by the top professors, independent study and research opportunities, and honors housing. As a participant in

the honors program, Sean engaged in research at a bioengineering lab conducting “innovative research in the areas of optical biosensors and biocomposites for soft tissue repair” (4S-Doc). In his senior year, he was third author on a published paper on biosensor research.

Following Sean’s undergraduate work, he decided to attend medical school. Sean attends one of the top medical schools in the country, ranked by *US News and World Report* in the top five medical schools nationally (Zuckerman, 2009). He continues to publish in medical school and is second author on one paper and technical assistant on several others.

Persons: Parents and mentors. Sean’s mother was very supportive of his abilities and interests, however, “his father was not tolerant during his youth but in the last few years, he was very supportive” (4M-E). Sean’s mother “endeavored to provide him with a learning environment and to nurture his inquisitiveness” (4M-E). She also attended all of his school functions, and, according to Sean, “was amazingly supportive and encouraging of almost everything I have ever tried to do” (4S-E).

Sean did not mention any elementary, middle or high school educators who had an influence on his talent development; however, he did have a mentor in college. Through the honors program, Sean became involved in research at the bioengineering lab and there he found a mentor. This professor guided Sean in developing his research skills and publishing his first paper (4S-T). Writing is a difficult task for Sean; as he explains, “most writing is an incredibly slow and arduous process for me, and it is something that I continue to struggle with. It takes me forever to be able to distill what I want to say into words” (4S-E). Given those circumstances, it was essential for Sean to have a mentor during this process.

Family milieu. Sean’s family is a close and open family that shared honest discourse around any topic (4M-T). Growing up gifted in a rural community was at times difficult for

Sean; he often felt different from his classmates (4S-T). His close and supportive family helped to ease this feeling with intellectual discussions and emotional support including his brother playfully “bantering him about his abilities” (4M-E, 4M-T). The family celebrated the accomplishments of the children, and, among other things, posted newspaper articles or photos on the refrigerator (4M-E).

Sean’s undiagnosed ADD/ADHD, specifically his impulsivity and hyperactivity, created problems for his parents at times. For instance, while in college, Sean changed his major five times requiring an extra year to graduate. Still, as Sean remarked, “Though [my parents] may have been skeptical about my adamant desire to do something, they always supported the effort” (4S-E). Neither Sean nor his mother mentioned any negative effects his ADD/ADHD had on the family dynamics.

Social milieu. As mentioned previously, it was difficult being highly gifted in a rural community. Sean described it this way:

Coming from a very rural area, I initially found the attributes associated with the title gifted to be very isolating. I felt different than my peers and it took me until college to fully appreciate and be grateful for my intellectual ability. (4S-E)

The honors program in college provided not only the academic challenge he needed but also a social network of his intellectual peers through honors housing (4S-T, 4S-Doc). In addition, by his junior year he became involved in the research lab with other highly gifted undergraduate and graduate students (4S-E, 4M-E, 4S-Doc).

Sean and his mother did not elaborate on any specific incidents that led to his feelings of isolation in grade school. However, Sean did have a social outlet through his participation in the junior high math team and the high school academic bowl team (4M-E).

Intrapersonal

The chance of having ADD/ADHD. Sean demonstrated symptoms of ADD/ADHD early in his development. His mother shared this description of Sean, “From the time he could crawl, he has been a fearless dare devil doing dangerous activities requiring constant vigilance” (4M-E). This description corroborates Sean’s scores in hyperactivity (96 percentile) and impulsivity (99 percentile) on the Childhood Memories scale of the CAT-A. A description of behaviors associated with hyperactivity includes excessive movement and “an inability to comply with common rules or behavioral expectations” (Bracken & Boatwright, 2005). Sean’s symptoms were not recognized as ADD/ADHD by his parents or teachers, possibly due to his high intellectual and academic abilities. As Sean explains:

In grade school I remember always feeling anxiety and restless. However, I was able to compensate because I could very often absorb the main point of the lesson before tuning out. I was fine once we were given an assignment to work on. It was during the lesson lecture that I would find myself drifting. (4S-E)

Sean had academic difficulties in school in addition to, or possibly as a result of, his anxiety and restlessness, specifically, memorizing large amounts of information (e.g. spelling); remembering details from texts, especially history; and analyzing literature for themes (4S-T, 4S-E). As

mentioned previously, he also had trouble organizing his thoughts and writing them down on paper (4S-E).

Sean was able to keep up with material throughout middle school, high school and even college. His ability to achieve in spite of ADD/ADHD may have been due to his intelligence. As mentioned in the review of literature, studies have linked lower IQ scores to a greater prevalence of mental disorders and suicide (Koenen et al, 2009). However, other studies found that a high IQ did not protect individuals with ADD/ADHD from executive function impairments, a symptom of ADD/ADHD (Brown et al, 2009). For Sean, it was the volume of reading and memorization in medical school that became too much for him, although the anecdotal information from Sean and his mother do support his difficulty with executive functioning.(4S-E). Sean was having trouble keeping up with his studies: “I have found that I am easily distracted and irritated when I find myself falling behind in studying... which can unfortunately perpetuate the loop” (4S-E). Finally, after experiencing so much “difficulty in sitting still and focusing” (4S-E) that he could not complete his studies, he sought help from a psychiatrist who diagnosed ADD/ADHD. Medication has helped Sean continue in his program: “Without medication I can simply not sit still long enough to do it all” (4S-E).

Self-management, motivation and volition Sean, according to his mother, “has strong motivation, will power, focus and persistence” (4M.-E). He is extremely goal oriented and has an unusual ability to focus in on a goal and work to achieve it. The word used by Sean and his mother to describe this behavior was “relentless” (4S-E, 4M-E):

He will research the best methods to achieve a target, list the pros and cons, establish a plan to reach the target, set time limits for the steps in the plan and

then be relentless in the pursuit until the target is met. He is able to realize which person can help him attain a goal and then establish a relationship with that person to help him achieve his goal. (4M-E)

This was confirmed by Sean with this comment: “I would say I am nothing if not relentless...and everything else seems to flow from being able to try again until I master something” (4S-E). Sean also listed his ability “to read people and anticipate their responses” as one of his greatest talents (4S-T). It is possible that this pursuit to master things worked against Sean in college as he tried to decide on a major. Sean remarked:

Though it is not unique to switch majors I found great difficulty staying interested in a course of study once I had sufficient time to investigate it. Consequently, it took me five years to complete my B.S. as my major evolved from Biology to Engineering, to Chemical Engineering, to Biological Engineering, and finally Bio-medical Engineering.

Although Sean’s desire to master subjects then move on may have increased his time in college, it was also beneficial. The comment I quoted earlier from Sean’s mother stating that his approach to learning was to press “forward on his own to learn more while others were working to master the basics” (4M-E) sounds similar to the mastery approach to learning, an approach that is preferred over the performance avoidance approach (Barron, Evans, Baranik, Serpell, & Buvinger, 2006). However, it cannot be dismissed that Sean’s behavior of mastering a subject superficially and then losing interest may also be a manifestation of his impulsivity.

Personality: Temperament, attributes, and self-concept. Sean is an outgoing, friendly, young man with a strong personality (4D-O). He is confident in his decisions, and, as his mother stated, “He is very strong-minded and it is almost impossible for someone to change his mind using any tactic” (4M-E). Sean likes things to be carried out in a planned and orderly fashion and becomes impatient and frustrated by changes (4M-T). His mother maintains, “His temperament rarely allows for fluctuations from the schedule he has established” (4M-E). Although these traits may be components of Sean’s personality, his impatience and frustration may also be linked to his ADD/ADHD. The results of the CAT-A cluster scores indicate that Sean has been experiencing his symptoms internally and personally to a significant degree and two behaviors associated with impulsivity are high levels of frustration or impatience.

Sean is determined and goal-oriented. He sets goals, develops a timeline and as he states, “gets irritated when I find myself falling behind” (4S-E). The inattention symptoms of his ADD/ADHD are problematic for this type of personality yet Sean remarked, “I really do not see it as a disadvantage, but only a tradeoff that necessitates a different learning style” (4S-E). However, Sean expects to achieve his goals and can be very critical of himself if he does not meet his goals on his timeline or to his satisfaction (4S-E). Although not documented, Sean’s remarks of being “hypercritical” of his work and judging it “not good enough” may be signs of unhealthy perfectionism or, as mentioned in the preceding paragraph, his frustration stem from his impulsivity.

Sean is also a caring individual. He has chosen the field of medicine in order to treat people with mental illness (4S-E). In addition to working at an emergency room, Sean did volunteer work for a cancer facility (4M-E).

Systematically Developed Skills

Academic

Sean has developed his academic skills in several areas: engineering, biology, and medicine. He was in the top 15% of students at his university and was accepted to one of the top medical schools in the country. Writing was always difficult for Sean, yet before he graduated from college, he was third author on a published paper on a biological engineering research project. Three years later in medical school, Sean was second author on a paper his research team published on cell biology, a related but different field (4S-T, 4S-Doc).

As Sean advanced through college, he mastered skills in two domains: biology, and engineering. He used his analytical skills from biology and applied them to engineering then combined the skills from those two domains for a degree in Bio-medical Engineering. After graduating, Sean “never pursued a job in that field and instead decided to go into medicine...an idea that was never even on [his] radar in college” (4S-E). Although a related field, medicine requires not only use of Sean’s analytical and problem solving skills but also gross memorization, which is problematic for him due to the symptoms of his ADD/ADHD.

Sean’s plans include another merger of his talents. In addition to his talents in science and engineering, Sean is also an excellent musician and arranges to play his guitar at different venues while he is not attending classes or studying (4S-T, 4D-O). He plans to specialize in psychiatry and is “very excited about the idea of participatory music therapy for a treatment of mental illness” (4S-E).

Talent Development

Barriers

Sean believes he is his greatest barrier to developing his talents. The first point he made was that he is “hypercritical to the point of being neurotic” (4S-E). He explains further that if he struggles with meeting his goals, he becomes frustrated and “feels like nothing is ever good enough and then once it is it means nothing” (4S-E, 4S-T). This picture of Sean fits with his mother’s explanation of how he relentlessly pursues his goals until he has mastered them (see p. 8) but adds to it a troubling perfectionist attitude.

Sean’s relentless and highly structured approach may be a hindrance to developing his talents. According to his mother, “His own fierceness at pursuing the talent in a structured form sometimes prevents him from being able to let the talent develop naturally as his skills improve” (4M-E). Lack of progress frustrates Sean and makes him push harder to achieve his goals on his timeline (4S-E) and this push to stay on a timeline may prevent him from reaching the expert level in a talent area.

Although Sean did not state that the symptoms of his ADD/ADHD were barriers to his talent development, he did describe certain situations in which they did interfere as a child and continue to do so as an adult. Furthermore, his responses on the CAT-A indicate he is experiencing negative effects of his symptoms in all contexts (personally, academically, and socially) both internally and externally to a significant degree (>99 percentile for all areas). Sean’s current symptoms on the CAT-A imply a diagnosis of inattention and hyperactivity/impulsivity or Combined Type ADD/ADHD. Research has shown that this type of

ADD/ADHD creates the most difficulties for individuals and consequently may be a barrier to talent development.

ADD/ADHD often coexists with other disorders. Sean alluded to this when he mentioned, “I feel that most of my troubles were emotional in nature and not academic” (4S-E, 4S-T). Sean’s mother inferred physical limits she felt he had, “I fear some of my ‘practicalities’ lead me to try to discourage him from goals that I feared he may not be able to accomplish due to physical limitations” (4M-E). Neither Sean nor his mother elaborated any further on his emotional problems or physical limits.

Facilitators

Sean believes the greatest facilitator to his talent development is the same exact thing as his greatest barrier:

Myself and being hypercritical to the point of being neurotic...I then get frustrated by the lack of progress...I feel like nothing is ever good enough and then once it is it means nothing...same answer as above, but it is a double edge sword and always pushes me to be better...(many times exhaustively so). (4S-E)

Sean’s comment on his tendency to be hypercritical as being a double-edged sword is very appropriate. Setting goals and seeking excellence has helped him to achieve at a very high level, but, at times, has taken a physical toll. Although Sean’s hyperactivity, hypercritical nature, and perfectionist leanings may have helped him to succeed, they may just be too much for anyone to handle comfortably.

Sean's mother highlighted several other characteristics that aided Sean in developing his talents. She mentioned Sean's "ability to easily absorb information" (4M-E), which was something Sean had also pointed out. Sean's mother remarked that he has a near photographic memory and highly advanced cognitive skills (4M-T) which coupled with his "determination assisted in the advancement of his talents" (4M-E).

Within Case Thematics

Sean articulated the central theme of his case when he said that he, or more specifically his personality, has had a major impact on his talent development. Sean's personality traits of determination and relentlessness have been instrumental in developing his talents. On the other hand, his hypercritical nature and perfectionist tendencies push him beyond his limits, draining him emotionally. The combination of these traits working within a goal mastery orientation are what has made him so productive and has possibly, along with his intellect, helped him to compensate for lack of treatment for his ADD/ADHD, until medical school. It is also possible that these very same traits and self-management skills have prevented Sean from realizing his highest potential, moving him too quickly from one area to the next once he reached his mastery goal.

The second theme is the support he received as he went along his path of talent development. Sean felt isolated from his peers because of his intelligence, but had that void filled by the acceptance and closeness of his family. His mother's nurturance, sister's encouragement, and brother's playful banter all buoyed Sean's feelings of belonging and allowed him to continue to achieve. The extracurricular activities in middle and high school gave him a community of like-minded peers outside of his home. The support that I believe had the greatest impact on Sean was the honors program at his university: The honors seminars challenged him

intellectually, the honors housing gave him a social network of intellectual peers, and the research opportunity gave him a mentor and raised his level of achievement to near professional.

In my communications with Sean and his mother, they focused primarily on three things: his intelligence, his achievements, and his relentless pursuit of goals. There has been very little discussion about his ADD/ADHD and that may be due to his adult diagnosis. It is also possible that Sean's undiagnosed ADD/ADHD resulted in his developing coping mechanisms or adapting to the symptoms of his ADD/ADHD without realizing it, or, maybe even assuming that his symptoms were just problematic personality traits.

Cross-Case Analysis

The first section of this chapter explored the themes and patterns found in the stories of each participant's talent development. The participants were different, in some respects, and the same in others. Geographically, Daniel came from a large city with many opportunities and Thomas came from a small college town with many opportunities. In contrast, Karen and Sean came from rural communities with limited opportunities. Financially, Daniel, Thomas, and Sean came from small families with more than adequate financial resources, but Karen had four siblings and limited financial resources. The parents of all four participants had college degrees and all parents held professional jobs, except for Karen's mother and Daniel's mother, who were full-time homemakers. All participants were identified as gifted in elementary school and were in gifted programs or received acceleration of some type. Two participants, Daniel and Thomas, were diagnosed with ADD/ADHD in elementary school, and two, Karen and Sean, were identified as adults.

All but one participant (Karen) are working, happily and successfully, in a field related to their identified talent area and, by that yard stick, have effectively navigated the talent

development process thus far. The question then is why have three of the four participants been successful in their talent development while the fourth participant, Karen, has not? What patterns run across all four cases that can help us understand this phenomenon? I have conducted a cross analysis of the themes and patterns of the four cases and from that process four themes have emerged that three of the four cases have in common. Table 6 illustrates the themes, the related cases and data sources.

Theme #1: Impact of ADD/ADHD symptoms

All of participants experienced symptoms of their ADD/ADHD that hampered their talent development. Daniel, Thomas and Karen continue to have trouble tackling large projects: organizing their approach, starting, and maintaining focus through to completion. All three have suffered the consequences of the symptoms of ADD/ADHD (impulsivity and inattention) in school, college and their work environment. Sean has difficulty in specific areas, namely, memorizing large amounts of content, analyzing certain content, sitting still and paying attention during lectures. As a medical student, these symptoms greatly hinder his progress.

To compensate, Daniel and Thomas use hyper focusing and multitasking, thought by them to be related to their ADD/ADHD, although, researchers contend there is no evidence that hyper focusing or multitasking are related to ADD/ADHD (Webb et al., 2005). Karen has not developed a strategy to deal with her symptoms, still struggling with the penalties of missing deadlines, and Sean has relied on his goal setting skills and relentless determination, the latter possibly related to excessive energy brought on by his hyperactivity.

All four participants are now receiving treatment, although Thomas, whose ADD/ADHD was the mildest, has stopped his medication. Certain interventions have eased the effects of the

symptoms of ADD/ADHD for Daniel, Thomas and Sean: parental support, early intervention for the ADD/ADHD, quality accelerative opportunities, and coping mechanisms.

Theme # 2: Level of Support

Support, or the lack thereof, from someone of significance in the lives of the participants played an important role in developing their talent. Daniel's mother supported him in many ways; first, by securing the best psychiatrist, counselor, medication, and treatment she could find for him. Second, she researched schools, visited them, and hired a school placement specialist to insure he was placed in the best schools to deal with his ADD/ADHD. Thomas had a similar level of support from his parents but with an emphasis on his talent development more than his ADD/ADHD. He, too, received the best care and treatment for his ADD/ADHD, but, more importantly, his parents orchestrated several academic opportunities for him in his talent areas of math and computer science. They also encouraged a family culture of intellectual pursuit that pushed him to achieve in spite of his inattention problems. Sean's mother fostered a similar family culture by providing at home the intellectual discourse Sean was missing at school.

