Spring 3-2018

# Examination of the Educational Impact of Delayed Identification of Gifted Students

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# Examination of the Educational Impact of Delayed Identification of Gifted Students

by

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March 2018

A Dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

Examination of the Educational Impact of Delayed

Identification of Gifted Students

by

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This Dissertation has been approved as partial fulfillment

of the requirements for the degree of

Doctor of Education

Lindenwood University, School of Education

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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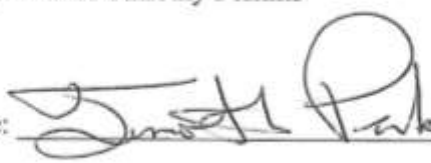
Signature:  Date: 2/1/18

Acknowledgments

I would like to thank the dissertation committee for their guidance through this process. Without dedicated professionals such as them, none of this would have been possible. I want to thank Dr. Terry Reid for patiently answering all my questions. Special thanks go to Dr. Julie Williams whose constant advice, positive outlook, and dedication made the entire process doable.

I want to thank Dr. Derek Hutsel for his role in initiating my doctoral pursuit in the first place. I also want to thank Margaret Wood for being my go-to data guru. Her help in securing the data and keeping records confidential made everything possible. Finally, I would like to thank my family members who encouraged and supported me throughout the entire process. With a special thanks to my wife, Malina. Thank you for not letting me quit, and thank you for being my biggest supporter throughout this process. Thank you all.

## Abstract

Gifted programming provides many children with an opportunity to reach their potential (Olszewski-Kubilius & Thomson, 2015). For years, gifted studies have been underfunded (Azano, Callahan, Missett, & Brunner, 2014). A lack of research into gifted programming has left glaring holes in the current understanding of best practices (Plucker & Callahan, 2014). This study included an examination of gifted programming from the standpoint of cognitive theory. The researcher examined archival data from School District A to determine students' overall academic success when compared to the number of years spent in gifted programming. The data yielded a negative correlation between years spent in gifted programming and ACT score, class rank, and GPA. The data also showed a positive correlation between high school attendance and years spent in gifted programming at School District A. The findings demonstrate the methods used in this study may serve as a useful evaluative tool for evaluating gifted programs. These findings may inform administrative decisions pertaining to resource allocation and curriculum.

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## Chapter One: Introduction

The high school dropout rate nationwide is 5.9%, and surprisingly, as many as 20% of all dropouts may be gifted students (National Center for Education Statistics [NCES], 2017; Zabloski, 2010). Public school students in America face many challenges, and gifted students are no exception. Gifted students often confront a myriad of problems and challenges not recognized by others (Gubbels, Segers, & Verhoeven, 2014). Perhaps due to accelerated cognitive ability, gifted students may experience difficulty relating to peers (King, Schanding, & Elmore, 2015). For gifted students, cognitive ability may develop before emotional maturity, and sometimes cognitive ability develops in uneven or confusing ways (Gubbels et al., 2014).

Sometimes gifted students are bored in the classroom (Adams, 2015). Dias Carvalho and Cruz (2017) cited Guenther, who noted a quick and curious mind has to stand a lot of tedium in a typical classroom. In many cases, gifted students may not develop good study skills and may suffer when academic material increases in difficulty (Conejeros-Solar & Gómez-Arízaga, 2015). It is for these reasons, amid a plethora of others, gifted curriculum has been developed (Cooper, 2011).

Gifted curriculum has been shown to improve academic outcomes for gifted students (Olszewski-Kubilius & Thomson, 2015). Despite this, there is resistance among some teachers and policymakers to develop further or to mandate gifted education (Baker, 2001). The academic outcomes of students who have been identified early in their scholastic careers were compared to the outcomes of gifted students identified later. This study examined the academic indicators of students who participated in gifted education programs for varying durations.

The background of the study is presented in this chapter; historical and modern research concerning gifted education are discussed. In Chapter One, the ways in which the theory of cognitive development relates to gifted education are examined. The theoretical framework of this study included cognitive theory and sensitive learning periods. In this chapter, the problem and importance of the study are offered, specifically how early identification of gifted students may be critical to their cognitive development. The research questions are listed, key terms of the study are defined, and potential limitations of the study are identified.

## Background of the Study

**History of gifted education.** Gifted education has had an interesting history, beginning hundreds if not thousands of years ago (Plucker & Callahan, 2014). Early researchers treated giftedness as a near-mystical situation (Lo & Porath, 2017). Giftedness was not studied in a systematic way before 1920 and was viewed with superstition, with giftedness often speculated as a neurosis (Lo & Porath, 2017). The invention of the intelligence test saw the emergence of an educational movement designed to recognize and develop giftedness through the educational process (Lo & Porath, 2017). The process of gifted identification has grown due to social constructivism and critical theory (Lo & Porath, 2017). In modern social constructivism, giftedness is viewed not as a measurable prediction, but as a goal achievable by all (Lo & Porath, 2017).

In ancient times, education was only available to the wealthy, but many recognized that potential knew no economic bounds (Lo & Porath, 2017). Plato described those with superior intellect as gold individuals (Lo & Porath, 2017). Plato

advocated for these gold individuals to receive an education in science, philosophy, and physics to increase their leadership potential (Lo & Porath, 2017). Similarly, Confucius believed education should be available for all, with programs designed to accommodate differences for individuals (Lo & Porath, 2017).

It was not until Comte wrote about the three stages of intellectual progress in the early 1700s that people began to understand intellectual progress common to all (Lo & Porath, 2017). In ancient times, education was only available to the wealthy, but many recognized potential knew no economic bounds (Lo & Porath, 2017). Comte believed people went through three stages of development (Lo & Porath, 2017). According to Comte, in the first stage, people viewed the world through superstition, followed by an abstract stage in which people appealed to abstract forces to understand the world, and finally through scientific thinking (Lo & Porath, 2017).

Comte's theories paralleled the understanding of gifted individuals (Lo & Porath, 2017). First, people viewed giftedness as a mythical proposition, and later, people conceptualized giftedness through more abstract lenses such as aptitude and neurosis, and finally through investigation and measurement, giftedness came to be understood through a scientific lens as a cognitive state capable of being developed and nurtured with careful forethought (Lo & Porath, 2017). The modern scientific study of gifted education began in 1892 with Galton's *Hereditary Genius* (McCredie, 2017). In *Hereditary Genius*, Galton proposed that, like height, eye color, and other phenotypes, ability and advanced ability are hereditary (McCredie, 2017). Galton then suggested mitigating environmental factors and attempted to calculate the effect of education upon those individuals he called genius (McCredie, 2017). Within his study, Galton promoted the idea that with

education, the gifts of the talented are enhanced or allowed to reach a higher potential (McCredie, 2017).

Other early examinations of gifted education included the works of Hollingsworth and Terman (Campbell & Feng, 2011). Hollingsworth and Terman, who independently performed their research in 1926, examined outcomes of students who were identified with high intelligence quotients (IQs) (Campbell & Feng, 2011). Hollingsworth conducted his studies in New York, while simultaneously Terman examined students across the nation in California (Campbell & Feng, 2011). Terman's longitudinal study revealed individuals with high IQs tend to have more success than those with lower IQs (Campbell & Feng, 2011). A common belief of Terman's time was that gifted children were weak, socially awkward, and behind their peers (Campbell & Feng, 2011). Terman's findings repudiated this mistaken belief (Campbell & Feng, 2011).

Several years later, in 1999, Michael Howe found outcomes associated with individuals with high IQs also varied by opportunity (Campbell & Feng, 2011). Educators began to cultivate students with enhanced capabilities (Campbell & Feng, 2011). For example, by 1940, bright students in Cleveland, Ohio, were enrolled in learning centers designed to fit their unique needs (VanTassel-Baska & Fischer Hubbard 2016). Data from these early gifted programs were collected, but the data were seldom translated into journals or used to design further programming (VanTassel-Baska & Fischer Hubbard 2016).

Olszewski-Kubilius and Thomson (2015) adhered to a talent development perspective on gifted programming. Talent development, as it pertains to gifted education, refers to the deliberate cultivation of existing ability in a specific domain

(Olszewski-Kubilius & Thomson, 2015). From the lens of talent development, psychosocial and psychological skills should be developed through gifted programming (Olszewski-Kubilius & Thomson, 2015). The curriculum can be engineered to develop the growth of psychosocial traits (Olszewski-Kubilius & Thomson, 2015). The well-being of gifted students is benefited by discussing the stresses, rejection, isolation, and uncomfortable differentness often felt by gifted youth (Olszewski-Kubilius & Thomson, 2015). Educators should enlist counselors, school psychologists, and social workers to help gifted students reach their potential and avoid the pitfalls associated with giftedness such as perfectionism, anxiety, or shyness (Olszewski-Kubilius & Thomson, 2015). Anxiety and self-efficacy are significant variables in predicting success in math (Cheema & Galluzzo, 2013).

In the late 1980s and into the 1990s, gifted education shifted focus from identification and labeling to recognizing and nurturing the individual talents of students (Olszewski-Kubilius & Thomson, 2015). Teachers began to look beyond IQ scores and identified non-cognitive traits (Olszewski-Kubilius & Thomson, 2015). Olszewski-Kubilius and Thomson (2015) spoke of a change toward serving under-identified and underrepresented students. These students, often from socioeconomically disadvantaged groups, had been primarily ignored by educators of gifted children (Olszewski-Kubilius & Thomson, 2015). A push to develop new identification methods yielded gifted students who were atypical of the type recognized half a century earlier by experts such as Terman and Hollingsworth, but the curriculum and instructional changes came much slower and are only now being embraced (Olszewski-Kubilius & Thomson, 2015).

New York and San Diego offer some of the oldest continually run gifted programs in the country (VanTassel-Baska, 2010). Gifted programs in these two cities have been used as prototypes for modern gifted programs (VanTassel-Baska, 2010). In 1958, a national conference on gifted education was held (Jolly, 2014). The nation, on edge after the Soviet launch of the first human-made satellite, Sputnik, was focused on the academically talented as a means to catch up to the Soviets (Jolly, 2014). During the conference, attendees noted American society had an anti-intellectual viewpoint that needed to be overcome (Jolly, 2014). John Stalnaker, president of the National Merit Scholarship Corporation, asserted salaries for K-12 teachers showed a lack of respect for the profession (Jolly, 2014). Stalnaker believed education should be viewed as a foundation to identify students with academic talent and proposed the early identification of gifted and talented individuals (Jolly, 2014). President of the Educational Testing Service, Henry Chauncey, described "ability as potential; but if it hasn't been developed, it won't do them much good" (as cited in Jolly, 2014, p. 120).

**Modern gifted education.** The problems facing gifted education today are the same as those encountered in past years and include concerns with identification, choices in services and programs, the emotional well-being of students, and resource allocation (Jolly, 2014). Allen et al. (2013) tested the Classroom Learning Assessment Scoring System and found a solid framework for assessing classroom interactions including emotional and relational support. Allen et al. (2013) linked emotional support to academic success at all ages and stages of development. Most research on gifted education today focuses on effective practices, but because of many issues and a general lack of causal research, there continues to be much ambiguity (Plucker & Callahan,

2014). Still, some areas have been adequately researched (Plucker & Callahan, 2014).

At the 1958 conference on gifted education, Lyle Spencer, Science Research Association President, described how America's natural support of the underdog compounds the issue of gifted education, because the nation is more likely to support a student laboring to overcome a malady or disadvantage than one who is already bright and capable (Jolly, 2014). Spencer was making note of the tendency in America to value the success of those who overcome great odds (Jolly, 2014). America sees itself as a nation where the meek and lowly can rise to prominence, and Spencer pointed out this belief is fundamentally at odds with the idea of supporting gifted students (Jolly, 2014). There is a lack of research, because there is a lack of advocacy for gifted education (Plucker & Callahan, 2014).

Acceleration and enrichment are the two common threads in gifted education curriculum (Olszewski-Kubilius, Steenbergen-Hu, Rosen, & Thomson, 2017). One area which has drawn much attention, but little in the way of implementation, is acceleration (Plucker & Callahan, 2014). Most schools are age-based (Plucker & Callahan, 2014). Students progress through the curriculum along with their age peers instead of their intellectual peers (Plucker & Callahan, 2014). Acceleration has been shown to be effective when students are allowed to move through curriculum at their own pace (Plucker & Callahan, 2014). Some of the newest research conducted on gifted programs combines acceleration and enrichment (Olszewski-Kubilius et al., 2017).

Another contemporary area of research is gifted curriculum design. Descriptive curriculum versus prescriptive curriculum is a current hot topic of research (Altintas & Ozdemir, 2015). The descriptive curriculum is an emphasis on what students can do with

knowledge, rather than what units of knowledge they possess (Altintas & Ozdemir, 2015). The prescriptive curriculum is a process by which learning objectives are fashioned, learning experiences are designed, scaffolding is created to build upon the learning situations, and evaluations are performed to determine learning success (Altintas & Ozdemir, 2015). Studies have shown prescriptive curriculum has a more positive effect than descriptive curriculum (Altintas & Ozdemir, 2015).

Planning effective intervention for advanced students is a valid educational practice (Altintas & Ozdemir, 2015). The Purdue model is a prescriptive curriculum that has shown a positive effect in repeated action research (Altintas & Ozdemir, 2015). The Purdue model was developed in the 1970s and involves an enrichment plan as opposed to acceleration (Altintas & Ozdemir, 2015). The Purdue model emphasizes higher-level cognitive learning (Altintas & Ozdemir, 2015). Higher-order thinking skills are developed when teachers pay attention to cognitive science (Allen et al., 2013). Another prescriptive curriculum model is Project Excite (Olszewski-Kubilius et al., 2017). Project Excite, developed in 2000 at Northwestern University, calls for supplemental enrichment courses for gifted students through the middle school years and follows with accelerated placement classes in high school (Olszewski-Kubilius et al., 2017).

Current researchers of gifted programming have not derived many best practices for gifted education (Olszewski-Kubilius & Thomson, 2015). One of the only agreed-upon concepts in modern research is the efficacy of gifted education (Olszewski-Kubilius & Thomson, 2015). Differentiated instruction and a challenging curriculum benefit gifted students, especially those who are also low-income (Olszewski-Kubilius &

Thomson, 2015). Critical criteria adapted from the work of VanTassel-Baska and Fischer Hubbard (2016) include the following:

1. Is the curriculum research-based? (i.e., Has it been used successfully with gifted learners and shown evidence of effectiveness?)
2. Does the curriculum show evidence of advanced or accelerative learning opportunities, linked to standards? (i.e., Does the curriculum employ pre-assessment in relevant areas to judge readiness for more advanced study at higher levels in the standards?)
3. Is the curriculum organized around a key interdisciplinary concept that may be used in the selected lesson? (i.e., Does the curriculum employ ideas as an organizer, not just skills?)
4. Does the curriculum employ higher-level critical thinking and problem-solving? (i.e., Are activities organized at higher levels and are questions articulated at those levels?)
5. Does the curriculum employ project and problem-based learning as a part of student-centered activities?
6. Does the curriculum use integrated technology? (i.e., Does the curriculum employ opportunities for the use of online databases for research, website linkages to topics study, and applications of relevance for presentations?). (pp. 291-292)

VanTassel-Baska and Fischer Hubbard (2016) asserted these elements must add to the current curriculum to ensure it is high-quality for use with gifted children.