Table 6

Themes across cases

Theme	Case	Data sources
Theme #1 Impact of ADD/ADHD symptoms:	Daniel	Interview transcripts (Daniel, mother, Resident Advisor, professor); Emails (Daniel, mother, Resident Advisor); DSTY parent questionnaires; DSTY student questionnaire; CAT-A
<ul style="list-style-type: none"> • Impulsivity • Inattention • Distractibility • Hyperactivity 	Thomas	Interview transcripts (Thomas, mother); Emails (Thomas, mother); DSTY parent questionnaires; DSTY student questionnaire; CAT-A
	Karen	Interview transcripts (Karen, mother); Emails (Karen, mother), Observation; CAT-A
	Sean	Interviews transcripts (Sean, mother); Emails (Sean, mother); Observation; CAT-A

Theme	Case	Data sources
Theme #2 Level of support:	Daniel	Interview transcripts (Daniel, parent, Resident Advisor, professor); Emails (Daniel, parent, Resident Advisor); DSTY parent questionnaires; DSTY student questionnaire
<ul style="list-style-type: none"> • Strong parental support for ADD/ADHD or giftedness • Quality mentoring 		
<ul style="list-style-type: none"> • No family support for ADD/ADHD or giftedness 	Thomas	Interviews transcripts (Thomas, parent); Emails (Thomas, parent); DSTY parent questionnaire; DSTY student questionnaire
<ul style="list-style-type: none"> • No mentor 	Karen	Interviews transcripts (Karen, parent); Emails (Karen, parent)
	Sean	Interviews transcripts (Sean, parent); Emails (Sean, parent)
Theme #3 Type of acceleration:	Daniel	Interviews transcripts (Daniel, parent, Resident Advisor, professor); Emails (Daniel, parent, Resident Advisor); DSTY parent questionnaires; DSTY student questionnaire, school records
<ul style="list-style-type: none"> • High quality • Talent area • Low quality 		Interview transcripts (Thomas, parent); Emails (Thomas, parent);

Theme	Case	Data sources
	Thomas	DSTY parent questionnaire; DSTY student questionnaire, school records
	Karen	Interview transcripts (Karen, parent); Emails (Karen, parent)
	Sean	Interview transcripts (Sean, parent); Emails (Sean, parent)
Theme #4 Coping mechanisms:	Daniel	Interview transcripts (Daniel, parent, Resident Advisor); Emails (Daniel, parent, Resident Advisor); DSTY parent questionnaires; DSTY student questionnaire; MSCS, ACL
<ul style="list-style-type: none"> • Determination • Goal setting • Strong self-efficacy • Positive academic self concept • High intellectual ability 	Thomas	Interview transcripts (Thomas, parent); Emails (Thomas, parent); DSTY parent questionnaire; DSTY student questionnaire, MSCS, ACL
	Sean	Interview transcripts (Sean, parent); Emails (Sean, parent)

Sean was not diagnosed with ADD/ADHD and so his mother's acceptance of him, and his undiagnosed ADD/ADHD symptoms that perhaps were seen as "personality flaws," was extremely important.

In contrast, Karen had very little support for her talent area and no support for her undiagnosed ADD/ADHD. Karen's mother did not push for acceleration for her daughter, on the contrary, she rejected the first opportunity. Karen's parents, with limited financial resources, provided few extracurricular lessons for their children. Karen did have piano lessons but not because she had shown talent or an interest, but because it was her mother's wish that one of her children learn to play piano.

Daniel's mother educated Daniel, and everyone charged with his education or care, on the symptoms of ADD/ADHD and appropriate accommodations. Although at times, Daniel's mother become frustrated by Daniel's behaviors, she held the belief, rightfully so, that ADD/ADHD was a disability, not a character flaw, and that Daniel should not be blamed for poor behavior related to the disability. Daniel learned to accept his disability in this way and was very open about it with others. Thomas's mother did not attempt to educate those around Thomas but did contact school personnel when his ADD/ADHD began to interfere with his school performance. She, too, believed her son should not be punished for having a disability and that accommodations should be made to help him deal with it. Neither Sean nor Karen had advocates to help them deal with their ADD/ADHD, but Sean's mother was supportive and accepting of his giftedness, which may have helped, whereas, Karen's mother may have never truly believed in her daughter's giftedness.

Mentoring was a very important component of the talent development of three of the participants. Both of Thomas's parents mentored him: his father in computer science and his mother in writing. The support this offered as he practiced his talent was immeasurable. Sean also had the help of a mentor while in college. The professor he worked with in the biosensor lab elevated his work to a professional level through the opportunity to participate in and publish on innovative research. Daniel did not have a formal mentor situation but considered one of his professors a mentor of sorts. Daniel looked up to this celebrated math professor and took his teachings, on mathematics and ethics, to heart. Karen did not have a long-term mentor relationship to help her develop her talents. Karen's eighth grade English teacher recognized Karen's interest and talent in acting, but the ability of that teacher to influence Karen's talent ended when Karen went to high school. Karen did have a close friend who served as a kind of life coach, reminding her to bring the check for her college entrance exams, taking her to ballet and art classes, and helping her manage her time. However, these efforts were random and geared to her friend's own interests, not Karen's interests.

What seems to be important is not who is giving the support or whether it focuses on the person's disability or giftedness, but that it is consistent and substantial. Daniel received consistent and quality support from his mother focused on his ADD/ADHD and thrived; Thomas received consistent and quality support from his parents focused on his talents and thrived; Sean received consistent and quality support from his mother and mentor focused on his intellect and talent and thrived. Karen's support was inconsistent and random and she drifted from one talent to another, never mastering any.

Theme # 3: The Type of Acceleration

When first analyzing the four cases, this theme was hidden beneath gifted services, early identification of talent area, and awareness of giftedness. Digging deeper into the cases and sources, I came to realize that my participants were not talking about the benefits of general gifted services or recognition of their talent or intellect. What really mattered was the quality of the services they received and that they targeted their talent area. For instance, Karen was accelerated in middle school in math, which may or may not be her talent area, in a class that was mismanaged; consequently, it did not advance her talent development. On the contrary, it damaged her academic self-esteem and stalled her math education. In contrast, Thomas's parents and then the local college, provided Thomas excellent math and computer instruction and in both cases, his acceleration was very successful. Daniel attended a magnet high school and took his math classes at a local college. He then attended a university with one of the top math departments in the country. Sean's curricular and research experience in the honors program in biology and engineering at the state university he attended laid the foundation for his future endeavors. All of the high quality experiences in the participants' talent fields were instrumental in advancing their talents.

Another factor is that the academic acceleration came from different sources, in quite different places, and at different times. Thomas's acceleration began when he was in fifth grade, with home instruction from his parents, and then from a small, selective, liberal arts college. Daniel's acceleration did not begin until he attended an urban high school and then continued at a large urban private university. Sean received some challenging work in his rural high school, but primarily, his true acceleration began at a

large state university. Karen's acceleration began in her rural elementary school and continued through high school and at a selective state college. It was not the source, setting, or time that determined the effectiveness of the acceleration; it was the quality and the fact that it targeted the participant's talent area.

Theme # 4: Coping Mechanisms

In reviewing the cases of the three participants who are doing quality work in a field related to their talent area, it was important to find out how they overcame the obstacles that other catalysts did not help them overcome. For example, Sean had a supportive mother and family, but his acceleration did not truly begin until college. What other factor helped him to continue on his talent development journey in spite of his undiagnosed and significant childhood symptoms of ADD/ADHD? Thomas had supportive parents and superior acceleration opportunities, but had inattention and social difficulties due to his ADD/ADHD and giftedness. How was he able to overcome these problems, get married, and earn a position in a company? Similarly, Daniel had very strong support and quality acceleration from high school on, but his social skills lagged far behind the norm and he continued to experience significant difficulties due to his ADD/ADHD. How was he able to compensate for these difficulties to become an entrepreneur? What needed to be present in or around Karen to help her compensate for a lack of support, inferior academic acceleration experiences, and undiagnosed ADD/ADHD symptoms? I discovered that some of the coping mechanisms employed by the successful participants were learned behaviors and some were personality traits. It is interesting to note that the personality traits may be linked to the participants' giftedness or to their ADD/ADHD.

For Sean, his relentless determination and focused goal setting are what kept him moving towards achievement in spite of his significantly problematic hyperactivity and impulsivity. The energy he derived from his hyperactivity may have fueled his relentless pursuits or multipotentiality may have driven him to move quickly from goal to goal. To resolve this issue would require more and deeper research. Thomas and Daniel shared Sean's determination and goal orientation.

All three young men also had a healthy perception of their academic abilities and overall competence. Thomas's peers may have rejected him and he may have had a disability but he still considered himself an intelligent person capable of successfully navigating his environment. In addition, by the time Thomas was in college, he had learned that he was motivated by interest and planned his academic and career choices accordingly, thereby greatly increasing his chances for success. Daniel learned awareness of his ADD/ADHD from his mother and, like Thomas, kept his disability in a healthy perspective avoiding harm to his self concept. Daniel was also a very loyal person who cultivated relationships and developed a business network to rely on for his startup company. Sean had a very strong self-efficacy, believing he was capable of anything he set his mind to doing, and pursued his goals relentlessly until attained.

The strong academic self-concepts these three participants exhibited had a foundation in exceptional intellectual ability. Their ability may not have shielded them from their symptoms of ADD/ADHD but it may have acted as a coping mechanism in dealing with those symptoms.

In contrast, Karen lacked the determination and the healthy self-efficacy and self-concept of Daniel, Sean and Thomas. Several things may have worked against

her in this regard; the failed attempts at acceleration (third grade reading and sixth to eighth grade math) may have damaged her self-efficacy, and without a goal setting orientation or the determination to fulfill goals, she drifted and 'fell' into situations instead of choosing options. Karen, also, may not been as gifted as the other three participants as evidenced by her academic struggles and above average, but not superior, performance on her college entrance exams.

CHAPTER 5

Discussion, Conclusions and Implications

The findings from this study revealed that the confluence of the characteristics of giftedness and the symptoms of ADD/ADHD produced similar outcomes for some participants and different outcomes for others. The themes that ran across the cases were (1) the impact of the symptoms of ADD/ADHD, (2) the level of support, (3) type of acceleration, and (3) coping mechanisms. The study confirmed the notion of researchers (Moon et al., 2001; Webb et al., 2005) that there are similarities between the characteristics of giftedness and the symptoms of ADD/ADHD, and that it is difficult, in some circumstances, to uncover the source of resulting behaviors. This chapter will discuss the findings of the study and how they relate to the research. Implications for future studies and recommendations for parents and educators are provided

The Effects of Being Gifted with ADD/ADHD on Talent Development

The first research question sought to examine the effects of being gifted with ADD/ADHD on talent development. I was curious to see if the characteristics of one phenomenon overwhelmed the characteristics of the other in supporting or hindering talent development or if they contributed equally in one or both respects. Most people assume that the symptoms of ADD/ADHD would have a negative effect and the characteristics of giftedness would have a positive influence. This was not the case in this study, though. The participants of this study experienced positive and negative effects on

their talent development because of both gifted characteristics and the symptoms of ADD/ADHD.

Facilitators of Talent Development

Awareness of giftedness and/or ADD/ADHD. At first, it seemed the data were emphasizing the importance of self-awareness of one's disability, but then I realized, as I looked across all cases, that it was important to be aware of one's giftedness and strengths as well. Daniel was most aware of his disability and worked to compensate for its symptoms, but he was also very aware of his giftedness and strengths and used those to cope with his ADD/ADHD symptoms. Thomas commented that he learned to manage his ADD/ADHD. Kaminski and colleagues (2006) found that college students with ADHD who were successful were actively aware of their disability and used several coping mechanisms and strategies to deal with the symptoms; the most common was working harder and longer than others (78%). Although Sean was unaware he had ADD/ADHD, he was very aware of his giftedness and used his goal-setting strengths and single-mindedness to achieve his goals, thereby unknowingly, but maybe instinctively, compensating for his hyperactivity and impulsivity. Karen was also unaware of her disability, but, additionally, doubted her giftedness and lacked the high academic self-concept of the other participants, and so struggled with developing her talents.

High productivity. Another positive effect on developing their talents was the high productivity of the participants. Daniel and Sean were very productive in their talent area, but it is difficult to pinpoint the origin of this productivity. Csikszentmihalyi et al. (1993) might claim the flow experience enabled Sean to be so productive in college. Although Sean did not report experiencing flow, his mother commented on his intense focus and

ability to immerse himself in a project until it was completed, an experience similar to flow. Sean also scored in the significant clinical risk range (T score = 74, 99 percentile, $M = 50$, $SD = 10$) for hyperactivity on the CAT-A which could be responsible for his excessive energy and relentless pursuit of completing projects. Daniel believed it was hyper focusing, or perseverating (Webb et al., 2005), from his ADD/ADHD that allowed him to work nonstop for 24 hours and produce an 8,000 word paper. Thomas was highly productive in subjects or projects that he had interest in, for instance, writing fantasy novels and developing computer games. It is impossible to determine from this study whether flow, hyper focusing or the combination of the two were responsible for the productivity of Sean, Daniel and Thomas.

Above average achievement. All four participants showed remarkable overall academic achievement in contrast to most students with ADD/ADHD (DuPaul et al., 2006; Frazier et al., 2007; Volpe et al., 2006). None of the participants suffered from chronic low grades and all took honors and AP courses in high school. All of the participants went to excellent colleges and graduated with high grade point averages (3.5 or above), unusual for college students with ADD/ADHD. Research has shown that college students with ADD/ADHD struggle due to their deficits in reading, spelling, and math (Frazier et al., 2007). Although reading was a “chore” for Karen, and Sean found “gross memorization” to be especially difficult, they were able to compensate for these deficits with their rapid processing and excellent memories. Daniel and Sean explained that they were usually able to absorb the material quickly before becoming distracted. Educationally speaking the participants have been very successful: Karen and Thomas have master’s degrees, Sean is in medical school and Daniel is starting his own business.

A study by Chae, Kim, and Noh (2003) supports the finding that gifted students with ADD/ADHD are able to compensate for their attention problems due to their high intelligence.

Furthermore, researchers have hypothesized that there is an inverse relationship between mental disorders and IQ due to cognitive reserve, individual differences in brain structure and functioning (Koenen et al., 2009). However, Brown et al. (2009) found that gifted individuals with ADD/ADHD had significant executive functioning impairments on 5 out of 8 assessments. Although cognitive reserve did not protect Daniel, Thomas, Karen or Sean from ADD/ADHD, we have no method of determining whether or not intelligence has helped them manage their symptoms or if it has protected them from other comorbid conditions. Nonetheless, comparing their educational and occupational outcomes to the majority of non-gifted individuals with ADD/ADHD, especially males, reveals that they have had far better outcomes (Biederman, Faraone, Spencer, et al., 2006; Halmøy et al., 2009; Mannuzza et al., 2008; Rucklidge et al., 2007).

Multitasking. The ability to multitask is often referred to as a necessary 21st century skill. Daniel and Thomas spoke about the benefits in business of being able to multitask and their belief that their early battles with distractibility prepared them for multitasking; Daniel also believes it is a factor of his giftedness. There is support in the literature for the notion that intellectually gifted individuals have the capacity for rapid processing and excellent memory retrieval (Rabinowitz & Glaser, 1985); the skills needed to quickly, and effectively, move attention from one task to another. Additionally, Zentall, Moon, Hall, and Grskovic (2001) found that gifted students with ADD/ADHD

preferred cognitively stimulating activities, and concentrating on more than one task at a time would be very stimulating.

Barriers to Talent Development

Impulsivity and inattention. First, as mentioned in the cross case analysis; all of the participants either directly stated or, through anecdotes, inferred that their symptoms of ADD/ADHD were major barriers to their talent development. Sean's impulsivity caused him to lose interest in a subject or activity and move on once it was minimally mastered. This prohibited him from ever reaching the expert level in those activities (Ericsson et al., 2005, Sternberg, 2003).

Karen, Daniel, and Thomas noted that large projects were a problem due to their ADD/ADHD. Daniel had a problem starting large projects (Brand et al., 2002; Carlson et al., 2002; Fabiano et al., 2007), Karen became overwhelmed and gave up on large endeavors (Brand et al.; Carlson et al.; Fabiano et al, Reid et al., 2005), and Thomas had difficulty maintaining focus and motivation during large work projects (Carlson et al.; Volpe et al., 2006). In contrast, Sean had mastered the skill of setting goals and that, along with certain personality traits (relentlessness, determination), lessened the effects of this problem for him (Gureasko-Moore et al., 2007).

Completing work, whether due to a lack of interest, inattention or poor study habits, was a problem for all the participants and is a well-documented result of ADD/ADHD (Carlson et al., 2002; DuPaul et al., 2006; Gureasko-Moore et al., 2007; Kaminski et al., 2006; Reid et al., 2005). It affected the grades of Karen and Thomas, but for Karen, the effect was even worse, causing her to miss valuable content. After the school placed Karen back in her grade level math class, she was able to learn the content

she missed, which, surprisingly, restored her academic self-concept in math instead of damaging it further.

Perfectionism and multipotentiality. There were two barriers to talent development noted by two of the participants that are cited in the gifted research, multipotentiality and perfectionism. Sean and Karen both reported behaviors similar to perfectionism, procrastination due to fear of failing and a belief that completed work was not good enough, and the negative effects this had on their productivity (Dixon, Lapsley, & Hanchon, 2004; Spiers Neumeister, 2004). In terms of multipotentiality, Karen reported that she had difficulty deciding on a talent to pursue because she had a passion and ability for so many things. Sean did not report a problem with multipotentiality but his history of moving from one major to another may have been a result of this.