An area of study with a greater depth of accumulated research is intervention, or the lack thereof, for gifted students in the regular classroom (Plucker & Callahan, 2014). VanTassel-Baska and Fischer-Hubbard (2016) stated without modifications to address educational needs directly, and on a daily basis, little will change. It is well-established a lack of curricular differentiation exists for gifted students in schools (Plucker & Callahan, 2014). What has not been examined in detail is the effect of lack of exposure to advanced curriculum on gifted students (VanTassel-Baska, 2010).

Olszewski-Kubilius et al. (2017) agreed with VanTassel-Baska (2010) and promoted the idea it is often minority students who languish unidentified or unserved in classrooms around the nation. VanTassel-Baska and Fischer Hubbard (2016) indicated underserved populations are often in urban areas composed of minority students. Students in rural areas are also underserved with fewer opportunities and reduced access to gifted education courses (Kettler, Russell, & Puryear, 2015). Schools in affluent areas are substantially more likely to have gifted programs (Kettler et al., 2015). Smaller districts often do not have the staff or funding to provide gifted services (Kettler et al., 2015).

Kettler et al. (2015) stated extensive research and policy development have gone into equity and access to gifted education. Identification and admission practices have been researched, yielding a significant amount of information (Kettler et al., 2015). Ford et al. (2002) asserted students who are Black, Hispanic, or economically disadvantaged are underrepresented in gifted programming (as cited in Kettler et al., 2015). The National Association for Gifted Children (NAGC) emphasized it is imperative to achieve sustainable equity of access (Kettler et al., 2015).

An area lacking in research is the identification of gifted students (Plucker & Callahan, 2014). Plucker and Callahan (2014) stated several emerging projects are adding to this area, but much research is still needed. Peters and Gentry (2013) conducted one of a handful of recent studies which have revealed new ways to identify gifted and talented students. Peters and Gentry (2013) suggested a criterion-related assessment along with a teacher scale is very effective at detecting students early and being more inclusive than traditional methods. Kroesbergen, Hooijdonk, Viersen, Middle-Lalleman, and Reijnders (2015) promoted verbal-deductive and nonverbal reasoning methods for identification of gifted students. Kroesbergen et al. (2015) asserted the verbal-deductive and nonverbal reasoning methods help identify gifted students who fall into the category of a high-potential group, while traditional methods may be better at identifying students who are in a high-accomplished group. Dias Carvalho and Cruz (2017) cited Oliveira (2007) and the need for knowledgeable and empathetic changes in training teachers to identify giftedness:

> Often there are pupils with rare capacity for attention and memory in certain fields; curious and persistent in some subjects; eager to learn more and in a more rapid and independent way; meta-cognitive in their way of thinking and solving problems; creative in their productions; who do not always conform with classes regulated in accordance with a previous grand plan and thinking like a supposedly 'average pupil.' It is important, then, to extend and raise the awareness and training of teachers in the area of giftedness. (p. 3)

Another area lacking in research is the social and emotional needs of gifted children. Some researchers believe gifted students have unique social or emotional concerns, while

others believe gifted students are better-suited than their peers for social or emotional issues (Plucker & Callahan, 2014). Kroesbergen et al. (2015) pointed out gifted students are no more prone than others to develop psychological problems. Kroesbergen et al. (2015) submitted the physical well-being and self-concept of gifted children often does lag behind their peers due to different interests in conversation and play. Others have argued society puts extra attention on gifted students, leading to unique manifestations of traits (Plucker & Callahan, 2014). Gifted students need exposure to increased academic rigor and time management instruction to be ready to succeed in college (Conejeros-Solar & Gómez-Arízaga, 2015).

Gómez-Pérez et al. (2014) showed some gifted programs are more effective than others at positive social development. Ritchotte, Suhr, Alfurayh, and Graefe (2016) revealed students in gifted programs score statistically higher on emotional indicators associated with education. Gifted programs can have a moderate effect on the emotional and psychological well-being of gifted students (Plucker & Callahan, 2014). More research in this area is needed (Plucker & Callahan, 2014).

One of the leading researchers in gifted education is Joyce VanTassel-Baska, Professor Emerita at College of William and Mary in Virginia (VanTassel-Baska & Fischer Hubbard, 2016). Among her concerns for the direction of gifted education is a lack of focus on rurality (VanTassel-Baska & Fischer Hubbard, 2016):

> Designing appropriate classroom-based strategies for advanced rural learners requires an appreciation of the rural environments within which they learn as well as an understanding of the academic needs of these learners. Appropriate academic challenge for advanced learners in rural settings requires consideration

> of the specific needs of these students and the values of their communities. (p. 285)

VanTassel-Baska and Fischer Hubbard (2016) noted how vital understanding the values and morays of rural communities is to the development of a viable, meaningful, and effective curriculum for gifted students.

**Cognitive development and education.** It is essential to understand the role of cognitive development in education. Siegler (2016) quantified that for the last 10 or 15 years, cognitive theory has increasingly been the focus of educational researchers. Siegler (2016) cited a number of reasons for this, but one, in particular, is the development and use of cognitive tools to improve education. Peterson (2015) stated, "Without a doubt, children of high ability do not fare well in educational systems that do not recognize them and their particular needs" (p. 44). Steiner and Carr (2003) stated, "It is necessary to merge research and theory on giftedness with current thinking in cognitive development" (p. 216). Examinations of cognitive development in children show intellectual development occurs at different rates for individual children (Steiner & Carr, 2003).

Metacognition, an important component of gifted education, can help gifted students make better use of their inherent strengths and apply those strengths to the academic setting (Steiner & Carr, 2003). Gifted education is built upon the individual principle differences in ability exist and can be used to predict school achievement (Olszewski-Kubilius & Thomson, 2015). According to Campbell and Feng (2011):

> Practice and preparation are shown to be vital in all fields of achievement. For example, around 10 years of sustained training are needed for a chess player to

> reach international levels, and it takes comparable periods of time to reach the highest standards in mathematics and the other sciences. (p. 19)

Ruth Strang, a faculty member at Teachers College, argued, "Most gifted children are underachievers given that their performance in schools was often significantly lower than their capabilities" (as cited in Jolly, 2014, p. 120). Kroesbergen et al. (2015) agreed with these researchers and noted support is necessary throughout the development process to achieve the high potential of the gifted individual. The emotional well-being of gifted students must also be supported, or a reduction in the gifted student's psychological well-being will occur (Kroesbergen et al., 2015). Kroesbergen et al. (2015) used a definition of psychological well-being that includes both a positive sense of self-concept and a lack of mental problems such as anxiety, depression, or psychiatric disorders.

Conejeros-Solar and Gómez-Arízaga (2015) reported gifted students often find it difficult to make the transition from high school to university. Conejeros-Solar and Gómez-Arízaga (2015) asserted when gifted students struggle in college, it is often due to anxiety caused by time management weaknesses, increased academic demands, and the newfound independence of college life. Cheema and Galluzzo (2013) agree with Conejeros-Solar and Gómez-Arízaga about the dangers of anxiety for gifted students and explain once anxiety and self-efficacy are controlled for in data, there is no discernible gender gap in the field of math. After accounting for anxiety and self-efficacy, socioeconomic status accounted for 20% of variation in math achievement (Cheema & Galluzzo, 2013).

Olszewski-Kubilius and Thomson (2015) advocated for the talent development approach to gifted education and subscribed to its central perspective–ability and talent

are not static but are malleable. In what would be considered a very Piagetian cognitive concept, Olszewski-Kubilius and Thomson (2015) reported children grow, and with nurturing and opportunity, develop expertise. Olszewski-Kubilius and Thomson (2015) described the final stage of talent development as artistry, innovation, and eminence in an individual's field.

Olszewski-Kubilius and Thomson (2015) ascribed to the talent development theory of gifted education. The talent development perspective sees giftedness as a state one achieves (Olszewski-Kubilius & Thomson, 2015). In talent development, potential moves into competence, followed by expertise (Olszewski-Kubilius & Thomson, 2015). General intelligence is at its most essential during early stages of talent development, and the emphasis is placed on domain-specific abilities in later stages (Olszewski-Kubilius & Thomson, 2015). In young children, potential defines giftedness, while in older children giftedness is defined through achievement (Olszewski-Kubilius & Thomson, 2015).

The talent development approach sees psychological needs for gifted individuals as malleable, teachable, and variable (Olszewski-Kubilius & Thomson, 2015). The talent development approach suggests curriculum for gifted individuals should be different at the various stages of talent development; for example, exposure to talent development stimuli is appropriate for young children, acceleration and enrichment apply to older children, and apprenticeships are ideal for young gifted adults (Olszewski-Kubilius & Thomson, 2015). Moving children to the next level of talent development is the outcome of a successful gifted program in the eyes of those who ascribe to this theory (Olszewski-Kubilius & Thomson, 2015).

It is important to understand the nature and scope of problems concerning gifted education. For many years, educators have known talented students need services to help them reach their ultimate potential (Plucker & Callahan, 2014). Many students who enter school, particularly students from poverty, lack exposure to literacy-rich environments and may not be ready for advanced or enrichment programming (Olszewski-Kubilius & Thomson, 2015). Thus, the first stage of talent development is often identification of talent followed by exposure to a cognitively stimulating environment (Olszewski-Kubilius & Thomson, 2015). Talent development accepts various domains of giftedness, and IQ testing is only an indicator of potential (Olszewski-Kubilius & Thomson, 2015). Talent development advocates such as Olszewski-Kubilius and Thomson (2015) were interested in improving assessment as ongoing, comprehensive, and holistic.

Identifying talent may be especially difficult in rural areas of poverty (VanTassel-Baska & Fischer Hubbard, 2016). Rurality creates a dilemma for gifted children who are unlikely to be "identified and placed in a program due to the lack of such programs and services in rural areas of our country, the lack of extra funding for such services, and the lack of trained teachers to work with these advanced learners" (VanTassel-Baska & Fishcher Hubbard, 2016, p. 286).

Historical perspectives aid in understanding the relevance of the issue and remind educators not to understate the importance of gifted education (Altintas & Ozdemir, 2015). An examination of gifted education in modern times shows the problems facing gifted education today are not new (Altintas & Ozdemir, 2015). Many of the issues in the field have been researched extensively, while some areas are supported by inadequate research (Plucker & Callahan, 2014). One area that needs further analysis is the process

of identification (Plucker & Callahan, 2014). Plucker and Callahan (2014) described traditional identification processes as biased and exclusive of various groups. Cognitive development of young minds follows a varied path, and it is crucial to aid gifted children with techniques designed to help them reach their potential (Steiner & Carr, 2003). Kroesbergen et al. (2015) agreed with Steiner and Carr (2003), even going one step further by stating that to prevent boredom, help students reach their full potential, and strengthen a positive self-concept, early identification of giftedness is necessary. Gifted individuals must resist underachievement due to boredom, twice exceptionality, or negative consequences of being labeled as gifted (Vladut, Vialle, & Ziegler, 2016).

Plucker and Callahan (2014) identified social and emotional issues as yet another area of gifted education in need of further research. Plucker and Callahan (2014) recognized a need for further research on the effectiveness of enrichment and acceleration programs. This study included an examination of the correlation between early identification of gifted students and improved academic performance. In this study is examined the role of gifted programming on attendance through a comparison of attendance between gifted students who attended programming for several years and gifted students who received only one or two years of gifted services.

**Theoretical Framework**

Cognitive development theories underpin the entire field of education (Siegler, 2016). Nowhere is this more obvious than in the field of gifted education. From historical perspectives and studies such as those conducted by Hollingsworth and Terman (Campbell & Feng, 2011), to modern research by Ritchotte et al. (2016), the underlying

assumption is the cognitive development of gifted children is different in various ways than that of their peers. These differences lead educators to develop interventions and curriculum suited to the specific needs of gifted students (Young & Balli, 2014). The underlying theory of cognitive development as established by Dewey and Piaget has informed education in many ways (Ultanir, 2012). Piaget's theories led to understanding the way children perceive and understand the world is fundamentally different than the way adults do (Ultanir, 2012). Piaget explained several different levels of naturally occurring cognitive development (Ultanir, 2012). Dewey's theories led to a new concept of education, one in which education's purpose is to facilitate a child's naturally occurring cognitive development (Ultanir, 2012). In recent years, the most interesting research into cognitive development has been in how it relates to education (Siegler, 2016).

Also guiding this research was the concept of sensitive learning periods. This term initially appeared after studies with animals fostered the theory of critical learning periods (Phillips, 2005). Although the theory of critical learning periods in humans has been primarily debunked, neuroscientists and educators agreed there are sensitive periods, or windows of opportunity, during which the brain is more accessible for learning (Phillips, 2005). Drs. Donald B. Bailey and Frank J. Symons believed although windows of opportunity may be longer than initially thought, some students, including those at high risk and those who are disadvantaged, lack exposure to important learning opportunities (Bailey, Bruer, Symons, & Lichtman, 2001). This puts students at risk for "substantial delay in development and setting a pattern of educational failure that is difficult to overcome" (Bailey et al., 2001, p. 3).

The design of this study and the design of the research questions associated with this study were influenced by the writings of Fraenkel, Wallen, and Hyun (2015). When developing a causal-comparative research study, it is important to identify a problem or phenomenon and then to consider possible causes or consequences associated with the phenomenon (Fraenkel et al., 2015). The data collected in 2015 by the National Association for Gifted Children and The Council of State Directors of Programs for the Gifted (2015) also influenced this research. Specifically, this research was affected by the lack of consistency among states when it comes to areas such as gifted programming, funding, and identification. A general lack of evaluation of gifted programming and little or no consensus on best practices were additional driving factors in the development of the research questions (National Association for Gifted Children [NAGC], 2015).

The theoretical base of this study was built upon the work of cognitive theorists. Dewey and Piaget developed the theory of cognitive development (Ultanir, 2012). Using their work, educators have built the current system of education. Helping students to create a knowledge base and to develop a psychological and social self-concept is an essential part of gifted education (Ultanir, 2012). The concept of sensitive learning periods, or windows of opportunity, leads educators to develop appropriate curriculum for students tailored to their developmental needs (Ultanir, 2012). Fraenkel et al.'s (2015) suggestions for how to develop causal-comparative research particularly influenced this project. A national report on the state of gifted education by the NAGC (2015) also influenced this research.

**Statement of the Problem**

While the most common age of identification for gifted children is during elementary school (Colangelo & Wood, 2015), gifted students are identified at varying ages (Peterson, 2015). Some are not identified during their academic careers and run the risk of underachieving (Peterson, 2015). The students specifically at-risk for lack of identification are the underprivileged, including those in very rural areas (Azano et al., 2014) and those in very urban areas (Baker, 2001). Plucker and Callahan (2014) cited identification concerns as a specific area in need of additional research. The NAGC (2015) published, *State of the States of Gifted Education,* and recognized a lack of consistency in many fundamental aspects of gifted education, including identification. A 1958 conference on gifted students focused on identification, programming options, social and emotional well-being of gifted students, and the limited resources allocated to gifted and talented students (Jolly, 2014). Jolly (2014) alleged most of these issues remain unresolved today.

The researcher thus identified the following problems: Is the lack of identification or delay of identification of gifted students contributing to diminished academic results? Why the lack of consistency? What is the effect on students' psychological health? Is there a window of opportunity when it comes to identification and gifted education? Will students who are identified earlier and thus have the potential for more years in gifted programming fare better academically than their peers who fail to be identified early in their academic careers and have fewer years in gifted programming? Is there a way to evaluate if gifted services continue to benefit the students who spend several years in programming?

Schools must develop ways to analyze data to identify where they are and why they are getting the results they are getting (Bernhardt, 2015). An independent review of data should be conducted to maintain confidence in the school's progress and to allow the school to put into place the teaching strategies that will ensure the best results for all students (Bernhardt, 2015). This study adds new information to the field of education and specifically the field of gifted education. The results of this study may help to predict the best age to identify gifted students. The study may focus the attention of schools and policymakers upon a specific grade level in school during which gifted identification yields the best academic results. This study could generate valuable data for policymakers about the efficacy of existing identification policies and could provide impetus to make changes. This research could be used to evaluate existing gifted programs as to their current effectiveness, even projecting an optimal number of years students should maintain enrollment in gifted programming.

The importance of this study is its potential to build upon current knowledge about gifted education. The research will add to the literature on outcomes of gifted education. Experts, such as Schorer and Baker (2012), noted additional research linking success indicators and gifted programming is needed to evaluate the effectiveness of gifted programming. Gifted education research can be improved if the evaluation of programs includes examination of data and other sophisticated analytic methods to assess effectiveness (Makel & Wai, 2016). This research will directly address the lack of research alluded to by Schorer and Baker (2012). It also adds to the dearth of studies spoken of by Plucker and Callahan (2014) and the NAGC (2015).

**Purpose of the Study**

This study examined the effects of gifted programs on academic performance. This research adds to existing research by examining the correlation between the time a student is in a gifted program and success on quantifiable data points such as American College Test (ACT) scores, discipline referrals, grade-point averages (GPAs), and graduation rates. The study adds to existing research by providing a matrix schools could use to evaluate the effectiveness of their gifted courses or other challenging curricula.

The researcher compared the academic performance of 100+ gifted students, some who were identified for gifted programs early in their academic careers and some who were identified later. According to Fraenkel et al. (2015), research questions are significant if they have implications for the improvement of practice or administrative decision making. The results of this study align with both indicators. Knowing the best age to identify giftedness and the expected outcomes associated with proper, timely identification would benefit educational practice and administrative decision making. Schorer and Baker (2012) suggested more research linking success indicators and gifted programming is required.

This research may also be considered correlational research. Correlational research includes attempts to investigate the extent to which one or more relationships exist (Fraenkel et al., 2015). Correlational research does not prove causation (Fraenkel et al., 2015). The archival data used for this study were academic data collected over the past 20 years from School District A. The data were collected from student transcripts obtained and held by High School A. This study records an attempt to measure the extent to which years spent in gifted programs correlate with success on academic indicators.

**Research questions and hypotheses.**

The problem identified in the research was a lack of data concerning the ideal number of years a student should enroll in gifted services. Another problem this study addresses was the lack of research on how to evaluate gifted curriculum. The following questions guided the research:

1. What is the correlation of ACT scores and years spent in gifted services?

$H1_0$: There is no correlation of ACT scores and years spent in gifted services.

$H1_a$: There is a correlation of ACT scores and years spent in gifted services.

2. What is the correlation of class rank and years spent in gifted services?

$H2_0$: There is no correlation of class rank and years spent in gifted services.

$H2_a$: There is a correlation of class rank and years spent in gifted services.

3. What is the correlation of high school attendance and years spent in gifted services?

$H3_0$: There is no correlation of high school attendance and years spent in gifted services.

$H3_a$: There is a correlation of high school attendance and years spent in gifted services.

4. What is the correlation of grade point average and years spent in gifted services?

$H4_0$: There is no correlation of grade point average and years spent in gifted services.

$H4_a$: There is a correlation of grade point average and years spent in gifted services.

## Definition of Key Terms

**Accelerated program.** An accelerated program is an educational intervention based on mastery of knowledge (Kim, 2016). An accelerated program involves speeding up the pace of curriculum to match the achievement of the student (Kim, 2016).

**Accessible population.** The accessible population is the population a researcher is able to access and generalize (Fraenkel et al., 2015).

**American College Testing (ACT).** The ACT is a national college admissions examination (ACT, Inc., 2016).

**Archival data.** Archival data are data collected and stored for future use (*RenewData eDiscovery Glossary*, 2016).

**Enrichment programs.** Enrichment programs are designed to fulfill the needs of students by promoting higher-level thinking, creativity, and problem-solving (Kim, 2016).

**Gifted education.** Gifted education includes services designed to optimize the potential of gifted students (U.S. Department of Defense, 2016).

**Gifted student.** Gifted students are those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains (NAGC, 2015).

**Grade point average (GPA).** A student's GPA is a number representing the average value of the accumulated final grades earned in courses over a given period (*The Glossary of Education Reform*, 2016).

**Intelligence quotient (IQ).** An IQ is an intelligence test score obtained by dividing mental age, which reflects the age-graded level of performance as derived from population norms, by chronological age and multiplying by 100 (*Dictionary.com Online Dictionary*, 2016). A score of 100 indicates performance at precisely the average level for that age group (*Dictionary.com Online Dictionary*, 2016).

**Metacognition.** Metacognition is higher-order thinking that enables understanding, analysis, and control of one's cognitive processes, especially when engaged in learning (*Dictionary.com Online Dictionary*, 2016).

**Wechsler Intelligence Scale for Children (WISC).** The WISC is a popular intelligence test for evaluating students and is often used in gifted assessment (Rowe, Dandridge, Pawlush, Thompson, & Ferrier, 2014).

## Limitations and Assumptions

The following limitations were identified in this study:

**Sample Demographics.** The demographics of the sample were a limitation. The sample from only one district may not be generalizable across varied regions of the United States. Thus, the ability to generalize results based on this sample may hold a regional limitation with population-specific findings.

The archival data were accessed from only one district, which is a limitation in this type of study. Potentially, results can be skewed to reflect the specific performance of the school district associated with the study. Another limitation was the archival data represented students who were in an enrichment curriculum. Data from an accelerated or hybrid curriculum were not included in this study.

**Timeframe.** A further limitation was the timeframe involved in this study. In order to accumulate enough data, the timeframe of this study covered a span of 20 years. This point does not detract from the study but was a limitation in had there been more data, the study could have covered a shorter time span with the potential to allow the district to pinpoint the correlation to changes in the curriculum during that timeframe. For example, the 20-year timeframe spanned two different teachers. Had there been enough data points to yield solid results in only a 10-year time span, the additional variable and complication of change in teacher could have been removed to strengthen the correlation between the curriculum and the results. In other words, it is better to remove additional variables, and the length of this study inevitably added variables.

## Summary

This research was focused on gifted education. An examination of historical and modern perspectives leads to an understanding of the background of gifted education and research on gifted education. The framework for this research included the theory of cognitive development and the concept of sensitive learning periods. This study drew from experts in developing causal-comparative analysis to arrive at a specific problem: Is the lack of identification or delay of identification of gifted students contributing to diminished academic results? A testable hypothesis was developed to aid in examining this problem.

The results of this study will benefit gifted education in specific and education in general. Data from this study could help guide administrators and policymakers. Data from this study could show administrators the ideal time and an optimal number of years for students to benefit from gifted services. Berliner and Glass (2015) reiterated the

difficulties of implementing a program developed in another school. Complex programs often require monitoring, evaluation, and small changes when being moved from one district to another (Berliner & Glass, 2015). In the next chapter are found reviews of literature associated with and pertaining to the identified topic, problem, and theoretical framework.

# Chapter Two: Review of Literature

Gifted education has not been implemented in a comprehensive, universal manner (Kettler et al., 2015). There are differences in perception concerning the relevance of gifted education, resource allocation for gifted education, strategies used in gifted education, and policies guiding gifted education (DeNisco, 2015). The themes in this literature review include the relevance of gifted education, resource allocation for the education of gifted students, best practices and current research advancing the field of gifted education, and recent and developing a policy concerning gifted education. This literature review also includes the theoretical framework of cognitive learning and relevance of specific academic indicators in evaluating academic success.

## Theoretical Framework

Cognitive development theories are an essential component of modern education (Colangelo & Wood, 2015). Especially in gifted education, cognitive theory becomes a framework for understanding how students build meaning and understanding from the environment (Colangelo & Wood, 2015). Motivation and environmental factors are stronger predictors of academic success for gifted students than any other individual factors (Stoeger, Fleischmann, & Obergriesser, 2015). Motivation is multi-faceted in gifted education (Vladut et al., 2016). Educators need to get parents, gifted individuals, peers, teachers, and mentors on board to assist in student motivation (Vladut et al., 2016). Student motivation is related to support, relationships, and autonomy (Allen et al., 2013).

Cognitive theory emphasizes environmental, personal, and behavioral factors to describe human behavior (Colangelo & Wood, 2015). Historical perspectives have led many in the field to conclude cognitive development of gifted children is based on unique

needs different from the needs of typical peers in meaningful ways (Campbell & Feng, 2011). Sally Reis, who spent most of her career as a professor of educational psychology at the University of Connecticut, stated, "The later we identify gifted and talented students, the more difficult it is to reverse their underachievement" (as cited in DeNisco, 2015, p. 43). The Classroom Learning Assessment Scoring System helps organize decisions regarding motivational atmosphere, which stimulates effective instruction across social-emotional and cognitive domains (Allen et al., 2013).

Early IQ studies, such as those conducted by Hollingsworth and Terman in 1926, indicate researchers have always examined the cognitive aspect of giftedness in an attempt to develop programs best-suited to helping students reach their potential (Campbell & Feng, 2011). Modern terminology and concepts surrounding genius and giftedness arose due to work in 1921 by Lewis Terman (Simonton, 2016). Terman believed gifted students need to be grouped with their developmental peers, not their age-related peers, to reach their potential (Campbell & Feng, 2011).

Simonton (2016) explained after Terman played a major role in developing the Stanford-Binet intelligence test, he wanted to conduct a longitudinal study of gifted students. Terman set the cut-off point for highly intelligent people at an IQ of 140, a number derived using the standard deviation determined by his own recently developed test (Simonton, 2016). He called his work *Genetic Studies of Genius* and thus inadvertently set the IQ score for genius at 140 (Simonton, 2016). Of the over 1,000 test subjects in Terman's work, none of his genius subjects accomplished anything nearing monumental or extraordinary in scope, leading researchers in the field to the conclusion other factors are a more significant determinant of success than just IQ (Simonton, 2016).

Simonton (2016) concluded IQ plays a definite role in talent, but a minor part in genius, with many of the most talented never reaching a level of accepted genius.

From historical perspectives to modern views, the differences in the cognitive development of gifted children have led to interventions and curriculum suited to their specific needs (Missett, Brunner, Callahan, Moon, & Azano, 2014). One such development is the theory of self-regulated learning (Stoeger et al., 2015). Self-regulated learning is a cognitive theory some experts ascribe to improved academic performance, and it has specific relevance to the gifted and talented (Stoeger et al., 2015). In self-regulated learning, metacognitive techniques are taught to students to help guide them to make meaning of new material (Stoeger et al., 2015).

Cognitive theories such as self-regulated learning and theory of mind underscore the connection between gifted education and theories of cognitive development (Stoeger et al., 2015). Conejeros-Solar & Gómez-Arízaga (2015) described cognitive theory and its application not only to general education but gifted education. In social cognitive theory, giftedness is a state of advanced development, and a student must continue to use and develop enhanced abilities to maintain advancement over their traditional developmental path, especially as they pursue higher education (Conejeros-Solar & Gómez-Arízaga, 2015)

Often theoretical principles lead directly to curriculum development as evidenced by the Purdue model (Altintas & Ozdemir, 2015), or Challenge Leading to Engagement, Achievement, and Results (CLEAR) (Missett et al., 2014). The Purdue model emphasizes cultural experiences and makes use of acceleration and mentors (Altintas &

Ozdemir, 2015). The CLEAR curriculum also makes use of acceleration and adds ability grouping as one of its components (Missett et al., 2014).

Another gifted model was explained in detail by DeNisco (2015). DeNisco (2015) described the benefits of the Young Scholars gifted model. The Young Scholars program is a relatively new gifted enrichment curriculum targeted at students in kindergarten through third grade (DeNisco, 2015). Young Scholars primarily is aimed at providing an opportunity to disadvantaged children and minorities (DeNisco, 2015). Young Scholars reinforces the cognitive development ideas of Stoeger, Steinbach, Obergriesser, and Matthes (2014) by providing enrichment to the very young. Stoeger et al. (2014) asserted environmental factors most easily influence the earliest stages of cognitive development. According to DeNisco (2015), students enrolled in the Young Scholars program move forward and are often identified for placement in traditional gifted programs. A full 78% of Young Scholars take Advanced Placement and International Baccalaureate courses in high school (DeNisco, 2015).

Cognitive development, as famously described by Dewey and Piaget, has informed education in profound ways (Ultanir, 2012). The concept that it is the educator's job to facilitate a child's naturally occurring cognitive development stems from Dewey's theories (Ultanir, 2012). This idea was expressed in Buber's learning centers and Avnon's builders (as cited in Guilherme, 2015). Both of these researchers envisioned the role of teacher as a facilitator who helps provide scaffolding for the cognitive development of children (Guilherme, 2015). Bjorklund (1997) pointed out cognitive theory, when applied along with the theory of developmental biology, helps predict cognitive development patterns in humans and has led to a new understanding of

the brain's elasticity. Bjorklund (1997) explained formal schooling is against the nature of cognitive development, and students need experiences more rooted in the context of the environment for which the learning is to be generalized.