One other factor cited in the research on giftedness is the big fish little pond syndrome (Marsh et al., 2001) experienced by only one participant. Daniel noted that he felt like a ‘small fish in a big pond’ when he arrived at his university. Although it did not create academic difficulties for him, it did dampen his drive and require him to rethink his priorities.

The Effects of Internal Characteristics on the Talent Development of Gifted Students with

ADD/ADHD

Much of the research on talent development noted the effects of internal characteristics, such as will power, persistence, and self-efficacy, on developing talent (Ambrose, 2001; Bloom & Sosniak 1981; Cox, 1926; Csikszentmihalyi et al., 1993; Muratori et al., 2006). For the participants of this study, internal characteristics played a

significant role in their talent development. The one participant, Karen, who lacked all of the positive internal characteristics found in the research, has yet to realize her potential.

Facilitators to Talent Development

Desire for self-actualization and drive for achievement. There is extensive research on the desire for self-actualization and drive for achievement in gifted individuals and the positive effects these motivators have on talent development (Bloom & Sosniak, 1981; Cox, 1926; Hall & Hansen, 1997; Hébert & McBee, 2007; Kaufmann, 1981; Muratori et al., 2006; Olszewski-Kubilius, 2000; Subotnik & Steiner, 1995).

Daniel, Thomas, and Sean set goals, took risks, and reached high levels of achievement in their talent domains. Although Carlson et al. (2002) found that students with ADD/ADHD, especially hyperactivity and impulsivity, were highly competitive which improved achievement; the competitiveness stemmed from a desire to be perceived as high performing by others, as opposed to a desire for self-actualization. The former may have been part of the motivation for these three young men but the data points more towards a desire to achieve, realize goals, or master skills. Karen also had a desire for self-actualization but never carried it through to fruition due to her attention issues and lack of self-efficacy.

Persistence and interest. All but one of the participants described themselves as being persistent; Sean and his mother went even further by using the more powerful word “relentless.” Research in the gifted field is clear on the value of persistence in pursuing a talent (Bloom & Sosniak 1981; Cox, 1926; Csikszentmihalyi et al., 1993; Muratori et al., 2006). Thomas’s determination to succeed was evident when he stated he “just [kept] putting one foot in front of the other.” Daniel demonstrated persistence in every aspect of

his life, including learning about social conventions and how to dress, but especially in things that interested him.

There was a connection between interest and persistence; interest being a strong motivator for learning or completing an assignment, project, or course of work. Daniel and Thomas were more willing to begin a project and more determined to complete it if their interest in it was high. Sean commented that he would move onto a new major when his interest level waned. Zentall and colleagues (2001) confirmed this finding in their study of three highly gifted students with ADD/ADHD who had difficulty completing boring work or rote memorization and much preferred work that was interesting or related to their talent.

Healthy self concept, high self-efficacy and high aspirations. Daniel, Thomas and Sean all possessed high academic self-esteem, high self-efficacy and high aspirations; cited in gifted literature as internal characteristics contributing to high achievement in a talent area (Ambrose, 2001; Bloom & Sosniak, 1981; Kaufman, 1981). These findings coincide with the findings from the DSTY in which 99% of the 868 gifted students felt confident about their academic abilities (Ablard, Hoffhines, & Mills, 1996). As mentioned in the case studies, Thomas scored above the norm on the MSCS in the belief that he could accomplish his goals and in the belief of his high academic ability. Although Daniel did not score above the norm, both of those categories were his highest scores and were strengths relative to his other scores. Sean attributed his successes to his high intellectual ability and ability to follow through and accomplish his goals.

Karen, on the other hand, was the only participant to report low academic self-concept, low self-efficacy, and low aspirations, and as a result, she experienced the most

disruption to her talent development. Karen's inattention, procrastination, lack of discipline and indecisiveness contributed to a loss of confidence in her abilities and low self-esteem. Karen noted that she becomes easily discouraged when faced with a difficult task and gives up. This could be because she lacks the belief that she is capable of completing difficult tasks or achieving at a high level (Ambrose, 2001; Kerr, 1994); or it could be due to her ADD/ADHD; or it could be a combination of the two. Gifted individuals sometimes experience a low self concept due to their own high standards, but I believe Karen's self-concept issues were the result of the impact ADD/ADHD had on her academic achievement (Brand et al., 2002; Carlson et al., 2002; Fabiano et al., 2007; Reid et al., 2005). If she had been aware of her attention problems and had strategies that allowed her to perform at her ability level in her advanced reading groups and math classes, she may not have suffered from a low academic self-concept (Gureasko-Moore et al., 2007; Kaminski et al., 2006; Reid et al., 2005).

Karen, similar to the other participants, realized she was different from her peers but instead of maintaining her identity as a gifted individual, she conformed to the level of her peers and the values of her community (Herbert & McBee, 2007; Kerr, 1994, Olszewski-Kubilius; 2000). Kerr (1994) found this to be true of many of the gifted girls in her study who, although they attended an accelerated high school program, pursued traditional female careers and roles following graduation. Karen, who struggled with intellectual and academic inconsistencies, also reported depression that research supports as a comorbid condition of ADD/ADHD (Kaplan et al., 2001; MacPhee & Andrews, 2006). This study could not determine if Karen's low self-esteem and low aspirations

were the result of her gender, childhood community, family milieu, or the impact of her ADD/ADHD.

Introversion and a sense of isolation. Researchers and theorists note the need for talented people to have time to practice their talent (Csikszentmihalyi et al., 1993; Ericsson et al., 2005; Gagné, 2002; Kerr, 1994; Muratori et al., 2006; Olszewski-Kubilius, 2000; Subotnik & Steiner, 1995) and for two of the participants; Daniel and Thomas, this time was made possible due to their introversion. A preference for being alone allowed them to pursue their interests in math and computers, both solitary activities

Sean and Karen are not introverts; to the contrary, they are very socially capable and enjoy socializing with others. Sean, though, has sought out people of his intellect and interests to socialize with, thereby promoting his talent development (Muratori et al., 2006), whereas, Karen adjusted her behaviors to be more socially accepted by her community (Kerr, 1994) and did not pursue her talents.

Although a sense of being different and isolated from peers can have a negative effect on children, for the participants in this study, it had a positive influence on developing their talents. Sean and Thomas felt isolated from their peers due to their intelligence, and Daniel reported isolation due to the inappropriate and disruptive behaviors of his ADD/ADHD (Dumas, 1998; Fabiano et al., 2007; Waas & Graczyk, 1999). Thomas specifically remarked on how a lack of friends led to his interest in computers. Lack of friends and a community of intellectual peers was also the impetus for Thomas, Sean, and Daniel to become involved in math competition programs, which increased the practice of their talents (Muratori, et al, 2006; Stanley, 2005; Wu & Chen,

2001). Muratori, et al, (2006) found in their investigation of the talent development of two highly gifted mathematicians that they too sought to connect with other gifted mathematicians and intellectual peers, which thereby facilitated their talent development. Conversely, Karen was not socially isolated in school and spent time socializing and exploring the interests of her friends instead of her own.

The social isolation felt by Thomas, Daniel, and Sean was in contrast to the findings from the DSTY on student's perceptions of their level of social success. Based on six years of data, Ablard (2004) found that 89% of the participants ($N = 868$) believed they were moderately socially successful, 91% were happy with the friends they had, and 95% were happy with the number of friends they had. Although, compared to a subgroup of high mathematically talented students from the DSTY, Sean, Daniel, and Thomas shared similar characteristics of feelings of being unpopular and an internal locus of control. Karen, on the other hand, was popular in school and relied on external controls.

Barriers to Talent Development

Lack of volition. Thomas, Daniel, Karen and Sean had trouble with self-discipline in their work. Lack of will power affected their academic lives and now continues to affect their work life. Thomas and Daniel can overcome this problem when their interest is high. Sean experiences a lack of discipline in completing work when required to digest or memorize large volumes of content. For Karen, if there are institutionalized deadlines she finds she can complete work on time. However, all four lack the internal locus of control to tackle the completion of work on their own, a common problem for people with ADD/ADHD (Barron et al., 2006; Brand et al., 2002; Carlson et al., 2002; Volpe et al., 2006). Many of the studies on talent development highlighted the opposite of this, the

presence of an internal locus of control and will power in gifted individuals, and the importance of it for realizing potential (Bloom & Sosniak, 1981; Cox, 1926; Feng et al., 2001; Muratori et al., 2006).

Aggression. It is difficult to say if this is an internal characteristic or a symptom or result of ADD/ADHD. Thomas and Daniel reported anger and aggression as something that caused them difficulty mostly when they were growing up and occasionally now. Their anger was expressed as frustration or inappropriate or disruptive language or behaviors (Fabiano et al., 2007; Reid et al., 2005). Sean noted frustration as a reaction he had to not being on schedule. Anger or aggression may interrupt talent development by either stopping the process because of overwhelming frustration or by damaging relationships with peers or mentors.

The Effects of Elementary Schools, Middle and High Schools, and Colleges on the Talent Development of Gifted Students with ADD/ADHD

In many school districts, services for gifted children are focused on elementary and middle school and are non-existent in high schools. This question was important to me to provide information on where we need to strengthen our services and what types of services are important. The participants in this study gained the most in their talent development from individuals who took an interest in them and provided truly accelerated opportunities. In this study, it occurred most often at the college level, with two participants engaging in quality talent development at the middle school level (Karen and Thomas).

Elementary Schools

A challenging educational experience was cited often in the literature on talent development and gifted individuals as being important to nurturing talent and achievement (Feng, VanTassel-Baska, Quek, Bai, & O'Neill, 2005; Feng et al., 2001; Hebert & McBee, 2007; Muratori et al., 2006; Stanley, 2005; Wu & Chen, 2001), yet, none of these participants felt their elementary education was rigorous. All of the participants were enrolled in a gifted program when they were in elementary school but reported their programs as unremarkable and inconsistent; primarily pullout programs consisting of fun projects instead of rigorous, advanced curriculum.

Daniel and Thomas were diagnosed with ADD/ADHD due to the concerns of their elementary teachers. Early diagnoses of their disability allowed them to access treatment and avoid some of the negative effects of the disability. Even though they did not receive accommodations for their disability in school, they were receiving medication and had informed parents practicing appropriate interventions at home (DuPaul & Eckert, 1997; Gureasko-Moore et al., 2007; Reid et al., 2005). In contrast, Karen and Sean, both from rural communities, were not identified by their teachers as exhibiting troubling behaviors or needing assessment. Lack of identification caused several difficulties for Karen as suggested by the ADD/ADHD literature such as depression and low academic achievement (Fabiano et al., 2007; Rucklidge, et al., 2007; Volpe et al., 2006), but Sean was able to overcome and compensate for his problems.

Middle Schools and High Schools

All of the participants received academic enrichment in middle school. Daniel, Thomas and Karen were accelerated in math courses and Sean had access to

extracurricular math competition programs. The issue is the quality of the experiences. Karen's experience was of low quality, lacking in structure and good teaching, and was not her talent area. Daniel's experience also lacked good teaching and was inconsistent; but Thomas's was a high quality experience with support of the school and home, good teaching, good content and in his area of talent. Thomas's experience had all the attributes of the quality accelerative opportunities cited in the talent development research (Feng et al., 2001; Muratori et al., 2006; Stanley, 2005; Wu & Chen, 2001) and moved him along rapidly in developing his math and computer science skills.

The high school programs of all of the participants offered honors and AP courses, and Daniel and Thomas's schools offered a dual enrollment program. Advanced Placement courses have a rigorous curriculum with high expectations for learners; even so, they are often not challenging enough for the brightest students. High schools like Thomas's and Daniel's that recognized this and were willing to collaborate with students and their families to allow highly accelerative options were important in developing their talents (Muratori et al., 2006; Stanley, 1996, 2005).

Colleges and Universities

The colleges and universities attended by the participants were among the best in the country and provided rigorous curriculum and learning experiences. All of the schools, due to federal regulations, offered services for disabled students but only two of the participants were eligible for those services, Daniel and Thomas, and neither took advantage of them. Sean's and Karen's university and college offered honors programs for highly capable students and Sean was enrolled, but Karen did not qualify. In terms of talent development, the colleges and universities of the participants offered the best

opportunities compared to their elementary, middle, and high school programs (Hébert & McBee, 2007; Stanley, 2005; Muratori et al., 2006; Wu & Chen, 2001). The participants were allowed to pursue courses of interest, complete research (Bloom & Sosniak, 1981; Hébert & McBee, 2007; Stanley, 2005; Muratori et al., 2006; Wu & Chen, 2001), and immerse themselves in their talent area which helped to motivate them (Muratori et al., 2006; Stanley, 2005) and eliminate some of the effects of their ADD/ADHD, unlike their other educational settings.

The Role of Families in Supporting Talent Development

Family support is essential in nurturing talent (Bloom, 1985; Bloom & Sosniak, 1981; Cox, 1926; Feng et al., 2001; Hébert & McBee, 2007; Muratori et al., 2006; Wu & Chen, 2001). Researchers conducting the DSTY found that 98% of the sixth grade gifted children they surveyed ($N = 868$) indicated that their families were loving and supportive (Ablard, 2004). All of the participants of this study also felt their parents were loving and supportive but in different ways with different outcomes. Daniel, Thomas, and Sean enjoyed parental and family support in their talent areas, and Daniel and Thomas for their disability. This support included arranging extracurricular activities, collaborating with school officials on acceleration, and emotionally supporting the participant. Without the academic, social, and emotional support of their families, the participants may not have achieved as much as they did. Karen, on the other hand, had a caring and loving family but did not have the support she needed educationally and emotionally to overcome the obstacles she faced due to her giftedness and ADD/ADHD. Instead, she developed low academic self-concept, low aspirations, and low self-efficacy, all major inhibitors to talent development (Ambrose, 2001; Carlson et al., 2002; Kerr, 1994; Reis et al., 2005).

The financial support that families were able to provide was also crucial to the development of talent. Karen's family was not able to afford lessons to nurture her talents and her rural community did not value this type of activity. Daniel and Thomas had the advantage of financial support for both their ADD/ADHD treatment and accelerative opportunities. None of the participants had to worry about paying for college. Karen had federal support; Sean had a scholarship; Thomas's parents were professors at his college; and Daniel's parents had the means to pay his tuition.

Conclusions

The findings from this study suggest that the talent development of gifted individuals with ADD/ADHD is influenced both positively and negatively by their giftedness and their ADD/ADHD. Characteristics of giftedness and ADD/ADHD that facilitated the talent development of the participants of this study were: (a) awareness of giftedness and/or ADD/ADHD, (b) high productivity, (c) above average academic achievement, and, (d) multitasking. Barriers to their talent development related to ADD/ADHD were: (a) inattention, manifesting itself as an inability to organize tasks, an inability to maintain focus, an inability to complete work, and, an avoidance of tasks requiring sustained attention (APA, 2000), and; (b) symptoms related to hyperactivity, such as an inability to sit still, risky behaviors, and excessive talking (APA). Two gifted characteristics that negatively affected talent development for two of the participants of this study were multipotentiality and perfectionism.

The drive for self-actualization, persistence and interest were the key internal characteristics that helped the participants overcome the negative effects of their ADD/ADHD. A healthy self concept, high self-efficacy, and high aspirations were also

instrumental in the participants realizing their potential. Lastly, introversion and the sense of isolation felt by the participants either because of their giftedness or due to the negative effects of their ADD/ADHD caused them to focus at a young age on their talents. On the other hand, a lack of volition or will power, most likely the result of their ADD/ADHD caused all of the participants difficulty in pursuing their talent development. For two of the participants, aggressive tendencies intervened on their progress when they were younger but became less of a problem as they got older.

The participants' experiences in college were their most rewarding and influential in terms of talent development. The colleges and universities attended by the participants offered extremely challenging curriculum, research opportunities, and mentors. In elementary school, even though all were identified as gifted and being served, the programs were inconsistent, often not academically challenging, and did not target the participants' talent area. The participants all received enrichment opportunities in middle school but, in all but one case, the programs were poorly structured and inconsistent. High school offered the second best experience with AP courses, dual enrollment, and targeted extra-curricular activities.

The role of families in the lives of these participants was extremely important. The parents of the participants who gave emotional, educational, and financial support to their children helped to ease the negative effects of both their giftedness and ADD/ADHD and reinforced the positive effects. They accepted their children with all of their faults, validated their giftedness, and allowed them to pursue their own interests.

Implications for Practice

Identification Issues

The symptoms of ADD/ADHD were found to be a barrier to talent development for all participants. Awareness of the disability helped to mitigate the effects for two participants identified in elementary school. From this finding, I assert that early identification is important for facilitating the talent development of gifted individuals with ADD/ADHD. On the national level, federal guidelines need to recognize the uniqueness of the twice-exceptional student's profile and provide guidance to schools for assessing this population. The move in special education towards response to intervention, which is interpreted by some school districts as requiring students to be failing following interventions before they are assessed for a disability, puts these students at risk of never being assessed. For parents with financial means, they can seek assistance outside of the school system, but for parents of lower incomes it is difficult, almost impossible, to get services for their gifted children with ADD/ADHD. School systems need to develop policies to ensure that this population is served within the response to intervention guidelines.

Gifted coordinators need to insist on determining if a referred student has ADD/ADHD and then consider the effects ADD/ADHD may have on a student's ability to perform well on an assessment. When classroom grades are gathered as part of the assessment, it would be appropriate to separate test performance from the homework grade. Portfolios and student products are increasingly a part of the gifted identification process. If so, when gathering student products, the process must be sensitive to attention issues, an inability to sit still for long periods of time, and impulsive answers. In

administering assessments, the type of assessment and setting should also be adjusted to account for inattention, hyperactivity, and impulsivity.

Services

In terms of services, schools need to be open to accelerating gifted students with ADD/ADHD when warranted and not use their disability as an excuse to deny an accelerative opportunity. Services for this population should include appropriately accelerated curriculum, behavior modification programs, study skills instruction, and social skills training. From the results of this study, I would also add goal setting training and assistance in setting and monitoring goals. The accelerative opportunities should be in the student's talent area, not a generalized program that the student may not have an interest in, thus creating attention and behavioral problems.

Gifted students with ADD/ADHD should also have access to counseling services in schools. Perfectionism, multipotentiality, low self-esteem and the myriad symptoms of ADD/ADHD make them vulnerable to emotional issues and academic failure. It was evident from the findings of this study that the successful participants had a significant person in their lives who believed in them, accepted them, and helped them navigate their environment. This could be provided in school through the gifted teacher, school counselor, or a mentor. Students should also be counseled in modifications and services available for their ADD/ADHD, especially at the post-secondary level. Schools should also sponsor parent training on how to aid in the development of gifted students with ADD/ADHD.

Professional Development

In order to ensure success for gifted students with ADD/ADHD, schools must first be able to identify them. Early diagnosis is important to avoid achievement deficits and low academic self-concept, as was evident in Karen's case. School districts should provide in-services on gifted students with ADD/ADHD to faculty that include how to identify this population as well as how to identify the symptoms of ADD/ADHD in their already identified gifted students (Hartnett, Nelson, & Rinn, 2004).

Teachers of the gifted should also receive in-service training on how to accommodate for gifted students with ADD/ADHD. This training should include designing and delivering behavior modification programs, study skills instruction, and social skills. Teachers also need to be made aware of the social and emotional needs of this population. The findings of this study underscore the importance of challenging gifted students with ADD/ADHD, educating them towards their strengths not their weaknesses, in order to avoid low self-efficacy and low academic self-esteem. There is more of a deficit approach in education and teachers of the gifted should be trained on how to deliver challenging curriculum to this population while accommodating for their disability

School counselors should receive training on the social and emotional issues of gifted students with ADD/ADHD and how to provide group and individual counseling to this population on issues such as perfectionism, low self-esteem, multipotentiality, and social skills. They should be made aware that this is a population at risk considering they are prone to the negative effects of two phenomena: giftedness and ADD/ADHD. .

Implications for Future Research

Examining the talent development of four gifted individuals with ADD/ADHD in case studies is a good start for understanding the barriers and facilitators of talent development for this population, but studies with more participants are needed in order to generalize findings to the wider population. There were several issues not addressed by this study due to the small sample size. For instance, this study did not address the impact of gender on the talent development of gifted individuals with ADD/ADHD. The issue of talent development in females has been well-researched (Arnold, 1994; Goertzel & Goertzel, 2004; Hall & Hansen, 1997; Kerr, 1994; Sadker & Sadker, 1994), but I have not found any studies examining the talent development of gifted females with ADD/ADHD. Only one participant in the study was female, and she was the only participant not engaged in her talent area, but I cannot draw any conclusions from one case. A comparison study of the talent development of gifted males and females with ADD/ADHD would inform the gifted field of obstacles and needed interventions unique to gender.

Although comorbidity of ADD/ADHD with other disorders was mentioned in one case, it was not a focus of this study. Researchers have conducted studies on the prevalence and effects of depression and behavioral disorders on individuals with ADD/ADHD (Bagwell et al., 2006; Kaplan et al., 2001; MacPhee & Andrews, 2006; Purdie et al., 2002) and gifted individuals (Baker, 1995; Cross, Cassady, Dixon, & Adams, 2008; Yoo & Moon, 2006). There is no evidence that gifted individuals are more prone to depression and other disorders than the general population, but there is ample evidence of a higher prevalence of comorbidity in individuals with ADD/ADHD. A study

with a much larger sample could determine if there is a higher prevalence of comorbid disorders in the population of gifted individuals with ADD/ADHD and whether or not their twice exceptionality amplifies the effects of these conditions. It would be unfortunate to lose the valuable resource of talented individuals to the negative effects of these disorders when the effects can be mitigated by treatment or medication. Studying the prevalence and effects of comorbid conditions in this population would aid in raising awareness of this problem and in developing intervention strategies to ensure continued development of talent.

Finally, studies on strategies that will enhance achievement and aid in talent development for this population are needed. Interventions that work for gifted students or for students with ADD/ADHD may not necessarily work for gifted students with ADD/ADHD. Self-management training has been successful with adolescents and adults with ADD/ADHD but may need some adjustment to be effective with the gifted adolescent and adult with ADD/ADHD.

REFERENCES

- Albert, R. S. (Ed.) (1992). *Genius and eminence* (2nd ed.). New York: Pergamon Press.
- Ablard, K. E. (2004). The Developmental Study of Talented Youth (DSTY): Six year trends (Tech. Rep. No. 31). Baltimore, MD: Johns Hopkins University, Center for Talented Youth.
- Ablard, K. E., Mills, C. J., & Hoffhines, V. L. (1996). The Developmental Study of Talented Youth (DSTY): The participants (Tech. Rep. No. 13). Baltimore: Johns Hopkins University, Center for Talented Youth.
- Ambrose, D. (2003). Barriers to aspiration development and self-fulfillment: Interdisciplinary insights for talent discovery. *Gifted Child Quarterly*, 47, 282-294.
- American Academy of Pediatrics. (2007). What is ADD/ADHD? Retrieved June 4, 2008, from <http://www.aap.org/healthtopics/ADD/ADHD.cfm>.
- Americans with Disabilities Act of 1990, 42 U.S.C.A. § 1201 et seq. (West, 1993).
- American Psychological Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Anstey, B. (1999). Test review: Evaluation of the Multidimensional Self-Concept Scale (MSCS). *Canadian Journal of School Psychology*, 14, 59-65.
- Arnold, K. (1994). Academically talented women in the 1980s: The Illinois valedictorian project. In K. D. Hubert & D. T. Schuster (Eds.) *Women's lives through time: Educated women in the twentieth century*. San Francisco, CA: Jossey-Bass.

- Bagwell, C. L., Molina, B. S. G., Kashdan, T. B., Pelham, Jr., W. E., & Hoza, B. (2006). Anxiety and mood disorders in adolescents with childhood attention-deficit/hyperactivity disorder. *Journal of Emotional and Behavioral Disorders, 14*, 178-87.
- Baldwin, A. Y., & Vialle, W. (1999). *The many faces of giftedness: Lifting the masks*. Belmont, CA: Wadsworth.
- Baker, J. A. (1995). Depression and suicidal ideation among academically gifted adolescents. *Gifted Child Quarterly, 39*, 218-223.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Barkley, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (2nd ed.). New York: Guilford Press.
- Barkley, R. A. (2007). School interventions for attention deficit hyperactivity disorder: Where to from here? *The School Psychology Review, 36*, 279-86.
- Barron, K. E., Evans, S. W., Baranik, L. E., Serpell, Z. N., & Buvinger, E. (2006). Achievement goals of students with ADD/ADHD. *Learning Disability Quarterly, 29*, 137-158.
- Baum, S. M., & Owen, S. V. (2004). *To be gifted and learning disabled: Strategies for helping bright students with LD, ADD/ADHD, and more*. Mansfield Center, CT: Creative Learning Press.
- Baum, S. M., Olenchak, F. R., & Owen, S. V. (1998). Gifted students with attention deficits: Fact and/or fiction? Or, can we see the forest for the trees? *Gifted Child Quarterly, 42*, 96-104.

- Baum, S. M., Rizza, M. G., & Renzulli, J. S. (2006). Twice-exceptional adolescents: Who are they? What do they need? In F. Dixon & S. M. Moon (Eds.), *The handbook of secondary gifted education* (pp. 137-164). Waco, TX: Prufrock Press.
- Biederman, J., Faraone, S. V., Spencer, T., Wilens, T., Norman, D. Lapey, K., A., Mick, E., Lehman, B. K., & Doyle, A. (1993). Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. *American Journal of Psychiatry*, *150*, 1792-1798. Retrieved on August 21, 2009, from PubMed database.
- Biederman, J., Faraone, S. V., Spencer, T., Mick, E., Monuteaux, M. C., Aleardi, M (2006). Functional impairments in adults with self-reports of diagnosed ADHD: A controlled study of 1001 adults in the community. *Journal of Clinical Psychiatry*, *67*, 524-540. Retrieved on August 21, 2009, from PubMed database.
- Bloom, B. S. (1982). The roles of gifts and markers in the development of talent. *Exceptional Children*, *48*, 510-522.
- Bloom, B. S. (Ed.) (1985) *Developing talent in young people*. New York, NY: Ballantine Books.
- Bloom, B. S., & Sosniak, L. A. (1981, November). Talent development vs. schooling. *Educational Leadership*, 86-94.
- Bracken, B. A. (1992). *Multidimensional Self Concept Scale*. Austin, TX: PRO-ED.
- Bracken, B. A. & Boatwright, B. S. (2005). *Clinical Assessment of Attention Deficit – Adult professional manual*. Lutz, FL: Psychological Assessment Resources.

- Brand, S., Dunn, R., & Greb, F. (2002). Learning styles of students with attention deficit hyperactive disorder: Who are they and how can we teach them? *The Clearing House, 75*, 268-273.
- Brody, L. E., & Mills, C. J. (1997). Gifted children with learning disabilities: A review of the issues. *Journal of Learning Disabilities, 30* (3), 282-286.
- Brown, T. E., Reichel, P. C., & Quinlan, D. M. (2009). Executive functioning impairments in high IQ adults with ADHD. *Journal of Attention Disorders, 13*, 161-167. Retrieved on August 24, 2009, from <http://jad.sagepub.com/cgi/content/abstract/13/2/161>.
- Burruss, J., & Drummond, D. (2002, November). *Giftedness and Disabilities in Students: Coincidence and Consequences*, National Association for Gifted Children 49th Annual Convention, Denver, CO.
- Carlson, C. L., Booth, J. E., Shin, M., & Canu, W. H. (2002). Parent, teacher, and self-rated motivational styles in ADD/ADHD subtypes. *Journal of Learning Disabilities, 35*, 104-113.
- Cassady, J. C., Dixon, F. A., & Adams, C. M. (2008). The psychology of gifted adolescents as measured by the MMPI-A. *Gifted Child Quarterly, 52*, 326-339.
- Ceci, S. J., Barnett, S. M., & Kanaya, T. (2003). Developing childhood proclivities into adult competencies: The overlooked multiplier effect. In R. J. Sternberg & E. L. Grigorenko (Eds.), *The psychology of abilities, competencies, and expertise* (pp. 126-158). Cambridge, England: Cambridge University Press.
- Census <http://www.census.gov/hhes/www/income/histinc/county/county2.html>

- Chae, P. K., Kim, J., & Noh, K. (2003). Diagnosis of ADD/ADHD among gifted children in relation to the KEDI-WISC and T.O.V.A. performance. *Gifted Child Quarterly*, 47, 192-201.
- City Data <http://www.city-data.com/city/Warrenton-Virginia.html>
- Cox, C. M. (1926). The early mental traits of 300 geniuses. In R. S. Albert (Ed.), *Genius and eminence* (2nd ed., pp. 53-58). New York: Pergamon Press.
(Reprinted from *The early mental traits of three hundred geniuses*, by C. M. Cox, in *Volume II, Genetic studies of genius*, L. M. Terman, Ed., 1926, Stanford, CA: Stanford University press.)
- Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage Publications.
- Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teens: The roots of success and failure*. New York: Cambridge University Press.
- Dabrowski, K. (1967). *Personality shaping through positive disintegration*. Boston: Little, Brown.
- Dai, D. Y., & Coleman, L. J. (2005). Introduction to the special issue on nature, nurture, and the development of exceptional competence. *Journal for the Education of the Gifted*, 28, 254-269.
- Dickens, W. T., & Flynn, J. R. (2001). Heritability estimates versus large environmental effects: The IQ paradox resolved. *Psychological Review*, 108, 346-369.
- Dixon, F. A., Lapsley, D. K., & Hanchon, T. A. (2004). An empirical typology of perfectionism in gifted adolescents. *Gifted Child Quarterly*, 48, 95-106.

- Dumas, M. C. (1998). The risk of social interaction problems among adolescents with ADD/ADHD. *Education and Treatment of Children, 21*, 447-60.
- DuPaul, G. J., & Eckert, T. L. (1997). The effects of school-based interventions for attention deficit hyperactivity disorder: A meta-analysis. *The School Psychology Review, 26*, 5-27.
- DuPaul, G. J., Jitendra, A. K., & Tresco, K. E. (2006). Children with attention deficit hyperactivity disorder: Are there gender differences in school functioning? *The School Psychology Review, 35*, 292-308.
- DuPaul, G. J., Schaughency, E. A., Weyandt, L. L., Tripp, G., Kiesner, J., Ota, K., et al. (2001). Self-report of ADD/ADHD symptoms in university students: Cross-gender and cross-national prevalence. *Journal of Learning Disabilities, 34*, 370-379.
- DuPaul, G. J., & Weyandt, L. L. (2006). School-based interventions for children and adolescents with attention-deficit/hyperactivity disorder: Enhancing academic and behavioral outcomes. *Education and Treatment of Children, 29*, 341-58.
- Dy-Liacco, G. S. (2002). Test Review: The Adjective Checklist. *Association for Assessment in Counseling Newsnotes*. Retrieved May 15, 2007 from <http://aac.ncat.edu/>
- Educational Testing Service (July 12, 2009). Retrieved from web site on July 12, 2009, <http://www.ets.org>
- Ericsson, K. A., & Lehmann, A. C. (1996). Expert and exceptional performance: Evidence on maximal adaptations on task constraints. *Annual Review of Psychology, 47*, 273-305.

- Ericsson, K. A., Nandagopal, K., & Roring, R. W. (2005). Giftedness viewed from the expert-performance perspective. *Journal for the Education of the Gifted*, 28, 287-311.
- Evans, S. W., Serpell, Z. N., Schultz, B. K., & Pastor, D. A. (2007). Cumulative benefits of secondary school-based treatment of students with attention deficit hyperactive disorder. *The School Psychology Review*, 36, 256-273.
- Fabiano, G. A., Pelham, W. E., Gnagy, E. M., Burrows-MacLean, L., Coles, E. K., Chacko, A., et al. (2007). The single and combined effects of multiple intensities of behavior modification and methylphenidate for children with attention deficit hyperactivity disorder in a classroom setting. *The School Psychology Review*, 36, 195-216.
- Feldhusen, J. F. (1995). *Talent identification and development in education* (2nd ed.). Sarasota, FL: Center for Creative Learning.
- Feldhusen, J. F. (1998, August). *Talent development, expertise, and creative achievement*. Paper presented at the Annual Convention of the American Psychological Association, San Francisco, CA.
- Feldhusen, J. F., & Hoover, S. M. (1986). A conception of giftedness: Intelligence, self concept and motivation. *Roeper Review*, 8, 140-143.
- Feng, A., Campbell, J. R., & Verna, M. A. (2001). The talent development of American Physics Olympians. *Gifted and Talented International*, 16, 108-114.
- Feng, A. X., VanTassel-Baska, J., Quek, C., Bai, W., & O'Neill, B. (2005). A longitudinal assessment of gifted students' learning using the Integrated

- Curriculum Model (ICM): Impacts and perceptions of the William and Mary language arts and science curriculum. *Roeper Review*, 27, 78-83.
- Frazier, T. W., Youngstrom, E. A., Glutting, J. J., & Watkins, M. W. (2007). ADD/ADHD and achievement: Meta-analysis of the child, adolescent, and adult literatures and a concomitant study with college students. *Journal of Learning Disabilities*, 40, 49-65.
- Fox, L. H., Brody, L. E., & Tobin, D. (Eds.) (1983). *Learning disabled/gifted children: Identification and programming*. Austin, TX: Pro-Ed.
- Gagné, F. (2002). Toward a differentiated model of giftedness and talent. In N. Colangelo and G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed., pp. 65-80). Boston: Allyn & Bacon.
- Gagné, F. (2007). Ten commandments for academic talent development. *Gifted Child Quarterly*, 51, 93-118.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction* (6th ed.). White Plains, NY: Longman.
- Gardner, H. (1995). "Expert performance: Its structure and acquisition": Comment. *American Psychologist*, 50, 802-803.
- Gay, L. R., & Airasian, P. (2000). *Educational research: Competencies for analysis and application* (6th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.
- Goertzel, V., & Goertzel, M. G. (2004). *Cradles of eminence, second edition: Childhoods of more than 700 famous men and women*. Scottsdale, AZ: Great Potential Press.
- Grimm, J. (1998). The participation of gifted students with disabilities in gifted programs. *Roeper Review*, 20, 285-286.