Bjorklund (1997) introduced another conceptual theory into the equation. Along with cognitive theory, the concept of sensitive learning periods guided this research. The concept of critical learning periods originally appeared after studies with animals indicated to researchers there are windows vital to animal development (Phillips, 2005). Although critical periods of learning in humans have been primarily debunked, neuroscientists and educators agree there are sensitive periods or windows of opportunity during which the brain is more accessible for learning (Phillips, 2005). Bjorklund (1997) asked, "How pliable is human intelligence? When in development can children benefit from certain educational experiences? Is earlier always better? Are there sensitive periods for particular experiences?" (p. 145). Bailey et al. (2001) suggested the brain's elasticity is impressive, and windows of opportunity are longer than originally thought. Still, some students, including those at high risk and those who are disadvantaged, lack exposure to critical learning opportunities (Bailey et al., 2001). Students who miss out on these opportunities are at high risk for educational delay (Bailey et al., 2001).

The theoretical base for this study was cognitive theory. The work of cognitive theorists Dewey and Piaget was the foundation for the theory of cognitive development (Ultanir, 2012). Educators have built the current system of education upon the theory and research of psychologists and child development specialists (Roof, 2015). Ultanir (2012) noted helping students build their knowledge base and develop psychological self-concept is an essential component of gifted education. Montessori believed children pass

through many "sensitive periods" for learning (Kayili, 2018). Educators use these sensitive learning periods, or windows of opportunity, to employ appropriate curriculum for students tailored to their developmental needs (Ultanir, 2012).

**Relevance of gifted education.** The NAGC (2015) asserted 6-10% of K-12 students have been identified as academically gifted (Adams, 2015). Of these three to five million students, it is unknown how many are receiving services and whether these services are adequate (DeNisco, 2015). A common belief in the field of gifted education is that gifted students need differentiated instruction to reach maximum achievement (Missett & Foster, 2015). Missett and Foster (2015) viewed differentiated instruction as a means of keeping students interested in school. Missett and Foster (2015) proclaimed involving students in the learning process, developing curriculum objectives that are not too easy or too difficult, and use of positive reinforcement help keep students engaged in school.

Steiner and Carr (2003) explained cognitive instruction must be employed to help gifted students reach their potential. Gifted education can serve to level the playing field for disadvantaged groups, as "they regularly catapult students of all ethnicities and income levels into top middle and high schools" (Crouch, 2016, p. 2). Hollingsworth (as cited in Olszewski-Kubilius, Subotnik, & Worrell, 2015) indicated gifted students need acceleration and enrichment to overcome the issues that arise due to the discrepancy between their intellectual capacity and age-typical emotional development. Ritchotte et al. (2016) showed students in gifted programs score higher on emotional indicators associated with education. Gallagher (2015) stated encouragement from adults and peers helps a child's abilities to flourish. The Columbus group (as cited in Missett, 2013)

asserted it is this asynchronous cognitive development that leaves gifted students vulnerable psychologically. Conejeros-Solar and Gómez-Arízaga (2015) recommended counseling for gifted students entering college to prepare them for increased independence.

Swanson (2006), as cited in Young and Balli (2014), asserted gifted students of all backgrounds demonstrate high achievement when exposed to advanced curriculum and strategies. Cooper (2011) noted gifted students see the world through a different lens than their teachers and often need services to thrive. Bailey et al. (2001) maintained students who miss out on the learning experiences required during learning windows often experience developmental delays.

Stoeger et al. (2014) suggested environmental factors are more important than individual factors when it comes to talent development. Stoeger et al. (2014) examined students with high intelligence and achievement who differed in their motivation and learning behavior. Gifted students who received learning support from parents and/or teachers can overcome poor motivation and maladaptive learning behavior (Stoeger et al., 2014). Stoeger et al. (2014) implied gifted education has a substantial role in developing cognitive-related attributes in gifted children, namely achievement motivation and learning strategies. Autonomy of students entering college, or the transfer of decision making from parents to student, are also predictors of college perseverance and success (Conejeros-Solar & Gómez-Arízaga, 2015).

A popular perception is that gifted children do not need additional resources and will succeed on their own (Baker, 2001). Some believe gifted education is somehow an elitist concept (DeNisco, 2015). Others worry by providing another subset of students

who can access limited educational resources, it will further dilute the already shrinking pool of funding (Baker, 2001). Some opponents of gifted education use a resource allocation philosophy to justify their opposition to gifted education (Baker, 2001). One view for the allocation of resources in education is the standards-based approach (Baker, 2001). Downes and Pogue (as cited in Baker, 2001) explained the standards-based approach as defining educational costs as the level of resources required for a group of students (X) to achieve performance standards (Y). According to the standards-based economic approach, there is virtually no reason to serve gifted students, as they already produce the desired minimum performance standards with very little or zero resource allocation (Baker, 2001).

Few studies have been used to evaluate the effectiveness of gifted programming, but of the few in existence, academic performance has not been improved by gifted programming (Makel & Wai, 2016). Cooper (2011) submitted the same attitude present in teachers who do not find anything extra should be done for gifted students leads them to exclude students with special needs if not explicitly mandated. Teachers who are unfamiliar with giftedness often expect gifted students to fall into a set of stereotypes (Councill & Fiedler, 2017). Sometimes teachers expect gifted students to display advanced aptitude in all disciplines, not understanding the unique qualities of each gifted individual (Councill & Fiedler, 2017). Teachers consistently struggle to see the delineation between gifted students and bright students (Councill & Fiedler, 2017). Bright learners are alert and quickly absorb information, but gifted students observe fine detail and make inferences and connections unseen by other individuals (Councill & Fiedler, 2017).

Experts such as Ziegler and Heller and Butler-Por argued gifted students often underachieve and have significant gaps in aptitude and realization if not challenged in the proper learning environment and with appropriate cognitive strategies (Dalia & Agne, 2013). Sometimes it is in a specialized area such as music or art where a gifted student first encounters a task that is difficult for them (Councill & Fiedler, 2017). Gifted individuals may express frustration or anger when a skill such as learning a musical instrument does not come easily (Councill & Fiedler, 2017).

Conejeros-Solar and Gómez-Arízaga (2015) stated gifted students need increased challenges to achieve top academic performance. These challenges prepare students for difficulties later in life, which if not obtained at the proper developmental period, may be more difficult to overcome (Conejeros-Solar & Gómez-Arízaga, 2015). Landis and Reschly (2013) explained gifted students are more difficult to identify for at-risk programming at an early age, because a typical indicator of an at-risk student is low achievement, whereas the first indicator of giftedness at a young age is often high achievement. Similarly, when gifted students struggle in college, it is often due to time management weaknesses, increased academic demands, the new-found independence of college life, and/or personality traits that are counter-productive (Conejeros-Solar & Gómez-Arízaga, 2015).

DeNisco (2015) maintained the national focus on struggling students has put high achievers, especially those who are minorities or economically disadvantaged, at risk. This national emphasis on struggling students is nothing new. In 1958, a conference on the gifted and talented concluded the American educational system reduced the best to the level of the average (Jolly, 2014). The lack of federal funding and inconsistent

policies across the nation leave gifted education in the hands of local districts (DeNisco, 2015). There are between three and five million gifted students in the United States, and it is unknown how many receive services (DeNisco, 2015).

The performance of top students has stagnated since 2000, in part because of the policy of No Child Left Behind and its emphasis on the lowest-achieving students (DeNisco, 2015). Only three states require general education teachers to have training in gifted education, making a gifted program a near necessity to provide services to gifted students (DeNisco, 2015). On the other hand, research shows the addition of gifted programs to schools has not negatively impacted the educational experience of non-gifted students (Makel & Wai, 2016).

Gifted students can become bored and act out if not challenged in elementary school (Adams, 2015). This lack of challenge may prohibit the discovery of how to work through difficult material (Adams, 2015). Altintas and Ozdemir (2015) concluded, "Gifted children cannot succeed with only intelligence; they need to use this intelligence in suitable conditions" (p. 1104). Gifted students may have problems with self-esteem, sleeping, and stress (Peterson, 2015).

Sometimes gifted students seem focused in class, but report to their parents they are bored (Adams, 2015). Gifted students may have difficulty tolerating large numbers of people in one place, noise, and visual over-stimulation (Peterson, 2015). They may question authority and may be overly sensitive to criticism (Peterson, 2015). Gifted children are often more sensitive than their peers (Plucker & Callahan, 2014).

Persson (2014) concluded gifted students could not fare well in systems that do not recognize and cater to their specific needs. Teachers are often surprised when they

learn gifted students drop out of school, self-medicate with drugs, and have tragic outcomes at a higher-than-average rate (Peterson, 2015). In fact, Peterson (2015) identified giftedness as a risk factor for poor personal and educational outcomes. Studies show gifted programs have a positive effect on the emotional and psychological well-being of gifted students (Plucker & Callahan, 2014). Gifted students who participate in enrichment classes have a dropout rate of less than 1%, significantly better than the national average (Landis & Reschly, 2013).

Minorities, especially black girls, are underrepresented in science and technology classes (Young, Young, & Ford, 2017). Even though over half of the population will be non-white by 2050, there will be an absence of women in science, technology, engineering, and mathematics professions (Young et al., 2017). Young et al. (2017) reiterated young black girls have unique gifts and needs in the math and science arenas. Young black girls routinely express a higher interest in math and science than young white girls (Young et al., 2017).

Even though black girls represent 7.8% of American students, they only represent 6.8% of students identified as gifted (Young et al., 2017). Early enrollment in gifted education is shown to help address racial and gender achievement gaps (Young et al., 2017). Gifted courses present African American girls access to highly skilled teachers, highly skilled peers, and increased vocational options (Young et al., 2017). To exacerbate the problem, young black girls are also often overlooked in research (Young et al., 2017).

Counseling is an essential element of developing and nurturing the gifted and talented (Colangelo & Wood, 2015). The social and emotional development of gifted

students hinges upon preventing these students from stumbling in what might be called "predictable crisis" (Blackburn & Erickson, as cited in Colangelo & Wood, 2015, p. 133). Colangelo and Wood (2015) identified this predictable crisis as any of the following: asynchronous development; affective and psychological responses linked to gifted characteristics; inclusion in specific populations and minority groups such as racial and ethnic, as well as transgender, gay, or bisexual; or being twice-exceptional. Twice-exceptional students have a disability while still being identified as gifted (Colangelo & Wood, 2015). Colangelo and Wood (2015) saw a need for counseling of gifted individuals to aid in cognitive and social development due to these complicating factors.

There has been no unified attempt to bring together research on best practices concerning twice-exceptional learners (Baldwin, Baum, Pereles, & Hughes, 2015). An early investigation into special education and gifted individuals by Hollingsworth in 1923 and later in 1944 by Asperger paved the way for recognition of this unique class of learners (Baldwin et al., 2015). Work by Straus and Lehtin in 1947 proved learning disabilities are distinct from syndromes (Baldwin et al., 2015). Before 1950, much of the research into learning disabilities was in the context of brain injuries, while nearly all emphasis on giftedness centered around those with high IQ scores (Baldwin et al., 2015).

As many as one-third of students who qualify for special education services also display gifted behaviors (Fugate & Gentry, 2016). The needs of these twice-exceptional learners are often unmet because teachers, administrators, and special education professionals focus on remediating weaknesses at the expense of the individual's strengths (Fugate & Gentry, 2016). Recognizing the strengths or weaknesses of twice-exceptional learners is often difficult due to the masking effect of the two opposing forces

(Fugate & Gentry, 2016). Twice-exceptional learners often work under their potential and may perform below the level of their peers (Fugate & Gentry, 2016).

Several of the characteristics of giftedness are similar to the characteristics of Attention-Deficit Hyperactivity Disorder (ADHD) (Fugate & Gentry, 2016). Common characteristics of giftedness, such as boredom, lack of focus, and creativity, make misdiagnosis a danger (Fugate & Gentry, 2016). Many of these characteristics can be thought of as a consequence to low self-esteem which goes hand in hand with both giftedness and ADHD (Fugate & Gentry, 2016). Often it is parents who first recognize the intellectual gifts of twice-exceptional students (Fugate & Gentry, 2016).

In 1943, Kanner described set behavioral characteristics of those with high IQs he labeled Autism (Baldwin et al., 2015). In 1977, Cruickshank noted hyperactivity and ease of distraction characterized the way some high-ability students navigated the world (Baldwin et al., 2015). Goertzel and Goertzel (1942) found a number of gifted adults did not perform well in school and even disliked their educational experiences in traditional classrooms (as cited in Baldwin et al., 2015).

During the mid to late 1970s, federal legislation led to a standard definition for both giftedness and learning disabled (Baldwin et al., 2015). Public Law 94-142 mandated a free and appropriate public education for all children with disabilities and introduced the concept of the least restrictive environment (Baldwin et al., 2015). Gifted and talented students were not included in Public Law 94-142 (Baldwin et al., 2015). Three years after Public Law 94-142, in 1978, the Gifted and Talented Children's Act passed (Baldwin et al., 2015). The Gifted and Talented Children's Act created a National Training Institute, a federal office of gifted and talented, and a definition of gifted

(Baldwin et al., 2015). The Gifted and Talented Act of 1978 recognized six distinct areas of giftedness: general intellectual ability, specific aptitude, visual and performing arts, creativity, leadership, and psychomotor abilities (Baldwin et al., 2015). According to the Gifted and Talented Children's Act of 1978, all six areas of giftedness entitle specialized services, but services were never mandated (Baldwin et al., 2015).

Neither the Gifted and Talented Children's Act of 1978 nor Public Law 94-142 alluded to the fact students can be gifted and have a disability (Baldwin et al., 2015). However, during the late 1970s, researchers began to make the connection between gifted and disabled individuals when Maker wrote *Providing Programs for the Gifted Handicapped* (Baldwin et al., 2015). Maker described individuals with a dual diagnosis of extraordinary gifts and physical or cognitive disability (as cited in Baldwin et al., 2015). Meisgeier and Werblo acknowledged the need for learning supports and advanced programming for students who fall into both categories (as cited in Baldwin et al., 2015).