- Gureasko-Moore, S., DuPaul, G. J., & White, G. P. (2007). Self-management of classroom preparedness and homework: Effects on school functioning of adolescents with attention deficit hyperactivity disorder. *The School Psychology Review, 36*, 647-664.
- Hall E. G, & Hansen, J. (1997). Self-actualizing men and women: A comparison study. *Roeper Review, 20*, 22-27.
- Halmøy, A., Fasmer, O. B., Gillberg, C., & Haavik, J. (2009). Occupational outcome in adult ADHD: Impact of symptom profile, comorbid psychiatric problems, and treatment. *Journal of Attention Disorders, 13*, 175-187. Retrieved August 21, 2009, from Sage Journals Online.
- Hartnett, D. N., Nelson, J. M., & Rinn, A. N. (2004). Gifted or ADHD? The possibilities of misdiagnosis. *Roeper Review, 26*, 73-76.
- Hébert, T. P., & McBee, M. T. (2007). The impact of an undergraduate honors program on gifted university students. *Gifted Child Quarterly, 51* (2), 136-151.
- Hoge, R. D., & Renzulli, J. S. (1991). Self-concept and the gifted child. (National Research Center on the Gifted and Talented Monograph No. 9104). Storrs, CT: The University of Connecticut.
- Hurtubis Sahlen, C. A., & Lehman, J. P. (2006). Requesting accommodations in higher education. *Teaching Exceptional Children, 38*, 28-34.
- Individuals with Disabilities Education Act (IDEA) of 1997, Pub. L. No. 105-17, 34 C.F.R., Part 300, § 300.7 [b] [1].
- Jarvin, L., & Subotnik, R. (2006). Understanding elite talent in academic domains: A developmental trajectory from basic abilities to scholarly productivity/artistry. In

- F. A. Dixon, & S. M. Moon (Eds.), *The handbook of secondary gifted education*, (pp.203-220). Waco, TX: Prufrock Press.
- Kaminski, P. L., Turnock, P. M., Rosén, L. A., & Laster, S. A. (2006). Predictors of academic success among college students with attention disorders. *Journal of College Counseling, 9*, 60-71.
- Kaplan, B. J., Dewey, D. M., Crawford, S. G., & Wilson, B. N. (2001). The term comorbidity is of questionable value in reference to developmental disorders: Data and theory. *Journal of Learning Disabilities, 34*, 555-565.
- Kaufmann, F. (1981). The 1964-1968 Presidential Scholars: A follow-up study. *Exceptional Children, 48*, 2.
- Kerr, B. A. (1994). *Smart girls: A new psychology of girls, women, and giftedness*. Scottsdale, AZ: Gifted Psychology Press.
- Klein, A. G. (2002). *Forgotten voice: A biography of Leta Stetter Hollingworth*. Scottsdale, AZ: Great Potential Press.
- Koenen, K. C., Moffitt, T. E., Roberts, L. T., Martin, L. T., Kubzansky, L., Harrington, H., Poulton, R., & Caspi, A. (2009). Childhood IQ and adult mental disorders: A test of the cognitive reserve hypothesis. *American Journal of Psychiatry, 166*, 50-57. Retrieved on August 24, 2009, from <http://ajp.psychiatryonline.org/>.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications.
- Leroux, J. A., & Levitt-Perlman, M. (2000). The gifted child with Attention-Deficit Disorder: An identification and intervention challenge. *Roeper Review, 22*, 171-176.

- MacPhee, A. R., & Andrews, J. J. W. (2006). Risk factors for depression in early adolescence. *Adolescence, 41*, 435-66.
- Mannuzza, S., Klein, R. G., & Moulton, J. L. (2008). Lifetime criminality among boys with attention deficit hyperactivity disorder: A prospective follow-up study into adulthood using official arrest records. *Psychiatry Research, 160* (3), 237-246. Retrieved August 21, 2009, from Sage Journal Online.
- Marsh, H. W., Köller, O., & Baumert, J. (2001). Reunification of East and West German school systems: Longitudinal multilevel modeling study of the big-fish-little-pond effect on academic self-concept. *American Educational Research Journal, 38*, 321-350.
- Miles, M. B., & Huberman, A. M. (1994). *An expanded sourcebook: Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Minner, S., Prater, G., Bloodworth, H., & Walker, S. (1987). Referral and placement recommendations of teachers toward gifted handicapped children. *Roeper Review, 9*, 247-249.
- Moon, S. M., Zentall, S. S., Grskovic, J. A., Hall, A., & Stormont, M. (2001). Emotional and social characteristics of boys with ADD/ADHD and giftedness: A comparative case study. *Journal for the Education of the Gifted, 24*, 207-47.
- Myers, I. B., & McCaulley, M. H. (1985). *A guide to the development and use of the Myers-Briggs type indicator*. Palo Alto, CA: Consulting Psychologists Press.
- Muratori, M. C., Stanley, J. C., Gross, M. U., Ng, L., Tao, T., Ng, J., & Tao, B. (2006). Insights from SMPY's greatest former child prodigies: Drs. Terence ("Terry")

- Tao and Lenhard (“Lenny”) Ng reflect on their talent development. *Gifted Child Quarterly*, 50, 307-324.
- National Center for Educational Statistics (1996). National Postsecondary Student Aid Study: 1996 Field test methodology report. Retrieved May 27, 2008 from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9617>.
- National Center for Educational Statistics (1999). Postsecondary Education Quick Information System: An Institutional Perspective on Students with Disabilities in Postsecondary Education. Retrieved May 27, 2008 from <http://nces.ed.gov/pubs99/1999046.pdf>
- Oden, M. (1992). A 40-year follow-up of giftedness: Fulfillment and unfulfillment. In R. S. Albert (Ed.), *Genius and eminence* (2nd ed.). New York: Pergamon Press. (Reprinted from *Genetic psychology monographs*, pp.71-74, 1968, Washington, DC: Heldref Publications.)
- Olszewski-Kubilius, P. (2000). The transition from childhood giftedness to adult creative productiveness: Psychological characteristics and social supports. *Roeper Review*, 23, 65-71.
- Olszewski-Kubilius, P., & Laubscher, L. (1996). Economically disadvantaged gifted students and their subsequent college adjustment. *Roeper Review*, 18, 198-202.
- Papierno, P. B., Ceci, S. J., Makel, M. C., & Williams, W. M. (2005). The nature and nurture of talent: A bioecological perspective on the ontogeny of exceptional abilities. *Journal for the Education of the Gifted*, 28, 312- 332.

Parker, W. D., & Mills, C. J. (1996). The incidence of perfectionism in gifted students.

Gifted Child Quarterly, 40, 194-199.

Perrone, P., & Dow, E. (1993). First and second year college experiences of Wisconsin's academically talented high school graduates. *Roeper Review, 15*, 144-148.

Peterson, J. S. (2001). Successful adults who were once adolescent underachievers.

Gifted Child Quarterly, 45, 236-250.

Piechowski, M. M., & Colangelo, N. (1984). Developmental potential of the gifted.

Gifted Child Quarterly, 28, 80-88.

President's Commission on Excellence in Special Education (July 1, 2002). A new era:

Special revitalizing education for children and their families.

Retrieved on May 27, 2008, from

<http://www.ed.gov/inits/commissionsboards/whspecialeducation/reports/index.html>.

Purdie, N., Hattie, J., & Carroll, A. (2002). A review of the research on intervention for attention deficit hyperactive disorder: What works best? *Review of Educational*

Research, 72, 61-99.

QSR International Inc. (retrieved on April 1, 2009) NVivo 8 [Computer software]

<http://www.qsrinternational.com/default.aspx> .

Rabinowitz, M., and Glaser, R. (1985). Cognitive structure and process in highly

competent performance. In F. D. Horowitz and M. O'Brien (Eds.), *The gifted and*

- talented: Developmental perspectives* (pp. 75-98). Washington, DC: American Psychological Association.
- Rehabilitation Act of 1973, Pub. L. No. 93-112, 29 U.S.C. § 793, 34 C.F.R. § 104.3 (k) (3).
- Reid, R., Trout, A. L., & Schartz, M. (2005). Self-regulation interventions for children with attention deficit/hyperactivity disorder. *Exceptional Children, 71*, 361-377.
- Reis, S. M., Colbert, R. D., & Hébert, T. P. (2005). Understanding resilience in diverse, talented students in an urban high school. *Roeper Review, 27*, 110-120.
- Renzulli, J. S. (1984). The triad/revolving door system: A research-based approach to identification and programming for the gifted and talented. *Gifted Child Quarterly, 28*, 163-171.
- Rucklidge, J., Brown, D., Crawford, S., & Kaplan, B. (2007). Attributional styles and psychosocial functioning of adults with ADHD: Practice issues and gender differences. *Journal of Attention Disorders, 10*, 288-298. Retrieved August 21, 2009, from Sage Journal Online.
- Sadker, M., & Sadker, D. (1994). *Failing at fairness: How America's schools cheat girls*. New York: Scribner and Sons.

- Schlachter, S. (2008). Diagnosis, treatment, and educational implications for students with attention-deficit/hyperactivity disorder in the United States, Australia, and the United Kingdom. *Peabody Journal of Education*, 83, 154-69.
- Secondary School Admission Test Board (SSATB, 1957) (retrieved from the internet on March, 2009). <http://www.ssatmembers.org/> (email from SSAT said they preferred this reference: Secondary School Admission Test Board, Inc., Secondary School Admission Test(SSAT®), multiple editions published and administered continuously from 1957 to date.)
- Seidman, I. (1998). *Interviewing as qualitative research: A guide for researchers in education and the social sciences*. New York: Teachers College Press.
- Siegler, R. S., & Kotovsky, K. (1992). Two levels of giftedness: Shall ever the twain meet? In R. S. Albert (Ed.) (1992). *Genius and eminence* (2nd ed., pp. 95-108). New York: Pergamon Press.
- Simonton, D. K. (2005). Giftedness and genetics: The emergenic-epigenetic model and its implications. *Journal for the Education of the Gifted*, 28, 270-286.
- Solanto, M. V., Marks, D. J., Mitchell, K. J., Wasserstein, J., & Kofman, M. D. (2008). Development of a new psychosocial treatment for adult ADHD. *Journal of Attention Disorders*, 11, 728-736. Retrieved August 21, 2009, from Sage Journal Online.
- Speirs Neumeister, K. L. (2004). Factors influencing the development of perfectionism in gifted college students. *Gifted Child Quarterly*, 48, 259- 274.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage Publications.

- Stanley, J. C. (1996). In the beginning: The study of mathematically precocious youth. In C. P. Benbow, & D. Lubinski (Eds.), *Psychometric and social issues: Intellectual Talent* (pp.225-235). Baltimore: Johns Hopkins University Press.
- Stanley, J. C. (2005). A quiet revolution: finding boys and girls who reason exceptionally well mathematically and/or verbally and helping them get the supplemental educational opportunities they need. *High Ability Studies*, 16, 5-14.
- Sternberg, R. J. (2000). Patterns of giftedness: A triarchic analysis. *Roeper Review*, 22, 131-235.
- Sternberg, R. J. (2003). What is an expert student? *Educational Researcher*, 32, 5-9.
- Subotnik, R. F., & Arnold, K. D. (Eds.) (1995). *Beyond Terman: Contemporary longitudinal studies of giftedness and talent*. Norwood, NJ: Ablex.
- Subotnik, R. F., & Steiner, C. L. (1995). Adult manifestations of adolescent talent in science: A longitudinal study of 1983 Westinghouse Science Talent Search winners. In R.F Subotnik & K. D. Arnold (Eds.), *Beyond Terman: Contemporary longitudinal studies of giftedness and talent*. (pp. 52-76). Norwood, NJ: Ablex.
- Subotnik, R. F., Miserandino, A.D., & Olszewski-Kubilius, P. (1996, April). Implications of the Olympiad studies for the development of mathematical talent in schools. Paper presented at the Annual Meeting of the American Educational research Association, New York, NY.

- Tannenbaum, A. (1997). The meaning and making of giftedness. In N. Colangelo & G. A. Davis (Eds.) *Handbook of gifted education* (2nd ed., pp. 27-42). Boston, MA: Allyn & Bacon.
- Trammell, J. K. (2003). The impact of academic accommodations on final grades in a postsecondary setting. *Journal of College Reading and Learning, 34*, 76-90.
- VanTassel-Baska, J. (1989). The role of family in the success of disadvantaged gifted learners. *Journal for the Education of the Gifted, 13*, 22-36.
- Vile Junod, R. E., DuPaul, G. J., Jitendra, A. K., Volpe, R. J., & Cleary, K. S. (2006). Classroom observations of students with and without ADD/ADHD: Differences across types of engagement. *Journal of School Psychology, 44* (2), 87-104.
- Volpe, R. J., DuPaul, G. J., DiPerna, J. C., Jitendra, A. K., Lutz, J. G., Tresco, K., & Vile Junod, R. (2006). Attention deficit hyperactivity disorder and scholastic achievement: A model of mediation via academic enablers. *The School Psychology Review, 35*, 47-61.
- Waas, G. A., & Graczyk, P. A. (1999). Child behaviors leading to peer rejection: A view from the peer group. *Child Study Journal, 29*, 291-306.
- Webb, J. T., Amend, E. R., Webb, N. E., Goerss, J., Beljan, P., & Olenchak, F. R. (2005). *Misdiagnosis and dual diagnosis of gifted children and adults*. Scottsdale, AZ: Gifted Psychology Press.
- Wu, W-T., & Chen, J-D. (2001). A follow-up study of Taiwan physics and chemistry Olympians: The role of environmental influences in talent development. *Gifted and Talented International, 16*, 16-26.

- Yin, R. K. (1984). *Case study research: Design and methods* (Applied Social Research Methods Series, Vol. 5). Beverly Hills, CA: Sage Publications.
- Yoo, J. E., & Moon, S. M. (2006). Counseling needs of gifted students: An analysis of intake forms at a university-based counseling center. *Gifted Child Quarterly, 50*, 52-61.
- Zentall, S. S., Moon, S. M., Hall, A. M., & Grskovic, J. A. (2001). Learning and motivational characteristics of boys with ADD/ADHD and/or giftedness. *Exceptional Children, 67*, 499-519.
- Zuckerman, M. B. (Ed.) (2009, July 6). Retrieved July 6, 2009, from US News and World Report, <http://colleges.usnews.rankingsandreviews.com/college/liberal-arts-search/>.

APPENDICES

Appendix A

Invitation to Participate

February 2009

Dear

My name is Diann Gully and I am a doctoral student in Gifted Administration at the College of William and Mary. I am conducting a study on gifted individuals identified as having Attention Deficit Hyperactivity Disorder (ADD/ADHD). The study seeks to understand how the two phenomena, giftedness and ADD/ADHD, affect the talent development of an individual.

It has long been recognized that many variables factor into the process of developing a person's talents. Home and school environment, educational opportunity, community resources, socioeconomic status, race, birth order, and gender have all been examined to determine their impact on talent development. Few studies, though, have explored the effects a disability has on the talent development of a gifted individual. In recent years, it has come to the attention of educators that gifted individuals with disabilities have been under-identified and underserved. This is especially true for gifted individuals with ADD/ADHD.

In a preliminary study, I worked with students on the elementary and middle school level to examine the effects different types of disabilities have on the education of gifted children. I would like to continue that work by talking with young adults who are both gifted and have ADD/ADHD. The study will consist of a one to two hour interview and similar interviews with one of the individual's parents and a college professor or advisor.

I sought out the assistance of The Center for Talented Youth to find young adults, identified as both gifted and ADD/ADHD, who would be willing to help me in this study. You are among the thousands of gifted students who have participated in the Center for Talented Youth's Talent Search. If you have also been identified as ADD/ADHD and would be willing to participate in this study, I encourage you to return the consent form. I have included an explanation of what you would be expected to do as a participant of this study. If you have any questions about this study, please call me at 443-690-4091 or email me at dianngully@hotmail.com. You may also contact Carol Mills or Karen Ablard at CTY at 410-735-4100.

Sincerely,

Diann Gully
Graduate Student
College of William and Mary

Cc: Carol Mills
Karen Ablard

Study of the Talent Development of Gifted Individuals with Attention Deficit Hyperactivity Disorder

This study seeks to understand the impact Attention Deficit Hyperactivity Disorder (ADD/ADHD) has on the talent development of gifted individuals. This information will contribute to the existing research in the field of gifted education about how best to serve this group of students. The study will be conducted from March 2009 to July 2009. You will be consulted on the authenticity of the analysis of your case at intervals during the study.

Participation involves the following:

You will be asked to:

- Submit documentation of your diagnosis of ADD/ADHD
- Participate in a one to two hour interview by phone or in person
- Complete a 20-25 minute assessment of symptoms of ADD/ADHD in adults, the Clinical Assessment of Attention Deficit-Adult (Bracken & Boatwright, 2005)
- Provide the name and contact information of one of your parents who agrees to be interviewed for the study
- Provide the name and contact information of a previous college professor or academic advisor who agrees to be interviewed for the study
- Consent to the review of documents (i.e. Individualized Education Plans (IEPs), 504 Plans, school records, records at the Center for Talented Youth)

Your parents will be asked to:

- Participate in a one to two hour interview, by phone or in person
- Submit educational documents for review (i.e. IEPs, 504 Plans, school records)

Previous college professor/academic advisor will be asked to:

- Participate in a one to two hour interview, by phone or in person

There are no foreseeable risks to participating in this study and you may withdraw at any time without penalty. Your identity, and the identity of all those interviewed, will be kept confidential. Please sign and return the attached consent form if you meet the requirements of being both gifted and ADD/ADHD and are willing to participate in this study as outlined above.

Appendix B

Consent Form

Participant Informed Consent Form**College of William & Mary**

The general nature of this study entitled "A Study of the Talent Development of Gifted Individuals with ADD/ADHD" conducted by Diann Gully has been explained to me. I understand that I will respond to questions in an interview about my giftedness, ADD/ADHD, and school experiences; complete a rating scale of adult ADD/ADHD; provide contact information for one of my parents and a college professor or advisor willing to respond to questions in an interview; and allow Ms. Gully access to my school records and records from the Developmental Study of Talented Youth at the Center for Talented Youth. My participation in this study should take a total of 4 hours. I understand that my responses will be confidential and that my name will not be associated with any results of this study. I know that I may refuse to answer any question asked and that I may discontinue participation at any time. I also understand that any incentive for participation will not be affected by my responses or by my exercising any of my rights. Potential risks resulting from my participation in this project have been described to me. I am aware that I may report dissatisfactions with any aspect of this experiment to the Chair of the Protection of Human Subjects Committee, Dr. Michael Deschenes, 757-221-2778 or mrdesc@wm.edu. I am aware that I must be at least 18 years of age to participate. My signature below signifies my voluntary participation in this project, and that I have received a copy of this consent form.

THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON 2009-03-03 AND EXPIRES ON 2010-03-03.

 Date

 Signature

 PrintName

Appendix C

Sample Interview Questions – Participants

Interview Questions – Participant

Name _____ Date _____ Time _____
 In-person _____ Phone _____

1. You have been told that you are gifted with ADD/ADHD. What do each of these mean to you?
2. Were there any specific opportunities you had in college that were the result of your giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)
3. Were there any specific opportunities you had in elementary, middle or high school that were the result of your giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honors programs, mentorships, internships, nominations to special programs, etc.)
4. What do you feel are your greatest talents or your area of talent? Has your giftedness or ADD/ADHD had an effect on the realization or pursuit of your talent? How? (Probes: practicing your talent, advancing your talent through learning, making connections with people in the talent field)
5. How have internal characteristics impacted your talent development? (Probes: motivation, temperament, will power, focus, persistence, good work habits)
6. What has been the role of your family in supporting your talent development?
7. How did your family support you during your K-12 educational experience and in college?
8. What have been the greatest barriers to your talent development?
9. What have been the greatest facilitators to your talent development?
10. How have social or personal relationships effected your talent development, either positively or negatively?
11. What work are you engaged in now? How is your current work consistent with your ambitions and talent area?

Appendix D

Sample Interview Questions – Parents

Interview Questions – Parent of the Participant

Name _____ Date _____

Time _____

In-person _____ Phone _____

1. You have been told that your son/daughter is gifted with ADD/ADHD. What has this meant for your child?
2. Were there any specific opportunities your son/daughter had in college that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)
3. Were there any specific opportunities your son/daughter had in elementary, middle or high school that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honors programs, mentorships, internships, nominations to special programs, etc.)
4. What do you feel are your son/daughter's greatest talents or his/her area of talent? Has his/her giftedness or ADD/ADHD had an effect on the realization or pursuit of that talent? How? (Probes: practicing your talent, advancing your talent through learning, making connections with people in the talent field)
5. How have internal characteristics impacted your son/daughter's talent development? (Probes: motivation, temperament, will power, focus, persistence, good work habits)
6. What has been the role of your family in supporting your son/daughter's talent development?
7. How did your family support your son/daughter during his/her K-12 educational experience and in college?
8. What have been the greatest barriers to your son/daughter's talent development?
9. What have been the greatest facilitators to your son/daughter's talent development?

Appendix E

Sample Interview Questions –Teachers

Interview Questions – Professor/Academic Advisor of the Participant

Name _____ Date _____ Time _____

In-person _____ Phone _____

1. You have been told that [participant] is gifted with ADD/ADHD. What did each of these mean for your student?

2. Were there any specific opportunities [participant] had in college that were the result of his/her giftedness or ADD/ADHD? Please describe them. (Probes: special services, modifications, honor programs, mentoring by a professor, internships, awards, etc.)

3. What do you think are [participant]'s greatest talents or his/her area of talent? Has his/her giftedness or ADD/ADHD had an effect on the realization or pursuit of that talent? How? (Probes: practicing your talent, advancing your talent through learning, making connections with people in the talent field)

4. How do you think internal characteristics have impacted [participant]'s talent development? (Probes: motivation, temperament, will power, focus, persistence, good work habits)

5. What has been the role of [participant]'s family in supporting his/her talent development?

6. What do you think have been the greatest barriers to [participant]'s talent development?

7. What do you think have been the greatest facilitators to [participant]'s talent development?

Appendix F

Daniel's Test Scores

MSCS results	SS	%tile/ SD	ACL results	1994	1999	CAT-A results	T score	%tile	Clinical risk range
Social	90	27 <-1SD	Below the norm:	SS	SS	CAT-A C Index	63	91	Mild
Competence	114	83 <1SD	Communality	31	31	CM CI	64	92	Mild
Affect	103	58 <1SD	Abasement	37	34	ATT scale	56	73	Normal
Academic	115	84 +1SD	Intracception	39	38	IMP scale	64	92	Mild
Family	96	40 <-1SD	Succorance	40	42	HYP scale	68	95	Mild
Physical	89	23 <-1SD	Counseling readiness	37	-				
			Self-control	35	40	Context			
			Creative personality	40	-	PER cluster	69	96	Mild
			Nurturing parent	38	37	A/O cluster	61	84	Mild
			Nurturance	-	31	SOC cluster	46	37	Normal
			Affiliation	-	38				
			Feminine attributes	-	29	Locus			
			Deference	-	36	INT cluster	58	80	Normal
			Military leadership	-	40	EXT cluster	69	96	Mild
			Heterosexuality	-	39				

Origence-Intellectence	40	31	CS CI	60	87	Mild
			ATT scale	56	75	Normal
Above the norm:			IMP scale	55	73	Normal
Aggression	70	61	HYP scale	66	94	Mild
Critical parent	68	63				
Masculine attrib.	60	64	Context			
Dominance	62	64	PER cluster	64	92	Mild
Free child	60	-	A/O cluster	56	73	Normal
Heterosexuality	62	-	SOC cluster	58	80	Normal
Autonomy	-	72				
Exhibition	-	67	Locus			
Creative personality	-	63	INT cluster	58	84	Normal
			EXT cluster	62	89	Mild

Interpretation of Daniel's Test Scores

MSCS results	ACL results	CAT-A results
<p>All, but one, of Daniel's scores on this self-concept scale were within the average range, although several were relative strengths and weakness compared to his other scores. Daniel compares himself to others less favorably in the areas social interactions and physical attributes. Both scores were in the low average range and relative weaknesses. He evaluates his performance in the academic domain as being above the norm and a strength for him. In conjunction with his academic self-concept, Daniel views his competence to be a relative strength (ipsative profile),</p>	<p>Daniel was fairly consistent in his high scores for both 1994 and 1999. The majority of high scores (11 out of 13) had the attributes of aggressiveness, ambition, stubbornness, insistence, self-confidence, impulsivity, and dominance. It portrays Daniel as a person who is insistent in pursuing his goals and easily frustrated when blocked by someone or something. The one outlier to this was his high score on Heterosexuality in 1994 which indicates someone who is warm and welcoming. However, in 1999, Daniel's score on that scale was below the norm which indicates</p>	<p>Daniel's scores note both a childhood and current condition of ADD/ADHD in the Mild risk range. In childhood, Daniel's symptoms were primarily impulsivity and hyperactivity affecting him personally and at school. As a child, Daniel's symptomatic behaviors were external causing him more problems in the contexts noted (personally and at school). Daniel's current symptoms are solely hyperactivity, although inattention and impulsivity are in the high end of average. Daniel reports that his symptoms are</p>

CI – Clinical Index; CM –Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

<p>although it is in the average range compared to the norm. Daniel's perception of his family is that it is an average family and has neither a positive nor negative effect on his self-concept. He perceives his affective behaviors to be average.</p>	<p>a person who is reserved and inhibited. Daniel's low scores were less consistent (7 out of 22) from the 1994 to the 1999 administrations. The profile of Daniel at 17 is a person who loves competition and is willing to stretch the rules. He prefers autonomy but this may be linked to his feelings of alienation, distrustfulness, and fears of social interaction. The profile also suggests impulsiveness and a temperamental attitude.</p>	<p>causing him difficulty only in the personal context (e.g. losing things) but continue to be expressed externally more than internally.</p> <p>Scores that would qualify as Mild clinical risk within the 90% confidence interval are CM ATT, CM INT, CS ATT, CSIMP, CS A/O, CS SOC, and CS INT. Scores that would qualify as Significant clinical risk with the 90% CI are CM IMP, CM HYP, CM PER, CM EXT, CS HYP, and CS PER.</p>
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CI – Clinical Index; CM –Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

Appendix G

Thomas's Test Scores

MSCS results	SS	%tile/ SD	ACL results	1994	1999	CAT-A results	T score	%tile	Clinical risk range
Social	83	13 -1SD	Below the norm (<40):			CAT-A CI	53	64	Normal
Competence	117	87 +1SD	Favorable	36	-	CM CI	55	72	Normal
Affect	93	33 <-1SD	Communality	34	-	ATT scale	60	86	Mild
Academic	117	87 +1SD	Abasement	36	-	IMP scale	51	56	Normal
Family	99	48 <-1SD	Nurturance	40	-	HYP scale	51	61	Normal
Physical	91	27 <-1SD	Deference	38	-				
			Military leadership	36	-	Context			
Total Scale	101	52 <+1SD	Heterosexuality	-	27	PER cluster	60	86	Mild
			Femininity	35	-	A/O cluster	60	83	Mild
			Origence-Intellectence	-	36	SOC cluster	41	14	Normal
			Masculinity	-	39				
						Locus			
			Above the norm (>59):			INT cluster	59	81	Normal
			Aggression	61	-	EXT cluster	50	52	Normal
			No. Checked	-	69				

CI – Clinical Index; CM – Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

MSCS results	SS	%tile/ SD	ACL results	1994	1999	CAT-A results	T score	%tile	Clinical risk range
						CS CI	52	59	Normal
						ATT scale	53	63	Normal
						IMP scale	51	51	Normal
						HYP scale	52	58	Normal
						Context			
						PER cluster	67	96	Mild
						A/O cluster	44	23	Normal
						SOC cluster	43	21	Normal
						Locus			
						INT cluster	50	50	Normal
						EXT cluster	54	69	Normal

CI – Clinical Index; CM – Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

Interpretation of Thomas's Test Scores

MSCS results	ACL results	CAT-A results
<p>Thomas's overall self-concept is average with two areas being strengths for him: academic and competence. Thomas perceives himself as being above average in his ability to solve problems, attain goals and live effectively within his environment. He also sees himself above average in academic achievement and school related activities. In the other domains, except one, Thomas views himself as comparable to his peers in terms of family interactions, physical attributes and affective behaviors. The one area that</p>	<p>Thomas's profiles on the two administrations of the ACL are slightly different. Although both indicate a person uneasy with social situations who fears intrapersonal relationships, as a sixth grader Thomas was more aggressive, competitive, and assertive with a preference for autonomy. In contrast, as a 12th grader Thomas registered as kind and gentle, and a person who values inner feelings. He was also eager to explore the world but who is impulsive and inconsistent in how they react to it. The</p>	<p>Thomas's scores on the CAT-A do not indicate symptoms of ADD/ADHD at the clinical range in either childhood or currently. Only four subscales (CM ATT, CM PER, CM A/O, CS PER) registered in the Mild clinical risk range. A lack of indication of symptoms on the CAT-A could be the result of three options: (1) Thomas has minimized the effects of his symptoms on this self-report; (2) Thomas's symptoms have responded to medical treatment and learned compensatory strategies; or (3) Thomas was</p>

CI – Clinical Index; CM –Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

<p>Thomas has a moderately negative self-concept is socially. This indicates that Thomas may not view his social interactions as positive or see himself as being able to successfully interact with others.</p>	<p>impulsivity is tempered, though,, by a tendency to plan ahead and abide by social conventions.</p>	<p>misdiagnosed as a child. The results indicate that Thomas was experiencing mild inattention symptoms in school and personally when he was a child and now experiences mild problem behaviors personally (e.g. losing things).</p>
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Appendix H

Karen's Test Scores

CAT-A results	<i>T</i> score	%tile	Clinical risk range
CAT-A CI	65	96	Mild
CM CI	62	90	Mild
ATT scale	79	>99	Significant
IMP scale	49	43	Normal
HYP scale	51	51	Normal
Context			
PER cluster	64	91	Mild
A/O cluster	58	78	Normal
SOC cluster	62	94	Mild
Locus			
INT cluster	63	93	Mild
EXT cluster	60	86	Mild

CI – Clinical Index; CM – Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

CAT-A results	<i>T</i> score	%tile	Clinical risk range
CS CI	67	95	Mild
ATT scale	77	>99	Significant
IMP scale	71	99	Significant
HYP scale	37	9	Normal
Context			
PER cluster	69	98	Mild
A/O cluster	62	89	Mild
SOC cluster	64	93	Mild
Locus			
INT cluster	56	77	Normal
EXT cluster	76	99	Significant

CI – Clinical Index; CM – Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

Interpretation of Karen's Test Scores

CAT-A results

Karen's score on the CAT-A Clinical Index indicates symptoms of ADD/ADHD present in both childhood and currently at the Mild clinical risk range. Her subscale scores range from the Mild to Significant risk range. In childhood, Karen was experiencing significant inattention problems such as daydreaming, distractibility, and forgetfulness. The symptoms effected her personally (e.g. self-regulation) and in interpersonal and social settings. Karen experienced these symptoms both internally, through her feelings or sensations, and externally, in behaviors that could be seen by others.

Currently, Karen's has indicated overall symptoms in the Mild risk range with significant symptoms of inattention and impulsivity. Karen experiences these symptoms in all three settings, personally, occupationally, and socially. Her rating of a Significant clinical risk on the EXT scale indicates that she perceives her symptoms to be responsible for behaviors that are problems for those around her, parents, friends and coworkers.

Appendix I

Sean's Test Scores

CAT-A results	<i>T</i> score	%tile	Clinical risk range
CAT-A CI	77	99	Significant
CM CI	67	94	Mild
ATT scale	49	43	Normal
IMP scale	77	99	Significant
HYP scale	70	96	Significant
Context			
PER cluster	72	98	Significant
A/O cluster	60	83	Mild
SOC cluster	66	93	Mild
Locus			
INT cluster	62	87	Mild
EXT cluster	70	96	Significant

CI – Clinical Index; CM –Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

CAT-A results	<i>T</i> score	%tile	Clinical risk range
CS CI	83	>99	Very Significant
ATT scale	72	98	Significant
IMP scale	83	>99	Very Significant
HYP scale	74	99	Significant
Context			
PER cluster	79	>99	Significant
A/O cluster	81	>99	Very Significant
SOC cluster	78	>99	Significant
Locus			
INT cluster	83	>99	Very Significant
EXT cluster	79	>99	Significant

CI – Clinical Index; CM – Childhood Memories; CS – Current Symptoms; ATT- Inattention; IMP – Impulsivity; HYP – Hyperactivity; PER – Personal; A/O – Academic/Occupational; SOC – Social; INT – Internal; EXT – External

Interpretation of Sean's Test Scores

CAT-A results

Sean's scores on the CAT-A indicate symptoms of ADD/ADHD in both childhood and currently. In childhood, Sean was experiencing symptoms in the Mild clinical risk range. Sean's scores indicate that inattention was not a problem for him but hyperactivity and impulsivity were significant problems. During childhood his symptoms effected him in all three contexts (Personal, Academic/Occupational, Social) but were a significant problem to him personally (e. g. self-regulation). Sean perceived his behaviors to have a mild effect in social and academic settings yet indicated in his answers that they were significantly more external, seen by others.

Currently, Sean's symptoms of ADD/ADHD are at a Very Significant risk range. All of his subscale scores on the Current Symptoms scale were in the Significant to Very Significant risk range. Sean has indicated through his self-report that his impulsivity is causing him the most difficulty now especially in the academic setting (medical school). This is causing him to experience a great deal of internal turmoil related to his symptoms.

Appendix J

Data Sources and Key Points for Daniel

Relationship of Data Sources, Key Points, and Themes to the Research Questions for Daniel (Case 1)

Research Question	Data source	Key points
1. Effects of ADD/ADHD & Giftedness	CAT-A, Interviews/emails (Mother and Daniel), DSTY questionnaires	1. ADD/ADHD was the primary concern for Daniel and his parents in childhood and still is today.
	MSCS, Interviews/emails (Mother, Daniel, Professor, RA), DSTY school records	2. Daniel is highly gifted in math and computer sciences, and is confident in his skills, which opened up accelerative options to him and has allowed him to pursue a career as a computer science entrepreneur.
	CAT-A, MSCS, ACL, Interviews/emails (Daniel, Mother, RA)	3. Daniel feels socially isolated which may be due to his ADD/ADHD symptoms of hyperactivity and impulsivity.
	CAT-A, Interviews/emails (Daniel, Mother, Professor, RA), DSTY Questionnaires	4. Daniel's ADD/ADHD symptoms (impulsivity, hyperactivity, distractibility) have hampered his studying and productivity.
2. Effects of internal	MSCS, ACL, Interviews/emails	1. Daniel has self-concept in the above average to average

Research Question	Data source	Key points
characteristics	(Daniel, Mother, RA)	range and feels competent in managing his life and achieving his goals.
	ACL, Interviews/emails (Daniel, Mother), CAT-A, MBTI	2. Daniel is determined, ambitious, creative, aggressive, assertive in attaining his goals, and easily frustrated when blocked from achievement.
	ACL, MSCS, CAT-A, Interviews/emails (Daniel, Mother)	3. Daniel is reserved and socially inhibited possibly due to rejections from peers which may have been due to his ADD/ADHD symptoms.
	CAT-A, DSTY Questionnaires, Interviews/emails (Daniel, Mother, Professor, R.A).	4. Daniel has difficulty with self-management skills such as discipline and will power.
3. Effects of different	DSTY Questionnaires,	1. Acceleration options were limited, random, and inconsistent

Research Question	Data source	Key points
school settings	Interviews/emails (Daniel, Mother)	in elementary and middle school.
	DSTY Questionnaires, school records, Interviews/ emails (Daniel, Mother)	2. Acceleration options in high school offered higher quality programs with more rigorous curriculum in Daniel's talent area.
	Interviews/emails (Daniel, Mother, Professor, RA)	3. University offered the most challenging curriculum, targeting and enriching Daniel's talent.
4. Role of family	Interviews/emails (Daniel, Mother), DSTY Questionnaires	1. Daniel's mother stopped work and dedicated herself to his education and well-fare.
	Interviews, emails: (Daniel, Mother), DSTY	2. Daniel's family income was sufficient enough to allow for

Research Question	Data source	Key points
	Questionnaires	the best medical treatment, education, training, and opportunities.
	Interviews/emails (Daniel, Mother), DSTY Questionnaires	3. Daniel perceived his family, especially his mother, to be very supportive, essential to his talent development.