During the 1990s, state and federal funds were available through grants aimed to assist the gifted and talented (Baldwin et al., 2015). The U.S. Department of Education's Jacob K. Javits Gifted and Talented Students Education Act of 1988 established a National Research Center and funded grants to allow for curriculum and program development for underserved populations including twice-exceptional learners (Baldwin et al., 2015). Finally, in 2004, with the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA), policymakers made mention of students with disabilities and gifts and talents as a target for funding (Baldwin et al., 2015). Only recently has a precise, unified definition of twice-exceptionality arisen, and critics still

argue educators are not in agreement regarding identification and best practices for twice-exceptional learners (Baldwin et al., 2015).

There are those who believe the plight of the gifted to be of utmost importance, such as noted British historian Arnold J. Toynbee, who stated:

> To give a fair chance to potential creativity is a matter of life and death for any society. This is all-important because the outstanding creative ability of a relatively small percentage of the population is humanity's ultimate capital asset, the only one with which humans are endowed. (as cited in Persson, 2014, p. 44)

Sever (as cited in Persson, 2014) noted 19% of the world's nations have displayed interest in developing the talents of gifted students. In the current world economy, developing the creative potential of students is critical to the development of a nation's economy (Lee, 2016). Early identification helps place gifted students into programming that can best benefit society by making use of above-average potential (Dalia & Agne, 2013).

Concern with gifted programming reached its pinnacle after the Soviet launch of the Sputnik satellite (Jolly, 2014). This concern led to a conference in 1958 during which education of the gifted and talented was seen as a means to catch up to the Soviets (Jolly, 2014). John Stalnaker, president of the National Merit Scholarship Corporation, believed an essential purpose of education was to identify students with academic talent (Jolly, 2014). Early identification was stressed (Jolly, 2014). Burns and Flournoy (2011) pointed out gifted individuals are vital to the sustainability of the future workforce. It was also noted in a study of students who scored in the 90th percentile in math in third grade that only 57% maintained this high level by the time they were eighth graders

(Burns & Flournoy, 2011). According to Burns and Flournoy (2011), this indicated more needs to be done to cultivate gifted students.

The model presented by Stoeger et al. (2014) is one in which environmental factors are more important than individual factors during the early stages of cognitive development. Stoeger et al. (2014) described, at some point, individual elements begin to interact with environmental factors, and potential is transformed into substantial achievement. This interesting view of cognitive development espoused by Stoeger et al. (2014) indicated environmental factors, such as school, gifted programming, and curriculum, play a more prominent role in the early development of a gifted individual and are set aside as intrinsic individual factors take over at some point. Sultan (2011), as cited in Cooper (2011), pointed out only bringing along the lowest-achieving students represents a considerable loss of human capital for America.

Cognitive skills impact personal earning and economic growth (Yamaguchi & Okada, 2018). In one model of the economy, improving the mean Trends in International Math and Science Study scores in math, science, and reading by 40 points would create a 5% improvement in the gross domestic product (Yamaguchi & Okada, 2018). According to the same model, improvements at the top end and the overall average have separate complementary effects on economic growth (Yamaguchi & Okada, 2018).

Another allocation philosophy, the resource-cost approach, suggests it is necessary to provide current resources for an appropriate education to a child with a given set of educational needs (Baker, 2001). When students are viewed by their current level of development and not merely compared to others of the same age, it is easier to see students have different academic needs (DeNisco, 2015). The resource-cost approach

recognizes the educational needs of gifted students and applies resources to meet those needs (Baker, 2001). It is similar to Hattie's (2015) philosophy of one year's growth for one year's work in that it attempts to provide resources and instruction to facilitate the educational progress of all students including the gifted subgroup. Baker (2001) argued the resource-cost approach is the best allocation philosophy because it better addresses the needs of all students and therefore should be the accepted funding paradigm. Important to note is that the strategies that work best for gifted students also have positive effects on the general student population (Altintas & Ozdemir, 2015).

**Identification of gifted students.** Cognitive theory has always aided psychologists and educators to understand the prescribed pattern in which an individual's development is likely to occur (Bjorklund, 1997). Precocious development might be an indicator of giftedness (Edmunds & Edmunds, 2014). Identification of gifted students is a critical and under-researched component of gifted education (Jolly, 2014). Identification of giftedness is difficult in part because experts seldom agree on the definition of giftedness (Colangelo & Wood, 2015). The most common age of identification for gifted students in schools is at the elementary level (Colangelo & Wood, 2015).

According to the Marland Report (1972), as cited in Colangelo and Wood (2015), between 3-5% of school-age children are identified as gifted. The most common reason gifted students are recognized is high general intellectual ability, performance, and achievement (Colangelo & Wood, 2015). The most common identification methods involve IQ scores, grade point averages, and parent or teacher observations (Colangelo & Wood, 2015). Identification of gifted students has long been an area in need of additional

research. John Stalnaker, President of the National Merit Scholarship Corporation, spoke in 1958 of the need for early identification (Jolly, 2014). Stalnaker recognized the limitations of using IQ scores alone and pushed for devising alternative methods of identification to allow for the inclusion of additional abilities and aptitudes (Jolly, 2014). Nearly three-quarters of a century later, this is still an area researchers identify as in need of further research (Colangelo & Wood, 2015). Even though districts are able to set their own benchmarks, the national baseline for gifted services is an IQ score of between 125 and 145.6 (Councill & Fiedler, 2017).

Federal law does not specify a process for identification of gifted students (Rowe et al., 2014). Subtle bias can influence who gets identified for gifted services, making the screening process essential (Sparks, 2015). Dalia and Agne (2013) explained the screening process should consist of two steps, a screening for above-average cognitive abilities and ongoing monitoring of students. Teacher nomination is the most widely used procedure for identification of gifted students (Dalia & Agne, 2013). Rapid comprehension, curiosity, excellent memories, large vocabularies, and an interest in numbers are among the traits teachers list as the initial indicators they notice when identifying gifted students (Dalia & Agne, 2013). Teacher identification is an accurate way to predict high ability as assessed with the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) when it is the agreed-upon opinion of three or more teachers (Dalia & Agne, 2013).

Ritchotte et al. (2016) stressed the importance of identifying what students need as opposed to identifying students. Ritchotte et al. (2016) asserted bright, non-identified students also benefit from the gifted curriculum. It is indefensible to deny differentiated

learning or enrichment to a student based on a lack of identification as a special class of student (Ritchotte et al., 2016). Using IQ scores as the sole method for identification of gifted students is an outdated concept (Ritchotte et al., 2016). High IQs seldom present a false positive of giftedness, but it is common for standard or even low IQs to be a false negative as an identification marker of giftedness (Ritchotte et al., 2016).

It is common practice in many states to require both a high score on an IQ test (IQ>130) and additional achievement measures (Ritchotte et al., 2016). Using only one criterion tends to over-identify, but requiring high marks on both criteria tend to provide false negatives (Ritchotte et al., 2016). Researchers have found a correlation of between .5 and .6 between ability scores and grades (Ritchotte et al., 2016). In other words, IQ scores only explain 25% to 36% of the variance in GPA (Ritchotte et al., 2016).

Ritchotte et al. (2016) cited a multitude of studies when making the conclusion neurological and psychosocial factors play an integral role in achievement. The meta-analysis performed by Ritchotte et al. (2016) indicated motivation as the psychosocial factor primarily cited in educational research to be paramount to achievement. Ritchotte et al. (2016) went on to explain motivation as multi-dimensional and made up of components such as interest, value, and autonomy.

Ritchotte et al. (2016) were dismayed that despite the general acceptance of psychosocial factors including the nearly universally accepted motivation, most gifted curriculum and identification procedures overlook additional factors entirely and instead focus on ability or achievement. Berliner and Glass (2015) asserted it is extremely difficult to gauge or predict social intelligence, grit, creativity, and resilience. Vladut et

al. (2016) recommended an examination of a student's innate resilience and robustness as part of the identification process for gifted education.

Girls with ADHD face pressures due to self-esteem different than the issues encountered by their male counterparts (Fugate & Gentry, 2016). Girls with ADHD often face a lack of motivation and a loss of academic achievement more severe than those of boys with ADHD (Fugate & Gentry, 2016). Gifted girls and girls with ADHD come upon similar motivational challenges due to reduced self-efficacy, self-concept, self-competence, and expectations (Fugate & Gentry, 2016). It is necessary for parents and teachers to recognize and support girls who fit into either category, as well as those who are twice-exceptional, in order to improve self-worth and motivation (Fugate & Gentry, 2016). Motivation is driven by positive factors, those that bring happiness or pleasure, and negative factors, those that elicit fear or lead to failure (Fugate & Gentry, 2016). Perfectionism, often an intrinsic characteristic of gifted students, can augment negative motivation factors such as a fear of failure (Fugate & Gentry, 2016). Gifted students, especially girls with ADHD, find few positive motivation factors in school, and the potential for negative motivation factors abound (Fugate & Gentry, 2016).

Students can become avoidance-motivated when situations elicit anxiety, depression, or underachievement (Fugate & Gentry, 2016). Gifted programming should be developed to make use of strategies designed to overcome avoidance motivation (Fugate & Gentry, 2016). Studies have shown curriculum designed to increase autonomy help reduce avoidance motivation (Fugate & Gentry, 2016). The primary factor shown to increase motivation for twice-exceptional learners is the relationship between the teacher and the student (Fugate & Gentry, 2016).

Not all educators and researchers agree with the idea changes must be made in traditional models of gifted education (Schorer & Baker, 2012). Schorer and Baker (2012) discovered an inconsistency when other researchers criticized the lack of evidence-based research on existing models of gifted education while simultaneously advocating for a new system (Schorer & Baker, 2012). Without more data on existing measures, Schorer and Baker (2012) contended, it is too early to reject traditional models.

Schorer and Baker (2012) also reported a lack of evidence in measuring the success of gifted education. Current studies seldom use effect sizes and probability statistics to provide appropriate benchmarks to determine the efficacy of programming (Schorer & Baker, 2012). Schorer and Baker (2012) asked, "How does one determine the value of a program in education? What benchmark provides a reasonable criterion for determining whether a program works?" (p. 105).

Schorer and Baker (2012) posited, "What constitutes success?" (p. 105). For an individual student, many types of performance can be emblematic of success (Schorer & Baker, 2012). Criteria that seem to measure success during one stage accurately are often inadequate during later development (Schorer & Baker, 2012). Schorer and Baker (2012) asserted gifted students manifest success in so many diverse ways, it would be impossible to create a system capable of identifying and nurturing all possible varied needs. Any new system would inevitably fall short due to the same perceived inadequacies of the existing traditional system (Schorer & Baker, 2012).

Zhbanova, Rule, and Stichter (2015) studied the differences in identification of specific subgroups including African Americans. Zhbanova et al. (2015) explained teachers might not understand or identify the behaviors of African American students as

gifted until they develop a better relationship with the students. This fits well with Clark (2008), who noticed teachers tend to identify children who are most like themselves (as cited in Dalia & Agne, 2013).

Using leadership to identify gifted students is another way to overcome this unintentional bias when identifying minority students (Zhbanova et al., 2015). Measuring other domains, such as spatial perception or social sensitivity, might be a way to expand the group of gifted students and be more equitable to ethnic or racial groups (Gallagher, 2015). Wininger, Adkins, Inman, and Roberts (2014) proposed using a mathematics interest inventory to help identify gifted children. Using cognitive theory, first proposed by Dewey (1913) (as cited in Wininger et al., 2014), educators noted interest-oriented learning helps with motivation. This fits well with what teachers reported to Dalia and Agne (2013) when they noted an interest in math as an initial indicator students might be gifted. Colangelo and Wood (2015) argued using cognitive assessments instead of intelligence tests would provide a better method for identifying gifted students. Peters and Gentry (2013) noted criterion-related assessments in conjunction with teacher scales are an effective means of identifying students early while being more inclusive than traditional methods.

The research of Colangelo and Wood (2015) led them to identify five common traits that manifest in gifted individuals. These traits include divergent thinking defined as innovative or novel, excitability or high level of arousal with focus and energy, sensitivity characterized by sympathy and empathy, perceptiveness portrayed as the ability to see multiple angles of a situation simultaneously, and entelechy described as

having a goal and motivation (Colangelo & Wood, 2015). Some cognitive traits associated with giftedness include the following:

> 1) early verbal ability, 2) awareness of what others fail to observe, 3) high levels of concentration, 4) extreme fascination with a topic or idea, 5) high functioning memory, 6) efficient information retrieval, and 7) the ability to depict or imagine objects from multiple often unobserved perspectives. (Colangelo & Wood, 2015, p. 134)

Some of these cognitive traits are in excess and to the extreme often verging on neurosis (Colangelo & Wood, 2015). Polish psychiatrist Kazimierz Dabrowski (as cited in Colangelo & Wood, 2015) saw internal forces at work that generated overstimulation, conflict, and pain. Colangelo and Wood (2015) agreed with Dabrowski by concluding gifted individuals need help navigating their developing traits, and without such support, these traits can lead to anxiety and pathological neurosis.

There is a lack of research in the field of gifted/ADHD studies pertaining to gender differences (Fugate & Gentry, 2016). More attention has been paid to boys with ADHD mainly due to the prevalence of the identification of males as having ADHD (Fugate & Gentry, 2016). Boys are clinically identified as ADHD at a rate four times higher than that of girls (Fugate & Gentry, 2016). Fugate and Gentry (2016) studied twice-exceptional adolescent girls with ADHD. Studies have shown girls differ in their ownership of giftedness (Fugate & Gentry, 2016). Gifted girls tend to value their parents' opinions more than gifted boys (Fugate & Gentry, 2016). This can be problematic for twice-exceptional girls with ADHD, as one of the characteristics of

ADHD is a potential to experience strained relationships with peers (Fugate & Gentry, 2016).

For gifted students, the standard Piagetian development model is often seen in an accelerated way or is not followed at all (Colangelo & Wood, 2015). This process is known as asynchronous cognitive development (Colangelo & Wood, 2015). The Columbus group (cited in Colangelo & Wood, 2015) wrote of asynchronous development as advanced cognitive abilities and heightened intensity that create a psyche qualitatively different from the norm. Because of this pattern of distinct psychological manifestations, Colangelo and Wood (2015) argued there is no valid profile of a gifted individual, going so far as to say gifted individuals comprise the most varied group of young people and adolescents in existence. Because of this variance, Colangelo and Wood (2015) argued traditional gifted identification methods inevitably miss vast swathes of talent.

Along with these other factors, an assessment is most often a core component, and the Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V) is the most current (Rowe et al., 2014). Cognitive theory led to improvements to the fourth edition of the WISC and adhered to current best practices in education (Rowe et al., 2014). Rowe et al. (2014) cautioned the new WISC-V does not support using an overall score as a cutoff value to determine gifted placement. Ritchotte et al. (2016) agreed, "Denying students access to gifted services solely by not meeting a cutoff score on a test is not a defensible practice" (p. 24). Cooper (2011) wondered why all gifted youngsters are not automatically tested and hinted schools might be liable for not helping them to reach their potential.

Heller (2012) proposed a complete shift in gifted research to an actiotope approach which he described as focusing on the interaction between the individual and the social learning environment. In this approach, "learning pathways," instead of the traditional approach to identification, are used (Heller, 2012). In an actiotope approach, students follow their talent and interests into areas best-suited to their individual and social development (Heller, 2012). Some would invariably excel at a level traditionally thought of as gifted programming (Heller, 2012).

DeNisco (2015) described a new identification method many schools are employing. In this new method, gifted teachers once or twice a year teach an enrichment class to the general student population based on the interests of the students (DeNisco, 2015). General education teachers and gifted program teachers then observe and assess the students in the courses, looking for leadership or other gifted traits (DeNisco, 2015).

**Resource allocation.** In 2011, gifted education sustained a complete loss of national funding only to have it partially restored in 2013 (Olszewski-Kubilius & Thomson, 2015). In 2015, the federal government only allocated $10 million for gifted education programs (Adams, 2015). In this uncertain environment, gifted education is primarily left to the discretion of the states, and there are varying degrees of programming quality developed by the states (NAGC, 2015). Only 31 states require gifted students be identified (DeNisco, 2015). Thirty-two states mandate some type of gifted education, while paradoxically, only 27 states allocate any funds for gifted education (NAGC, 2015). When resources are limited, schools need to focus on improvement programs that have a positive effect on all students (Bernhardt, 2015).

Gifted education has long suffered from a lack of financial support verging on apathy with the most recent example being a complete lack of federal funding for gifted education research in 2011 (Olszewski-Kubilius & Thomson, 2015). Although a partial restoration of funding for research on gifted education occurred in 2013, the continued focus on closing achievement gaps has promoted the idea of reaching a minimum level of achievement for all students at the expense of gifted students (Olszewski-Kubilius & Thomson, 2015). Kettler et al. (2015) examined resources allocated to gifted education in over 1,000 schools. According to Kettler et al. (2015), variance in funding depended upon multiple variables, but locale, school size, and economic hardship were the most reliable predictors of a high variation in funding for gifted education. Purcell (as cited in Baker, 2001) found gifted programming was more comprehensive in states with mandated gifted funding. Texas, a state often considered a leader in gifted education, exhibits a large variance in per-pupil spending on gifted students across districts (Baker, 2001). Baker pointed out when districts are faced with financial cuts, those with lower socioeconomic populations tend to cut gifted education more drastically than districts with a higher economic foundation (Kettler et al., 2015).

Olszewski-Kubilius and Thomson (2015) attributed the current lack of research or even interest in gifted students to federal programs such as No Child Left Behind and the Common Core State Standards, an increase in the number of children living below the poverty line, a growing income gap, and the continued under-representation of low-income and second language learners in existing gifted programs. To overcome the current lack of national emphasis on gifted education, Olszewski-Kubilius and Thomson (2015) recommended new approaches to identification and programming.

Gifted students who also have learning disabilities are known as twice-exceptional students, and attention to these students is increasing (Baldwin et al., 2015). Often these students have behavior disorders or act out in school, but are also academically gifted (DeNisco, 2015). Twice-exceptional students can often be overlooked by those providing assistance because of their unique combination of needs, and therefore gifted education is vital to help bridge the gap for these students (King et al., 2015). DeNisco (2015) noted twice-exceptional students are often excluded from gifted programming. Twice-exceptional students need resources for both support and advanced programming, according to Meisgeier, Meisgeier, and Werblo (as cited in Baldwin et al., 2015).

Resource allocation is different within the states as well; small, more rural schools tend to underserve populations of gifted students (Kettler et al., 2015). In St. Louis, there are two gifted magnet elementary schools, and four times as many students apply for spots in these schools as there are vacancies (Crouch, 2016). Within economically disadvantaged areas, minorities and English language learners are underrepresented in gifted courses and need multiple assessments to encourage proper identification (DeNisco, 2015). There persists a high discrepancy in funding between urban and rural schools (Azano et al., 2014). Young and Balli (2014) pointed out the variability of gifted programming and noted some schools promote better outcomes than others. According to Olszewski-Kubilius and Thomson (2015), talent development strategies and new research on intellectual malleability must be pursued to help low-income and English language learners excel in the gifted arena.

In a recent study of gifted programming, parents of gifted and talented students universally agreed more funding is needed for gifted and talented education regardless of whether their children are adequately served or not (Young & Balli, 2014). Gifted students in rural areas have access to fewer specialists and fewer available program options than their peers in less-rural areas (Azano et al., 2014). State policy often ensures standards and equity of access to the general curriculum, but in the enrichment curriculum and accelerated courses often populated by gifted students, the local district tends to have ultimate control (Kettler et al., 2015). There exists a correlation between funding and gifted education (Kettler et al., 2015). When school funding is reduced, gifted programs and other services for the gifted and talented are also reduced (Kettler et al., 2015).

**Strategies and research.** Schorer and Baker (2012) noted more research on the theoretical foundations of gifted education is needed to justify changes to current theory. Steiner and Carr (2003) submitted despite the parallels, an insufficient amount of communication exists between researchers of cognitive theory and gifted education. This is a loss to gifted education, as the only way to understand gifted performance is to merge research on giftedness with cognitive theory (Steiner & Carr, 2003). Today there are numerous academic journals promoting gifted studies (Lo & Porath, 2017). Gifted studies are growing in number, but studies are often fragmented in nature (Lo & Porath, 2017).

Olszewski-Kubilius and Thomson (2015) noted research on best practices for gifted students is often a tricky prospect: “In truth, there is not a cohesive body of research on many of our ‘best practices’” (p. 51). Chenoweth (2015) stated to improve

schools, educators must find patterns in data and use them to improve instruction. The current standards of best practice are to use ability grouping, acceleration, and formative assessment (Missett et al., 2014). Peterson (2015) stated research has grown gradually and is only directed at measurable variables. Henry Chauncey, President of the Educational Testing Service, believed putting the impetus on testing and identification without having support services to offer is a waste of resources (Jolly, 2014).

Gifted students need content suited to their individual needs, with frequent assessments and differentiated instruction (Adams, 2015). Campbell and Feng (2011) recommended grouping with developmental peers. Gifted students seek out new ways of learning and constantly create and manipulate their own learning strategies (Councill & Fiedler, 2017). When gifted students are given the opportunity to investigate a topic, creativity and critical thinking ensue (Councill & Fiedler, 2017). When not given the opportunity to pursue their own interests, gifted individuals become listless with the monotony of memorization due to the fluency of their cognitive skills (Councill & Fiedler, 2017). Often gifted students will become underachievers due to a lack of opportunity in the regular classroom (Councill & Fiedler, 2017). Educators not accustomed to gifted individuals may perceive their needs as negative, often describing such individuals as hyperactive or know-it-alls; teachers sometimes become upset at the students' constant questioning (Councill & Fiedler, 2017).

Teachers need training in differentiation to support the creativity of gifted students (Councill & Fiedler, 2017). Differentiation in the classroom may promote active learning, improve decision making, and stimulate problem-solving for all students (Councill & Fiedler, 2017). Differentiation can be achieved through the use of

Specifically Designed Instruction (SDI) (Councill & Fiedler, 2017). These SDI techniques help meet the needs of gifted students and non-gifted students (Councill & Fiedler, 2017). Specifically designed instruction includes retesting and compacting, telescoping and individual pacing, independent study, learning contracts, and tiered instruction (Councill & Fiedler, 2017). The SDI model works well for gifted education as well as for non-gifted students when executed in the classroom (Councill & Fiedler, 2017).

Gubbels et al. (2014) showed positive results in a study of cognitive, socioemotional, and attitudinal effects. Results indicated gifted students can thrive with a pull-out approach that focuses on cognitive development (Gubbels et al., 2014). Altintas and Ozdemir (2015) believed gifted students need intentionally created, organized teaching activities and environments to thrive. Guilherme (2015) emphasized relationships as an essential component of education for gifted students. To Guilherme (2015), the teacher's role is that of a community leader or builder who facilitates learning.

Another area of current research is the effect of descriptive curriculum versus prescriptive curriculum (Altintas & Ozdemir, 2015). Studies have shown prescriptive curriculum have more impact on gifted students than descriptive curriculum (Altintas & Ozdemir, 2015). Planning effective intervention for advanced students is a valid educational practice (Altintas & Ozdemir, 2015). An example of a designed, researched, and implemented prescriptive curriculum is the Purdue model (Altintas & Ozdemir, 2015). The CLEAR curriculum model is another well-reviewed and researched gifted framework (Azano et al., 2014). Stoeger et al. (2015) touted the benefits of a technique

called self-regulated learning to aid gifted students in building meaning from their experience and environment.

Gifted children usually outperform their peers on most cognitive tests (Zhang, Zhang, He, & Shi, 2017). However, when it comes to using memory strategies on recall tasks, gifted students perform on par with non-gifted individuals (Zhang et al., 2017). Studies have indicated gifted children can memorize difficult concepts easily, but when it comes to basic recall, they have no statistical advantage (Zhang et al., 2017). Any advantage gifted students enjoy at memorization stems from nonstrategic factors (Zhang et al., 2017). Gifted students succeed despite the efficiency of memorization strategies due to other factors such as processing speed (Zhang et al., 2017). Clustering strategy is a memorization strategy documented to improve recall performance (Zhang et al., 2017). Gifted students do not display a statistically significant correlation between clustering strategy and recall performance (Zhang et al., 2017). However, gifted students do not suffer from a typical recall pitfall known as collaborative inhibition, in which people who memorize facts collaboratively struggle to recall the facts individually (Zhang et al., 2017).

Students are generally identified as gifted in grade three (DeNisco, 2015). Krissy Venosdale (as cited in Adams, 2015), an innovation coordinator at Kinkaid School in Houston, communicated it is important to have daily class meetings and quick team-building games to break down the communication barriers between gifted and non-gifted students. DeNisco (2015) suggested placing students into classrooms according to achievement levels while maintaining flexibility. Gifted educators aim to develop either

growth or balance and expect different behaviors and outcomes based on which paradigm they follow (Vladut et al., 2016).

However, Adams (2015), who cited Eric Carabaugh, a professor of education at James Madison University, suggested teachers stay clear of labels and adjust their dynamic groups. Another strategy is to have gifted resource teachers come into the room and support the classroom teacher with differentiation (Adams, 2015). VanTassel-Baska and Fischer Hubbard (2016) agreed with this grouping and noted when fewer students are in a school, teachers and administrators can identify individual strengths and weaknesses more efficiently, and this knowledge helps with the creation of flexible groups of students operating at specific levels of education.

DeNisco (2015) posited providing access to differentiation experts is necessary, as only three states require general education teachers to have training in gifted services. In Adams (2015), Susan Winebrenner, author of *Teaching Gifted Kids in Today's Classroom*, suggested teachers should begin with the most advanced and complicated concepts, allowing their most gifted students to move on to higher levels. Venosdale also proposed gifted students thrive when they are allowed to explore topics in new ways (as cited in Adams, 2015). To implement these strategies, it is vital to plan differentiated learning experiences (Altintas & Ozdemir, 2015).

The gifted curriculum should be designed specifically to suit the needs of gifted individuals and should include research-based best practices (Sak, 2016). Unfortunately, in many schools, gifted education is not implemented in an efficient manner (Sak, 2016). Gifted programming seldom follows a coherent approach and is often patched into the existing school curriculum (Sak, 2016). Despite current inadequacies in funding and

design, gifted programs persist due to support from parents (Sak, 2016). Researchers have espoused the need for fidelity to scientifically created gifted programming, but in practice, this is seldom evident (Sak, 2016). Of the 20 gifted models reviewed by Sak (2016) in his meta-analysis, only five were found to have evidence of effectiveness with gifted students.

Sak (2016) reviewed the Education Programs for Talented Students (EPTS) curriculum. The EPTS can be used to develop accelerated and enrichment programming for gifted students of all ages, is designed for gifted students, and exhibits universality, specificity, utility, and flexibility (Sak, 2016). The EPTS can be used in special programs, pull-out programs, and self-contained classrooms (Sak, 2016). The EPTS is based on the theory of successful intelligence, which states gifted people use their analytical, creative, and practical skills in conjunction to achieve success (Sak, 2016).

Gifted programming has been dominated by acceleration and enrichment approaches (Sak, 2016). Acceleration is viewed by many as an ideal form of gifted education (Sak, 2016). Meta-analysis of research from 1984 to 2008 provided credence to the validity of acceleration and its positive effect on gifted students (Sak, 2016). Enrichment has similarly been shown to yield positive effects in (Sak, 2016). The EPTS uses both enrichment and acceleration to create a curriculum for gifted students (Sak, 2016). In the EPTS, enrichment is used to create skills that provide the learner with transferability of knowledge garnered in one arena to another (Sak, 2016).

Lee (2016) suggested using inquiry for problem-solving and brainstorming with gifted students. Often gifted differentiation takes on the form of enrichment (Altintas & Ozdemir, 2015). A successful approach indicated by Kaplan (as cited in Altintas &

Ozdemir, 2015) is using multiple intelligence theory. Proponents of talent development theory, such as Olszewski-Kubilius and Thomson (2015), advised matching enrichment opportunities with the specific intelligence domain in which the student excels. Another strategy with positive results is project-based learning (Altintas & Ozdemir, 2015). Interdisciplinary enrichment activities were also shown to improve student learning (Altintas & Ozdemir, 2015). Lee (2016) advocated using invention education with students who display aptitude in problem solving and creativity.

When preparing enrichment for twice-exceptional students, it is profitable to include input from special education experts concerning differentiation and specific student accommodations (King et al., 2015). Researchers of best practices for twice-exceptional students have suggested providing enriched educational opportunities targeted at the child's interests, while simultaneously supporting each student's social-emotional needs through therapeutic interventions and specialized instruction (Baldwin et al., 2015). Twice exceptionality is seen as a barrier to achievement for gifted students (Seeley, 2004, as cited in Landis & Reschly, 2013). Landis and Reschly (2013) suggested engagement in extracurricular programming is a valuable tool to reduce the risk of dropout for twice-exceptional and gifted students.

Missett and Foster (2015) recommended for all gifted curriculum, it is important to employ fidelity of implementation-based practices. Missett and Foster (2015) concluded some, but not all, gifted programs include fidelity of implementation protocols. Azano et al. (2014) pointed out fidelity of implementation is difficult in rural areas, because resources might not permit a high degree of fidelity to the prescriptive curriculum.