Appendix K

Data Sources and Key Points for Thomas

Relationship of Data Sources, Key Points, and Themes to the Research Questions for Thomas (Case 2)

Research Question	Data source	Key points
1. Effects of ADD/ADHD & Giftedness	MSCS, Interviews/emails (Mother and Thomas), DSTY questionnaires	1. Thomas’s giftedness was the primary concern for Thomas and his parents in childhood and still is today.
	MSCS, Interviews/emails (Mother, Thomas), DSTY questionnaires and school records	2. Thomas is highly gifted in math and computer sciences, and is confident in his skills, which opened up accelerative options to him and has allowed him to pursue a career in computer technology.
	MSCS, ACL, Interviews/emails (Thomas, Mother), DSTY questionnaires	3. Thomas feels socially isolated which he believes is due to his giftedness.
	CAT-A, Interviews/emails (Thomas, Mother), DSTY Questionnaires	4. Thomas’s ADD/ADHD symptoms (inattention) were mild as a child and affected him more personally and behaviorally than

Research Question	Data source	Key points
2. Effects of internal characteristics	MSCS, ACL, Interviews/emails (Thomas, Mother)	academically. He experiences few symptoms now.
	ACL, Interviews/emails (Thomas, Mother), CAT-A, MBTI	1. Thomas has self-concept in the above average (academic, competence) to average range (overall, family) and feels competent in his ability to manage his life and achieve his goals.
	ACL, MSCS, CAT-A, Interviews/emails	2. Thomas is kind, gentle, and at times impulsive. He values inner feelings and social conventions, and is eager to explore the world. His impulsivity is tempered by a tendency to plan ahead, which may be a result of learned compensatory strategies.
		3. Thomas fears interpersonal relationships, possibly due to rejections from peers, which he believes has to do with his

Research Question	Data source	Key points
	(Thomas, Mother)	giftedness and resulting social awkwardness.
	CAT-A, DSTY Questionnaires, Interviews/emails (Thomas, Mother).	4. Thomas has difficulty with self-management skills such as discipline and will power, and finds large projects difficult to manage..
3. Effects of different school settings	DSTY Questionnaires, Interviews/emails (Thomas, Mother)	1. Acceleration options were of a high quality and advanced his talent area due to the efforts of his parents more than the elementary and middle school.
	DSTY Questionnaires, school records, Interviews/ emails (Thomas, Mother)	2. Acceleration options in high school were targeted specifically to Thomas's talent and were an individualized educational plan of rigorous acceleration developed by his parents in conjunction with the schools.

Research Question	Data source	Key points
4. Role of family	Interviews/emails (Thomas, Mother)	3. Thomas's college offered the most challenging curriculum and targeted his strengths and talents.
	Interviews/emails (Thomas, Mother), DSTY Questionnaires	1. Thomas's parents provided an emotionally and academically supportive and enriching home environment that focused on and enhanced his talents.
	Interviews, emails: (Thomas, Mother), DSTY Questionnaires	2. Thomas's family had a culture that supported intellectual endeavors.
	Interviews/emails (Thomas, Mother), DSTY Questionnaires	3. Thomas perceived his family to be very supportive, considered his father to be a mentor, and essential to his talent development.

Appendix L

Data Sources and Key Points for Karen

Relationship of Data Sources, Key Points, and Themes to the Research Questions for Karen (Case 3)

Research Question	Data source	Key points
1. Effects of ADD/ADHD & Giftedness	CAT-A, Interviews/emails (Karen, Mother), school records	1. Karen experienced ADD/ADHD –Inattention type symptoms in childhood that went undiagnosed and may have had academic consequences such as underachieving academically, being dropped from several accelerated programs and low test scores.
	I	
	CAT-A, Interviews/emails (Karen, Mother), school records, test scores	2. Karen may have been less gifted than other participants or her undiagnosed ADD/ADHD symptoms may have hampered her academic achievement.
	CAT-A, Interviews/emails (Karen, Mother)	3. Karen was placed by the school in several accelerated programs for her giftedness but was not able to keep up with the work in each situation (second grade reading, third grade math,

Research Question	Data source	Key points
2. Effects of internal characteristics	CAT-A, Interviews/emails (Karen, Mother)	seventh and eighth grade math, 10 th grade math) due to inattention and self-management deficits. She continues to struggle with these issues in her work place.
	Interviews/emails (Karen, Mother), observation	1. Karen reported a low self-concept. She does not believe she has not been successful in managing her life efficiently or achieving her goals.
	Interviews/emails (Karen, Mother)	2. Karen has a good sense of humor, is sensitive to others needs, is liked by her co-workers, and has always been well integrated socially.
		3. Karen reported a problem with procrastination and believes it is related to perfectionism.

Research Question	Data source	Key points
	CAT-A, Interviews/emails (Karen, Mother).	4. Karen has difficulty with self-management skills and finds large projects difficult to manage.
3. Effects of different school settings	Interviews/emails (Karen, Mother)	1. Karen's acceleration was inconsistent and poorly managed in elementary and middle school. Middle school did offer one acceleration option, drama, which enriched Karen's experience during that time.
	School records, Interviews/ emails (Karen, Mother)	2. Karen's acceleration in high school offered challenging courses (honors and AP courses) but no mentor or teacher, other than her middle school drama teacher in eighth and ninth grade, who became Karen's mentor/advisor or took interest in her talent development.

Research Question	Data source	Key points
4. Role of family	Interviews/emails (Karen, Mother)	3. Karen's college offered the most challenging curriculum and allowed her to explore many of her strengths and talents. The many choices were also daunting for Karen and left her feeling she never found her 'niche' or true passion.
	Interviews/emails (Karen, Mother), Interviews, emails: (Karen, Mother)	1. Karen's family of seven was emotionally supportive and loving but they were unaware of her educational needs and had a 'hands off' approach to rearing children. 2. Karen's family did not have the financial means nor was there a family or community culture that supported classes or lessons in talent areas.

Appendix M

Data Sources and Key Points for Sean

Relationship of Data Sources, Key Points, and Themes to the Research Questions for Sean (Case 4)

Research Question	Data source	Key points
1. Effects of ADD/ADHD & Giftedness	CAT-A, Interviews/emails (Sean, Mother), school records	1. Sean experienced significant symptoms of ADD/ADHD – Hyperactivity/Impulsivity type in childhood that went undiagnosed. Sean did not struggle academically (valedictorian of his class) but did experience significant difficulties personally (anxiety, fidgeting, frustration). Sean continues to experience significant symptoms but they are now interfering with his academics (medical school).
	I	
	Interviews/emails (Sean, Mother)	2. Sean experienced social isolation that he believes was a result of his giftedness. He sought a community of intellectual peers in math competition programs, which also served to advance his talent in math.
	CAT-A, Interviews/emails (Sean, Mother)	3. Due to his academic achievement, Sean was accepted on full scholarship to a university and entered the honors program

Research Question	Data source	Key points
2. Effects of internal characteristics	CAT-A, Interviews/emails (Sean, Mother)	<p>where he received advanced course work and research/mentoring opportunities. He also found a large community of intellectual peers and felt as if he finally fit in somewhere.</p>
	Interviews/emails (Sean, Mother)	<p>1. Sean and his mother reported relentlessness in pursuit of his goals. He had a focus on goal setting and a determination to achieve his goals by his timeline. This relentlessness may be linked to his hyperactivity or the perseverance found in individuals with ADD/ADHD.</p> <p>2. Sean demonstrates persistence, will power, and tremendous effort in his endeavors and in obtaining his goals. This may seem in contrast to a diagnosis of ADD/ADHD but it could be due to his childhood classification of Hyperactivity/Impulsivity</p>

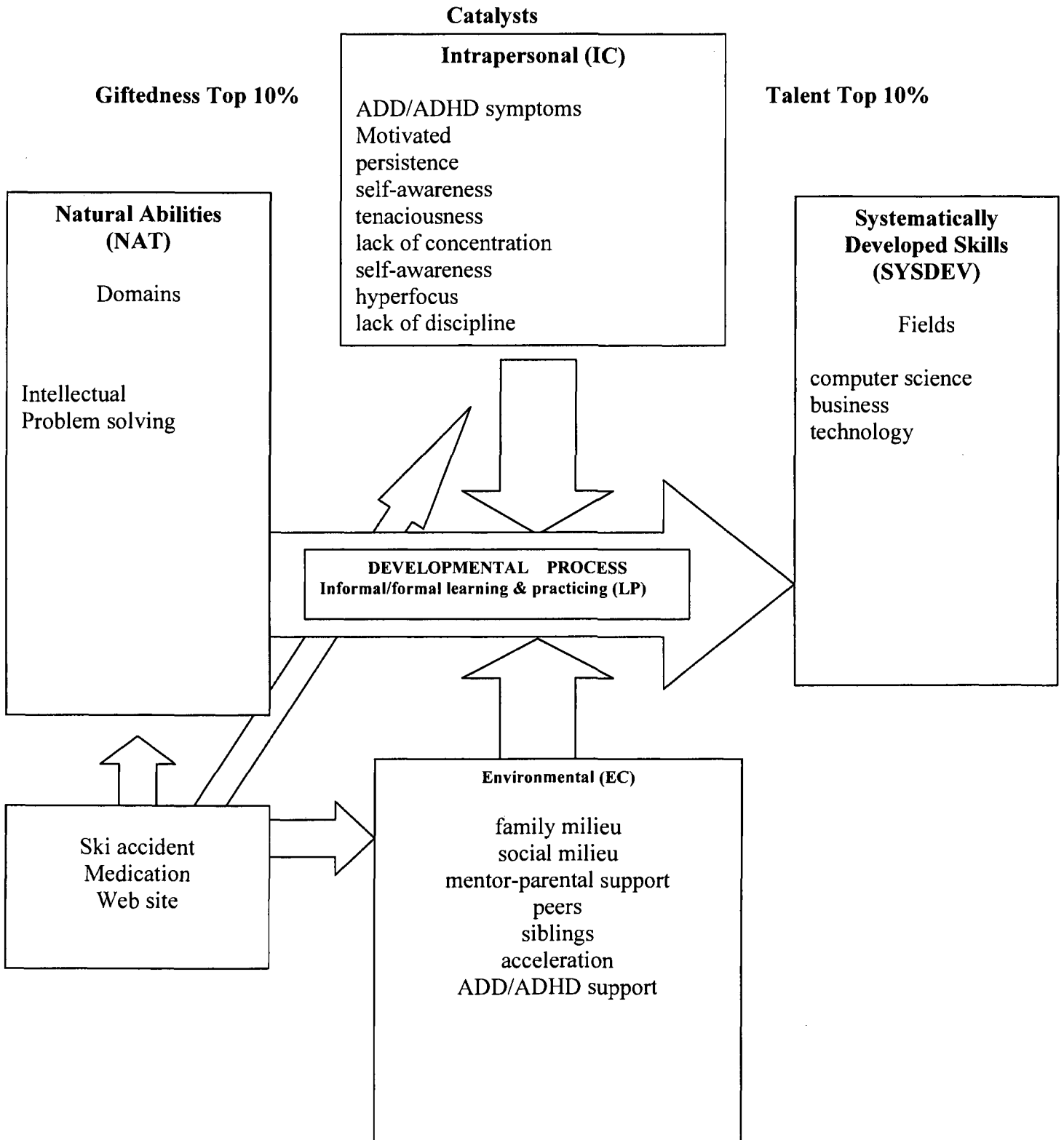
Research Question	Data source	Key points
		<p>Type. Symptoms of this type of ADD/ADHD deal more with issues of communication and behaviors. Now that he is experiencing symptoms of the Inattention Type, Sean is having difficulty with persistence and will power.</p>
	<p>Interviews/emails (Sean, Mother), observation</p>	<p>4. Sean is amiable, personable, an extrovert and very capable in social interactions.</p>
<p>3. Effects of different school settings</p>	<p>Interviews/emails (Sean, Mother)</p>	<p>1. Sean's was not challenged in the elementary and middle school gifted programs in his rural community. Middle school offered one acceleration option, math competitions, which enriched Sean's talent.</p>
	<p>School records, Interviews/ emails (Sean, Mother)</p>	<p>2. Sean's acceleration in high school offered challenging courses (honors and AP courses) but no mentor or teacher, who</p>

Research Question	Data source	Key points
		<p>became Sean's mentor/advisor or took interest in his talent development.</p>
	Interviews/emails (Sean, Mother)	<p>3. Sean's college offered the most challenging curriculum and allowed him to explore many of his strengths and talents. He changed majors several times after mastering each subject domain on a superficial level. He did have a mentor in college and engaged in innovative research which resulted in a published paper.</p>
4. Role of family	Interviews/emails (Sean, Mother),	<p>1. Sean's family of four was consistently supportive of Sean and aware of his educational needs in terms of his giftedness. This was especially important due to his feelings of isolation in his rural community.</p>

Appendix N

Conceptual Display for Daniel

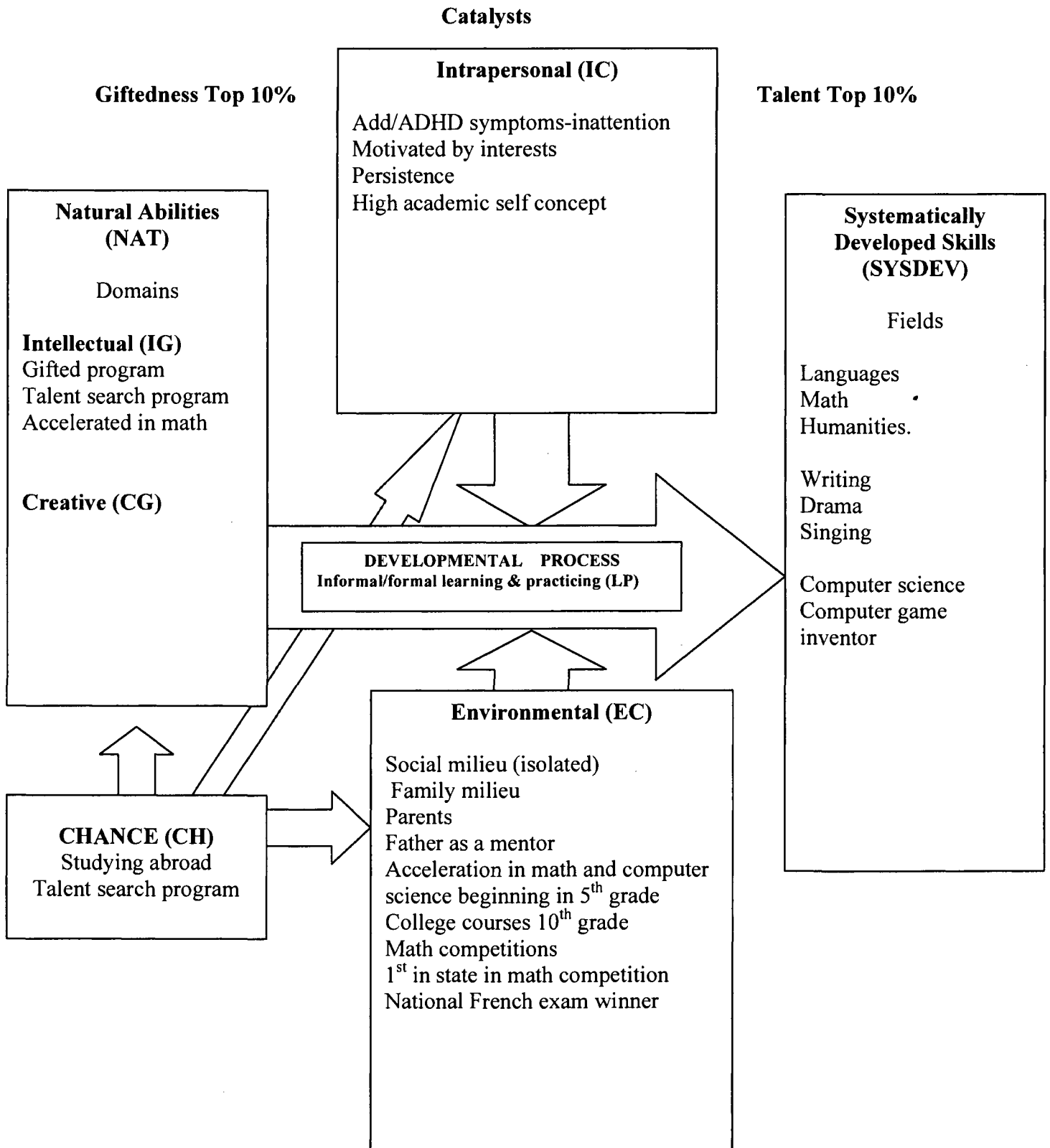
Daniel: Gagné's Differentiated Model for Giftedness and Talent (2002)