Young and Balli (2014) stressed the importance of professional development for teachers of gifted children. Azano et al. (2014) noted teachers in rural areas argue limited resources and limited funding for professional development contribute to inadequate opportunities for gifted children. According to the NAGC (2015), only five states require annual professional development for teachers in gifted programs, only 14 states require general education teachers to have any training about the needs of gifted students, and only six states require all teachers to have pre-service training in gifted education. Assessing gifted curriculum can help a school avoid a topping-out effect in which gifted students have surpassed the enrichment provided within the school's gifted courses (Makel & Wai, 2016). Gifted programs and other complex district initiatives are difficult to copy from one location and implement in another, often requiring assessment, patience, and small changes to refine (Berliner & Glass, 2015).

**The state of gifted education in state and national policy.** Lacking a comprehensive national policy, and left in the hands of the states, decisions concerning gifted education have largely been made at the local level (Kettler et al., 2015). Baker (2001) advocated those interested in increasing funding for gifted education abandon petitioning the national government and instead focus on supplemental funding from state government. The inclusion of the word 'potential' in most states' gifted definitions enables the recruitment of students who are not currently displaying high abilities but may (Olszewski-Kubilius & Thomson, 2015). Crouch (2016) noted in Missouri, the definition of gifted reads, "Those children who exhibit precocious development of mental capacity and learning potential" (p. 4).

Peterson (2015) argued terms defining gifted students are often open to interpretation and should instead reflect student needs. According to Baker (2001), standards-based reforms focus on accountability and prioritize the needs of those who continually fall below the national standards at the expense of those who can more easily exceed minimum standards. VanTassel-Baska (2010) pointed out curriculum developed for the gifted can be used to benefit all students.

Maxcy (as cited in Kettler et al., 2015) found a negative relationship concerning No Child Left Behind accountability requirements and the number of gifted education faculty in districts. Lee (2016) asserted when numerical test scores are valued above all else in education, problems develop. Baker (2001) explained, "Policies vary widely from state to state, and little empirical evidence exists regarding the availability of opportunities for gifted education across or within states" (p. 230). Of the 27 states which provide funds for gifted education in some manner, only 10 provide direct gifted funding, with the majority providing funding as part of a formula based on additional criteria (NAGC, 2015). In 2011, of Missouri's 522 school districts, fewer than 60% reported any gifted services whatsoever (Cooper, 2011).

Twice-exceptional learners have even less policy protecting them; only six states have passed legislation with policy implications for their special needs (Baldwin et al., 2015). As reviewed in Baldwin et al. (2015), Public Law 94-142 mandated a free and appropriate public education for all public-school students. Public Law 94-142 protects services for special education students but does not extend to gifted students (Azano et al., 2014). Baker (2001) pointed out court cases have determined this does not guarantee

gifted students a right to special education; it simply guarantees a "basic floor of opportunity" (p. 232).

A critical problem of litigation-based strategies to gain equity is that they inevitably create divisiveness and an unhealthy competition for resources (Baker, 2001). Policymakers are at a disadvantage because there continues to be a lack of sufficient information concerning what adequate funding might entail (Baker, 2001). Gifted students in public schools continue to be basically neglected (Cooper, 2011). United States Representative Elton Gallegly (2011) pointed out that among the highest-achieving students worldwide, United States' students are falling behind those from other nations.

**Gifted students and academic markers.** Grade point average (GPA) has been used by schools to determine academic success and as an indicator of future college success (Warne, Nagaishi, Slade, Hermesmeyer, & Peck, 2014). Grade point average is often used as a predictor of college readiness and future college success (Conejeros-Solar & Gómez-Arízaga, 2015). Goots (1997) explained gifted students' GPAs did not vary by their IQs; instead, high GPAs correlated more closely with the difficulty of the classes in which students were enrolled (Goots, 1997). Gifted students with higher GPAs tended to take higher-level classes (Goots, 1997).

**Summary**

Gifted education is important, because gifted students require services and curriculum to support their unique needs in order to reach their ultimate potential (Hollingworth, as cited in Olszewski-Kubilius, Subotnik, & Worrell, 2015). Peterson (2015) noted gifted students might have difficulties with self-esteem, sleeping, and stress, as well as overstimulation and sensitivity to criticism. Adams (2015) reported gifted

students may seem focused in class, but are bored. Gifted children are often more sensitive than their peers (Plucker & Callahan, 2014) and need the enrichment and cognitive processes that are the mainstays of gifted programming (Plucker & Callahan, 2014).

Gifted programming is not consistently researched, funded, or implemented across the United States (DeNisco, 2015; NAGC, 2015). Within states, the lack of consistency continues with some districts and demographics disproportionately serviced while others lack any service at all (Baker, 2001; Kettler et al., 2015). Research on best practices in gifted education has been uneven (Olszewski-Kubilius & Thomson, 2015). Some researchers have performed action research on prescriptive and descriptive curriculum (Altintas & Ozdemir, 2015). Various cognitive approaches such as teaching difficult material first (Adams, 2015), matching up learning modalities with domains in which the student excels (Altintas & Ozdemir, 2015), and accelerated instruction (Lee, 2016), have had success in the classroom.

There is a lack of sufficient literature concerning gifted education to advance educational practice (Plucker & Callahan, 2014). Most schools use either an accelerated or enrichment model, and there is a lack of conceptual knowledge that limits the ability to determine the effectiveness of these models (Kim, 2016). Kim (2016) stated, "In addition, a meta-analysis that reviews effects of enrichment programs needs to be updated with more current studies" (p. 1). Kim (2016) attempted a meta-analysis to evaluate the effects of enrichment programs on academic achievement and socioemotional development of gifted students. Kim (2016) discovered enrichment programs have a significantly positive effect on achievement; however, this meta-

analysis compared students who received gifted enrichment to students who did not receive gifted enrichment. In other words, gifted students in gifted enrichment programs performed better than general education students not in gifted education programs (Kim, 2016).

Gifted education has not received much attention from the national government, and details and policy concerning gifted education have largely been made at the local level (Kettler et al., 2015). Lee (2016) explained when test scores are valued above all else in education, inevitably problems develop. However, as Baker (2001) pointed out, "United States court cases have not been especially kind to gifted students by concluding gifted students do not have a mandated right to special education, just a 'basic floor of opportunity'" (p. 232). In the next chapter, the methodology, research design, and ethical concerns of this study are described.

## Chapter Three: Methodology

The purpose of this study was to examine gifted programming to determine if there is a correlation between the amount of time spent in gifted services and academic success. Chapter Three contains information about the problem and purpose of the study. The research questions and hypotheses are also restated and examined. Chapter Three includes information concerning the design of the study and a detailed description of data collection and data analysis. Ethical considerations and information about the population and sample size are found in this chapter.

The academic data selected for analysis included grade point averages, class ranks, standardized test scores, and absences. These measures were selected because they provide an opportunity to evaluate the academic performance of high school students numerically and because they reflect success in high school. For this research, School District A archival data were used. School District A does not have high school gifted programming; therefore, the data collected came from elementary and middle school level gifted coursework. If any correlation exists between success and years spent in service, it could indicate an indelible, lasting improvement in the quality of the students' education as a result of participation in gifted programming at the middle school and elementary levels.

Grade point average is a numerical representation of the accumulated scores a student has received throughout a quarter, semester, or year (Gayles, 2012). As a statistical measure, it does not rely upon and is not affected by the performance of other students; GPA simply measures a student against a predetermined standard (Gayles, 2012). In School District A, a GPA of 4.0 is considered an A, 3.0 is a B, 2.0 is a C, and

1.0 is a D, with any fraction below 1.0 regarded as an F. As an evaluative measure, GPA is considered a good predictor of first-year college grades, long-term college outcomes, and cumulative college GPA (Gayles, 2012). Grade point average even remains true across all academic disciplines and universities (Gayles, 2012). It has a limitation of being a poor individual predictor, as any given student can have a broad range of outcomes (Gayles, 2012). GPA was selected because it has been kept as a record for the entire duration of time under analysis and because it is a standard measure of academic success used in many schools around the state.

Class ranking is a numerical representation of a student's high school achievement in comparison with the achievement of peers (Saupe & Eimers, 2010). Class ranking was used as a statistical measure and calculated ranking by flipping the ranking scale and counting up instead of down. For example, in a class of 100 students, the valedictorian would have a rating of 100 instead of 1, and the student with the lowest academic level would rank 100. The acquired rank was then divided by the total number of students in the graduating class. In this manner, the valedictorian of a class of 100 would achieve a rating of 1 (100/100), while the salutatorian would have a ranking of .99 (99/100) and so on down the ranks. By assessing the rankings in this manner, this study is able to compare rankings across multiple graduating classes.

Class ranking is used by high schools and universities as an indicator of success in comparison to one's peers (Saupe & Eimers, 2010). The ranking is similar to GPA but also takes into account weighted courses (courses worth a maximum of more than 4.0) (Saupe & Eimers, 2010). The class ranking also differs from GPA because class rank takes into account and compares students to other students, while GPA only shows the

individual student's scores compiled over time (Saupe & Eimers, 2010). Because of this difference, class ranking is not merely a numerical listing of GPAs ranked highest to lowest, but a class hierarchy that evaluates a student's academic success (Saupe & Eimers, 2010). Saupe and Eimers (2010) emphasized class rank as having a high correlation to success in college. In fact, Saupe and Eimers (2010) recognized the correlation between class rank and college success as a higher predictor than GPA, ACT score, and individual enrollment exams. Class ranking has a limitation of being contingent upon the quality of the high school curriculum and socioeconomic factors (Guskey, 2014).

A standardized test is a test requiring all test takers to answer questions from a common bank of questions (*Standardized test*, 2016). Standardized tests are consistent in manner, making it possible to compare the relative performance of individual students (*The Glossary of Education Reform*, 2016). These scores are often used to assess student learning for curriculum assessment (*The Glossary of Education Reform*, 2016). Scores are also utilized summatively to evaluate end-of-course learning (*The Glossary of Education Reform*, 2016). Additionally, standardized tests are a common tool of colleges and universities to gauge a student's preparation for college readiness (*The Glossary of Education Reform*, 2016). A limitation of standardized tests as a gauge of college readiness is socioeconomic bias (Sommerfeld, 2011).

The most common and accepted college readiness exam given in Missouri is the ACT (Gewertz, 2018). For this study, ACT scores of students in the archival data are examined. Nearly every student in the archival data had registered an ACT score. The ACT is considered a high-school summative assessment that reflects math, science, and

reading/writing proficiency (Gewertz, 2018). For these reasons and the simple familiarity many schools have with the ACT, the ACT would be an appropriate benchmark for this study.

The researcher wanted to examine a behavioral component and any correlation with gifted services. One of the principal reasons given to justify gifted programming is the idea gifted courses satisfy a social/behavioral need for students seldom adequately met in the classroom (Plucker & Callahan, 2014). Many districts keep a record of discipline referrals for internal purposes; districts use the data to help promote positive school climate, evaluate the effectiveness of policies, and look for areas that concern school safety (Children Now, 2014). Student attendance is a record kept by schools because it is linked to school funding, but also because it is an excellent predictor of at-risk students (Children Now, 2014). Students who attend classes perform better in the courses and are more prepared for the next level in their academic careers (Children Now, 2014). In general, attendance correlates with success in high school (Rafa, 2017).

This study examines the behavioral indicator of attendance. The researcher wanted to use discipline records for the behavioral component under review; however, discipline records were not kept during large portions of the time period studied. Also, changes in administration during the timeframe involved and the variety of ways discipline is dealt with by administrators on a case-by-case basis. In other words, what constituted a discipline demerit under one principal might not have resulted in a demerit under another administrator. For this reason, and the additional complication of changing school board discipline policies from one era to the next, the less-ambiguous attendance data was used as the behavioral component under investigation. Attendance records were

kept during the entire period under review and reflect attendance during four years of high school for each student. It is important to note students in this study participated in gifted education programming in middle school and elementary school, so these absences did not correspond with the years in gifted education.

**Problem and Purpose Overview**

There exists a lack of research on certain aspects of gifted programming. Schorer and Baker (2012) suggested additional research into academic success indicators and gifted programming to assist in the evaluation of gifted programming. Plucker and Callahan (2014) maintained there exists a need to increase and improve research on the identification of gifted students. This viewpoint is held by many in the field and was written about in the NAGC's (2015) *State of the States of Gifted Education*.

Two areas identified as needing more study include identification of gifted students and evaluation of gifted programming. Is the lack of identification or the delay of identification of gifted students contributing to diminished academic results? Delayed identification was the problem identified for this study. This problem relates to the overall academic and psychological health of students and may help to determine if there is a window of opportunity when it comes to identification of gifted students.

This study examines the effects of gifted programs on academic performance. The purpose of this study was to add to existing research by examining correlation, or lack thereof, between the amount of time spent in a gifted program and success on quantifiable data points. These data points included ACT scores, attendance, GPAs, and class ranks. Knowing the best age to identify students for gifted education would benefit educational practice and administrative decision making. This study will add to existing

knowledge in the areas of identification, resource allocation, and evaluation of gifted curriculum.

**Research Questions and Hypotheses**

The following research questions were created to guide this research:

1. What is the correlation of ACT scores and years spent in gifted services?

$H1_0$: There is no correlation of ACT scores and years spent in gifted services.

$H1_a$: There is a correlation of ACT scores and years spent in gifted services.

2. What is the correlation of class rank and years spent in gifted services?

$H2_0$: There is no correlation of class rank and years spent in gifted services.

$H2_a$: There is a correlation of class rank and years spent in gifted services.

3. What is the correlation of high school attendance and years spent in gifted services?

$H3_0$: There is no correlation of high school attendance and years spent in gifted services.

$H3_a$: There is a correlation of high school attendance and years spent in gifted services.

4. What is the correlation of grade point average and years spent in gifted services?

$H4_0$: There is no correlation of grade point average and years spent in gifted services.

$H4_a$: There is a correlation of grade point average and years spent in gifted services.

## Research Design

The research for this study involved quantitative methods. In quantitative research, the investigator collects and calculates data and reports the information in the form of scores (Fraenkel et al., 2015). Toye, Williamson, Williams, Fairbank, and Lamb (2016) noted the value of quantitative research in determining truth through analysis. Toye et al. (2016) recognized quantitative research as providing data to corroborate or exclude correlation. Center, Skiba, and Casey (1985) called quantitative research "a powerful new tool" (p. 387).

A meta-analysis of gifted studies by Warne, Lazo, Ramos, and Ritter (2012) revealed with gifted education studies, quantitative methods were used more than twice as often as qualitative methods. In addition, quantitative studies were six times more prevalent than mixed methods studies (Warne et al., 2012). This study involved quantitative methods and procedures used to determine if there is a more positive linear fit for ACT scores, attendance, GPAs, and class ranks for students identified as gifted early in their education as compared to students identified as gifted later in their education.