Appendix O

Conceptual Display for Thomas

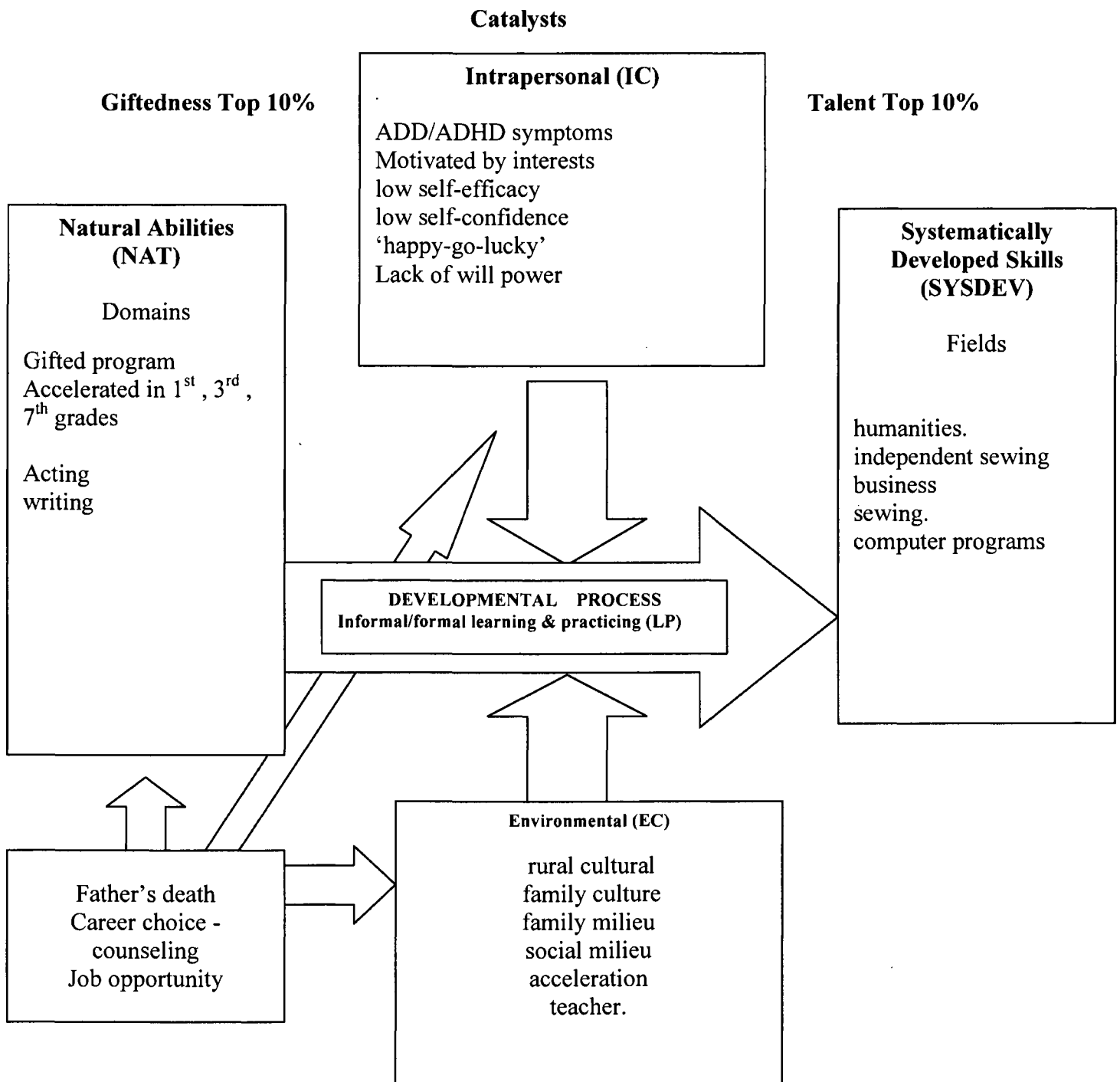
Thomas: *Gagné's Differentiated Model for Giftedness and Talent* (2002)



Appendix P

Conceptual Display for Karen

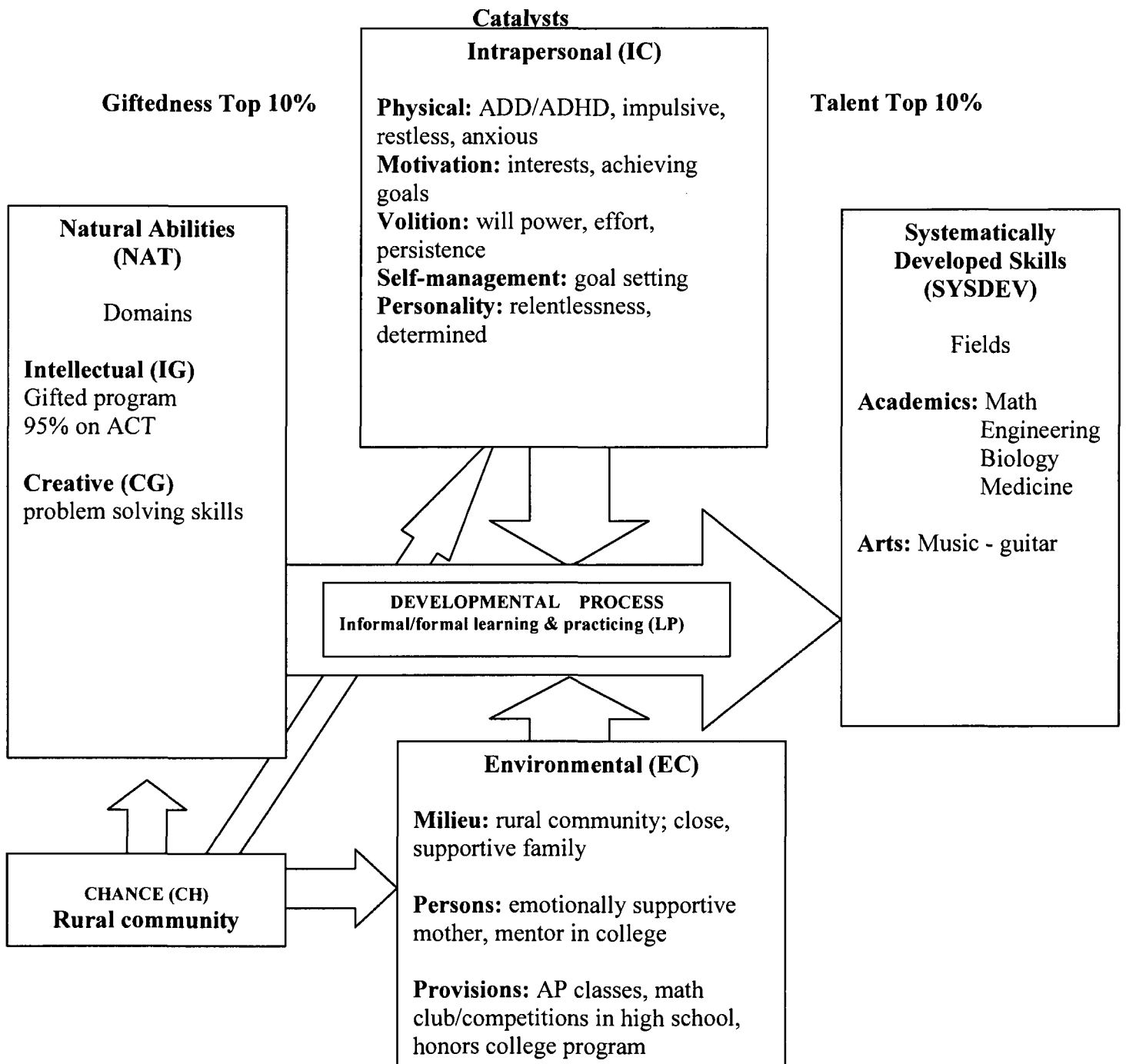
Karen: Gagné's Differentiated Model for Giftedness and Talent (2002)



Appendix Q

Conceptual Display for Sean

Sean: Gagné's Differentiated Model for Giftedness and Talent (2002)



Appendix R

Variable Matrix for Daniel

Sources	Facilitators to TD	Barriers to TD
Daniel	Parental support (mother/mentor)-educationally, financially, for disability Hyper focusing – ‘prodigious amount of work’ Intellect-ability to absorb things Private school education Building relationships with people	Impulsivity Distractibility Frustration Inattention/concentrating Lack of discipline Inability to start complex projects Poor judgment Poor study skills Big fish little pond syndrome
Mother	Mother Persistence Tenacious nature	Symptoms of ADD/ADHD Anger/aggressiveness perseveration
DSTY	Loyalty (ACL, MBTI) Academic achievement High academic self concept (MSCS)	Impulsivity Social relationships (MSCS) Aggressiveness (ACL)
Professor	Above average math skills	Hyperactivity Can go off on a tangent – off base at times
Advisor	Self-awareness –playing to his strengths	Procrastination Hyperactivity /distratibility(wandering halls)

	ADD/ADHD	GT	Internal Catalysts	Environmental catalysts
Barriers to TD	Impulsivity* Distractibility* Frustration Inattention/concentrating Lack of discipline Inability to start complex projects Poor judgment	Big fish little pond syndrome Above average math skills	Can go off on a tangent – off base at times	Social relationships

	ADD/ADHD	GT	Internal Catalysts	Environmental catalysts
	Poor study skills Symptoms of ADD/ADHD Anger/aggressiveness* Perseveration Procrastination Hyperactivity */distratibility(wandering halls)			
Facilitators to TD	Hyper focusing – ‘prodigious amount of work’		Persistence High academic self concept (MSCS) Tenacious nature Building relationships with people Self-awareness – playing to his strengths Loyalty (ACL, MBTI) Intellect-ability to absorb things	Mother Parental support (mother/mentor)- educationally, financially, for disability Private school education

Appendix S

Variable Matrix for Thomas

Source	Facilitated TD	Barriers to TD		
Thomas	Creativity Language skills Computer skills Problem solving abilities Determination-“Just keep putting one foot in front of the other” Multitasking/distractibility interest	ADD/ADHD inhibits focusing on work Lack of will-power High distractibility Procrastination		
Mother	Innate intelligence for languages and computers Education – formal and informal “Family’s culture of support for intellectual endeavor” interest	Lack of organization Lacked persistence in writing papers Lacked Impulse control		
DSTY	Math team/competitions Interest - “Do math puzzles for fun” Acceleration in math	“I would get rid of my Attention Deficit Disorder because it sometimes gets me in trouble” Concentrating “I’d make myself less impulsive.” trouble controlling his emotions turning in work on time		
	ADD/ADHD	GT	Environmental catalysts	Internal Characterisitcs
Barriers	“I would get rid of my Attention Deficit Disorder because it sometimes gets me in trouble” Concentrating “I’d make myself less impulsive.” trouble controlling his emotions turning in work on time			

	ADD/ADHD	GT	Environmental catalysts	Internal Characteristics
	Lack of organization Lacked persistence in writing papers Lacked Impulse control ADD/ADHD inhibits focusing on work Lack of will-power High distractibility Procrastination			
Facilitators	Multitasking/distractibility	Creativity Language skills Computer skills Problem solving abilities Innate intelligence for languages and computers	Math team/competitions Acceleration in math	Determination-“Just keep putting one foot in front of the other” Interest - “Do math puzzles for fun

Appendix T

Variable Matrix for Karen

Source	Facilitated TD	Barriers to TD
Karen	Friend Teacher Enforced deadlines	Distractibility* Inattention Easily discouraged Lack of will power Procrastination* Perfectionism Low self-esteem* 'hit a wall' Lack of money for special lessons/classes* Multipotentiality
Mother Observation	Good teachers Empathetic Well-liked Socially capable	Lack of money * Procrastination* Distractibility* Low self-esteem*

	ADD/ADHD	GT	Environmental catalysts	Internal Characteristics
Barriers	Distractibility Inattention Lack of will power Procrastination hit a wall'	Multipotentiality	Lack of money for special lessons/classes	Easily discouraged Perfectionism Low self-esteem
Facilitators			Friend Teacher; Good teachers Enforced deadlines	Empathetic Friendly Socially capable

Appendix U

Variable Matrix for Sean

Source	Facilitated TD	Barriers to TD		
Sean	Able to absorb material quickly Expecting excellence in everything he does Mentor/research Challenge of college Honors program Meeting intellectual peers at college	Easily distracted and irritated Anxious and restless during lectures Difficulty sitting still and absorbing large volumes of material Writing process is difficult and slow Some academic difficulties –memorization, analyzing literature Being hypercritical, perfectionistic Lack of exciting /challenging curriculum		
Mother	“Fearless dare devil” “Immerse himself in a specific goal until it was met” Goal setting abilities Determination Relentlessness Ability to absorb information quickly-photographic memory Cognitive skills Build relationships with people to help him achieve his goals			
Observation	High energy Self-confidence determination	Risk taking Impulsivity Dangerous		
	ADD/ADHD	GT	Environmental catalysts	Internal Catalysts
Barriers	Impulsivity Dangerous Risk taking Easily distracted and irritated	Being hypercritical, perfectionistic	Lack of exciting /challenging curriculum	“Fierceness in pursuing the talent in a structured form”

	ADD/ADHD	GT	Environmental catalysts	Internal Catalysts
	Anxious and restless during lectures Difficulty sitting still and absorbing large volumes of material Writing process is difficult and slow Some academic difficulties – memorization, analyzing literature			
Facilitators	High energy	Ability to absorb information quickly- photographic memory Cognitive skills	Mentor/research Challenge of college Honors program Meeting intellectual peers at college	Self-confidence Determination Fearless dare devil” Immerse himself in a specific goal until it was met” Goal setting abilities Determination Relentlessness Build relationships with people to help him achieve his goals

Appendix V

Cross Case Analysis

case	Facilitated TD	Barriers to TD
Daniel	<p>“Me” -Parental support (mother/mentor)- educationally, financially, for disability</p> <p>Hyper focusing –‘prodigious amount of work’</p> <p>Intellect-ability to absorb things</p> <p>Private school education</p> <p>Building relationships with people</p> <p>Persistence</p> <p>Tenacious nature</p> <p>Loyalty (ACL, MBTI)</p> <p>Academic achievement</p> <p>High academic self concept (MSCS)</p>	<p>Impulsivity</p> <p>Distractibility- “wandering halls”</p> <p>Frustration</p> <p>Inattention/concentrating</p> <p>Lack of discipline</p> <p>Inability to start complex projects</p> <p>Poor judgment</p> <p>Poor study skills</p> <p>Anger/aggressiveness</p> <p>Perseveration</p> <p>Hyperactivity</p> <p>Procrastination</p> <p>Can go off on a tangent – off base at times</p> <p>Big fish little pond syndrome</p>

case	Facilitated TD	Barriers to TD
Thomas	Creativity	ADD/ADHD inhibits focusing on work
	Problem solving abilities	Lack of will-power
	Determination-“Just keep putting one foot in front of the other”	High distractibility
	Multitasking/distractibility	Procrastination
	Interest	Lack of organization - turning in work on time
	Innate intelligence for languages and computers	Lacked persistence in writing papers
	Education – formal and informal	Lacked Impulse control- “I’d make myself less impulsive.”
	“Family’s culture of support for intellectual endeavor”	“I would get rid of my Attention Deficit Disorder because it sometimes gets me in trouble”
	Math team/competitions	Concentrating
	“Do math puzzles for fun”	Trouble controlling his emotions
	Acceleration in math	
	High academic self-concept (MSCS)	

case	Facilitated TD	Barriers to TD
Karen	Friend Teacher/ Good teachers Enforced deadlines Empathetic Well-liked Socially capable	Distractibility* Inattention Easily discouraged Lack of will power Procrastination* Perfectionism Low self-esteem* 'hit a wall' Lack of money for special lessons/classes* Multipotentiality

case	Facilitated TD	Barriers to TD
Sean	Able to absorb material quickly	Easily distracted and irritated
	Expecting excellence in everything he does	Anxious and restless during lectures
	Mentor/research	Difficulty sitting still and absorbing large volumes of material
	Challenge of college Honors program	“Fierceness in pursuing the talent in a structured form”
	Meeting intellectual peers at college	Writing process is difficult and slow
	Fearless dare devil”	Some academic difficulties –memorization, analyzing
	“Immerse himself in a specific goal until it was met”	literature
	Goal setting abilities	Being hypercritical, perfectionist
	Determination	Lack of exciting /challenging curriculum
	Relentlessness	“Fierceness in pursuing the talent in a structured form”
	Cognitive skills	Risk taking
	Build relationships with people to help him achieve his goals	Impulsivity
	High energySelf-confidence	

Appendix W

Themes Derived from Three Cases or More

Facilitators - minimum of 3 cases	Barriers – minimum of 3 cases
Family/Parental /mentor support	ADD/ADHD symptoms
Determination	
Intellect, cognitive abilities	
Self-confidence, high academic self-concept	

Appendix X

Data Sources by Case

Participant	Data collected	Data sources
Daniel	Interview transcripts	Participant, parent, professor, advisor
	Interview emails	Participant, advisor
	DSTY records (MSCS, ACL, school records)	Participant
	DSTY questionnaires	Participant, parents
	CAT-A	Participant
Thomas	Interview transcripts	Participant, parent
	Interview emails	Participant, parent
	DSTY records (MSCS, ACL, school records)	Participant
	DSTY questionnaires	Participant, parents
	CAT-A	Participant
Karen	Interview transcripts	Participant, parent
	Interview emails	Participant, parent
	Observation/interview	Participant
	CAT-A	Participant
Sean	Interview transcripts	Participant, parent
	Interview emails	Participant, parent
	Observation/interview	Participant
	CAT-A	Participant