**Pearson's product-moment correlation coefficient.** Data accumulated in this study were evaluated using Pearson's product-moment correlation coefficient. Warne (2011) stated, "Multiple regression may also be frequently used because the results have a clear-cut interpretation framework that fits cleanly into the general linear model (Thompson, 2006) and also produces R2, one of the most easily calculated and interpreted effect sizes" (p. 31). Wilcox (2001) stated Pearson's correlation is usually the sole tool used by researchers to determine the correlation between two variables. After

applying the Pearson's *r* to the data, the data were plotted on a scatterplot to aid in determining correlation.

**Academic data and qualitative analysis.** The above data analysis is consistent with accepted practice. Center et al. (1985) described a methodology for using quantitative design with studies aimed at special education. They explained it is appropriate to use some form of statistical analysis in such designs instead of, or along with, more qualitative designs (Center et al., 1985). This suggestion directly pertains to gifted studies, as gifted studies are often described with similar methodology and with similar accommodations as special education studies (Barnard-Brak, Johnsen, Pond Hannig, & Wei, 2015). Warne et al. (2012) pointed out means and standard deviations are the two most-common procedures used to examine statistics within gifted studies. Pearson's *r* is the next most-common procedure found in 68% of quantitative published articles reported using effect size, and the most common effect size variable was $\eta^2$ (Warne et al., 2012). Warne et al. (2012) concluded researchers who conduct studies of gifted education tend to use classic methods that stray very little from studies performed in other areas of psychology or education.

The quantitative nature of this study proved appropriate for academic data. The data yielded numerical values on multiple variables. The best and most common way psychologists and educators compare data from multiple variables is with Pearson's coefficient (Fraenkel et al., 2015). A way to visualize the processed data is by applying a line of fit to the data points yielded by the Pearson's coefficient (Fraenkel et al., 2015). A scatterplot and other graphs were used to visually display the data yielded by the Pearson's product-moment coefficient analysis. SPSS software was used to aid in the

production of graphs. The value of *r* determines if either a positive or negative correlation exists, thus validating or invalidating the hypotheses generated as part of the research questions.

In a Pearson's product-moment coefficient, *r* is the strength of correlation (Fraenkel et al., 2015). An *r* value of 1 would be a perfect one-to-one positive correlation, while an *r* value of -1 would be a perfect one-to-one negative correlation (Fraenkel et al., 2015). Strength of correlation can thus be calculated by assessing the *r* value (Fraenkel et al., 2015). The *r* value is statistically relevant to a .01 level, meaning any *r* value exceeding .01 or -.01 carries some relevance, and anything below .01 or -.01 is not relevant (Fraenkel et al., 2015).

**Ethical Considerations**

It is important to perform research in an ethical manner, especially research in the field of education (Ellis & Moss, 2014). The primary researcher in this study is a classroom teacher. The data collected included student academic reports. This study entailed virtually no risk to anyone. The IRB approval obtained for this study can be seen in Appendix A. The steps taken to ensure safety and validity are described below:

**To assure confidentiality.** All data and documents were kept under the supervision of the researcher. All electronic files were saved using a protected password and a personal computer on a secured site. All documents and files will be destroyed three years from completion of the research project.

**To assure anonymity.** A third-party data collector coded all names so no party can reconnect names to academic data points. All data were collected from archival sources, and no connection to the research or researchers by individual students was

made. There was no conflict of interest between the researcher and participants, as the participants already provided data collected from an archival source by a third-party data collector.

**Research consent form.** The school district and administration received a Research Consent Form, which described in detail the purpose of the research, any possible risks, and the opportunity to opt out of the study at any time without negative effects.

## Population and Sample

A purposive sample was used for this study. Fraenkel et al. (2015) explained, "A purposive sample is based on previous knowledge of the population, and investigators use personal judgment to select a sample" (p. 101). The population for this project included all gifted students in one rural Missouri school district, School District A, over the past 20 years. This population size is around 250 students. Of the potential 250 students in the population, data were collected on 100 students total for each of the investigated variables. The researcher, with the aid of the third-party data collector, extracted archival data at the rural Missouri school district starting with the most recent data set and working backward. The final data set included students who graduated in May of 2015. A list of gifted students for each data set (school year) and systematically compiled the students into groups for the proposed sample size of 100 was used.

Demographic information for School District A reveals it to be predominantly white with a total enrollment of around 1,300 students (Missouri Department of Elementary and Secondary Education [MODESE], 2017). The attendance rate is on par with other schools in Missouri at 94% (MODESE, 2017). The average ACT score

composite for School District A's students is just under the state average of 20.0 (MODESE, 2017). School District A lies within a relatively poor community, with 67% of students qualifying for free or reduced lunches compared with 51% for the state as a whole (MODESE, 2017). School District A is located in a predominantly rural area. A review of existing research revealed rural areas are underserved, understaffed, and underfunded in the areas of gifted education (Azano et al., 2014).

**Instrumentation**

Instrumentation is the process of preparing to collect data (Fraenkel et al., 2015). Instrumentation includes where, when, and who collects the data (Fraenkel et al., 2015). The primary investigator and the third-party data collector were the data collectors. In order to prepare to collect the data, permission to access permanent records from district files was gained.

**Data Collection**

The process used to collect the data was as follows:

1. Permission to perform on-site research from the superintendent of the rural Missouri school district was gained.

2. Lists of gifted students from the rural Missouri district's gifted coordinator was obtained.

3. The third-party data collector examined the list of gifted students and the permanent records of each identified gifted student.

4. The third-party researcher copied each file taking care to remove name and gender marks from the records.

5. The primary researcher noted the number of years spent in gifted programming.

6. The records were placed into order. Records were sorted into groups according to the number of years spent in gifted classes. The following subgroups were created:

    a. One year of gifted programming.

    b. Two years of gifted programming.

    c. Three years of gifted programming.

    d. Four years of gifted programming.

    e. Five years of gifted programming.

    f. Six years of gifted programming.

    g. Seven years of gifted programming.

    h. Eight years or more of gifted programming.

7. Notes were made for each student, highlighting academic achievement in the following categories:

    a. Grade point average on a scale of 0.0 to 4.0.

    b. Attendance in percentage of days attended.

    c. Class rank on a scale of 1 (valedictorian) to *x* where *x* is the number of students in a particular cohort.

    d. ACT scores as a percentage calculated by dividing the composite score achieved by the maximum composite score of 36 and then multiplying by 100.

**Data Analysis**

This research was conducted with attention to detail to avoid any unwanted threats to validity. Fraenkel et al. (2015) outlined threats to validity and described three main types of evidence used to counter these threats. This study made careful use of a purposive sample to build high content-related validity. This study was comprehensive in that it was designed for the examination of academic indicators such as grades, graduation rates, discipline referrals, and ACT scores for all students in the stated population. The study has high criterion-related validity because different indicators of academic success and not just one indicator (Fraenkel et al., 2015) were compared. The research built upon the concept of construct-related validity. Fraenkel et al. (2015) identified this concept as how well researchers measure the differences in behavior of individual performance on certain tasks.

A basic causal-comparative design was used to investigate and describe the data. This design involves selecting two or more groups that differ on a particular variable of interest and comparing them on another variable or variables (Fraenkel et al., 2015). A sample of gifted students who received one, two, three, four, five, six, seven, and eight years of programming was used.

A Pearson product-moment correlation coefficient was used to measure the correlation between number of years in the gifted program and ACT scores, attendance, GPAs, and class ranks. The Pearson product-moment correlation coefficient was an appropriate correlation to use because it is designed for use with interval or ratio data (Fraenkel et al., 2015). When two objects can be measured in different ways, a

researcher can use the Pearson product-moment correlation coefficient to show how objects relate to others in the population (Fraenkel et al., 2015).

**Summary**

In this chapter, problem and purpose of the study were examined. The research questions and hypotheses were reviewed. Within Chapter Three was the information concerning the design of the study. All ethical considerations, sample size, data collection, and data analysis were addressed. In the next chapter, the actual results and data of this study are detailed.

## Chapter Four: Analysis of Data

Although gifted programming has been studied over the years, a dearth of understanding of the effectiveness of programming as related to years spent in service exists (Olszewski-Kubilius & Thomson, 2015). This study was designed to examine the correlation between years spent in gifted services and academic success in high school. At the heart of this question is the concept of sensitive learning periods, which cognitive perspective researchers have indicated is lacking in current studies (Kettler et al., 2015). Relevant data would potentially suggest how best to utilize the finite resources school districts have for gifted education, a problem in many schools today (Kettler et al., 2015).

This study was designed to compare gifted students who received services for a varying number of years. Data were collected on academic outcomes in four categories and were organized to assist in the detection of a correlation, if one exists, and the strength of any correlation between years spent in gifted programming and academic indicators. The data were collected and analyzed quantitatively.

Data were analyzed using a Pearson's product-moment correlation coefficient. The data are presented statistically in this chapter. For each question, a table shows the correlation (if any) between the number of years in gifted services and scores on statistical markers. The correlational data are presented in the form of Pearson's product-moment correlations. The value *r* represents the strength of the correlation. Within the charts, an *r* value of +1 would indicate perfect correlation, and a score of -1 would indicate a perfect negative correlation (Fraenkel et al., 2015). The closer the correlation is to either extreme, the more significant the correlation (Fraenkel et al., 2015).

Statistical significance is noted if the absolute value is greater than .05 (Fraenkel et al., 2015).

**Research Question One**

1. What is the correlation of ACT scores and years spent in gifted services?

$H1_0$: There is no correlation of ACT scores and years spent in gifted services.

$H1_a$: There is a correlation of ACT scores and years spent in gifted services.

A Pearson product-moment correlation coefficient was computed to assess the relationship between the number of years spent in gifted programming and each student's composite score on the ACT exam. There was a negative correlation between the two variables [$r$ = -0.056, $N$ = 95, $p$ = 0.589] (see Table 1). A scatterplot summarizes the results (see Figure 1). For this reason, the null hypothesis was not rejected; there is a negative linear relationship between ACT scores for students who spend more time in gift programming as compared to students who spend less.

Table 1

*Pearson Product-Moment Correlations for ACT Scores and Years in Gifted Services*

| | | Years | ACT |
|---|---|---|---|
| Years in Program | Correlation | 1 | -.056** |
| Pearson *r* | Sig. (2-tailed) | | .589 |
| | *N* | 95 | 95 |
| ACT Pearson *r* | Correlation | -.056** | 1 |
| | Sig. (2-tailed) | .589 | |
| | *N* | 95 | 95 |

*Note.* **Correlation is significant at the 0.01 level.

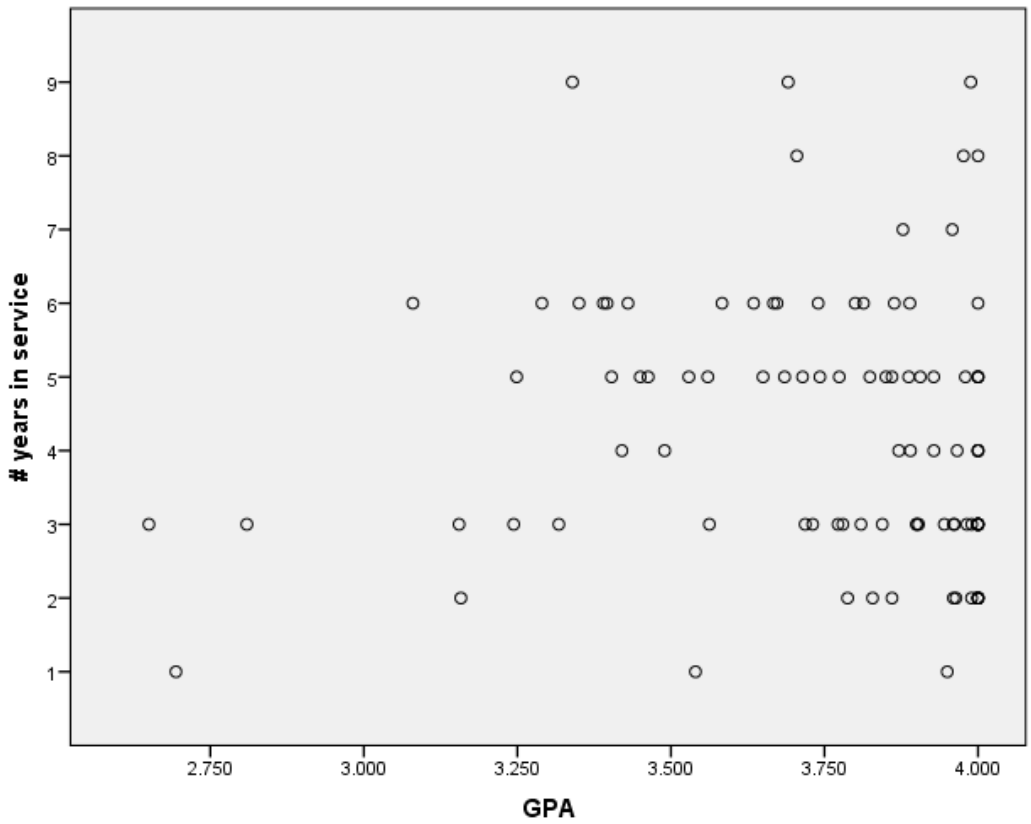


*Figure 1.* Scatterplot of years students received gifted services compared to ACT scores.

**Research Question Two**

2. What is the correlation of class rank and years spent in gifted services?

$H2_0$: There is no correlation of class rank and years spent in gifted services.

$H2_a$: There is a correlation of class rank and years spent in gifted services.

A Pearson product-moment correlation coefficient was computed to assess the relationship between each student's class rank and the number of years spent in gifted programming. There was a negative correlation between the two variables [$r$ = -0.059, $N$ = 95, $p$ = 0.572] (see Table 2). A scatterplot summarizes the results (see Figure 2). For this reason, the null hypothesis was not rejected; there is a more negative linear relationship for class rank of students who spend more time in gift programming as compared to students who spend less.

Table 2

*Pearson Product-Moment Correlations for Class Rank and Years in Gifted Services*

| | | Years | Class Rank |
|---|---|---|---|
| Class Rank | Correlation | 1 | -.059** |
| | Sig. (2-tailed) | | .572 |
| | *N* | 95 | 95 |
| Years of Gifted | Correlation | -.059** | 1 |
| | Sig. (2-tailed) | .572 | |
| | *N* | 95 | 95 |

*Note.* **Statistical significance is noted at the 0.01 level.

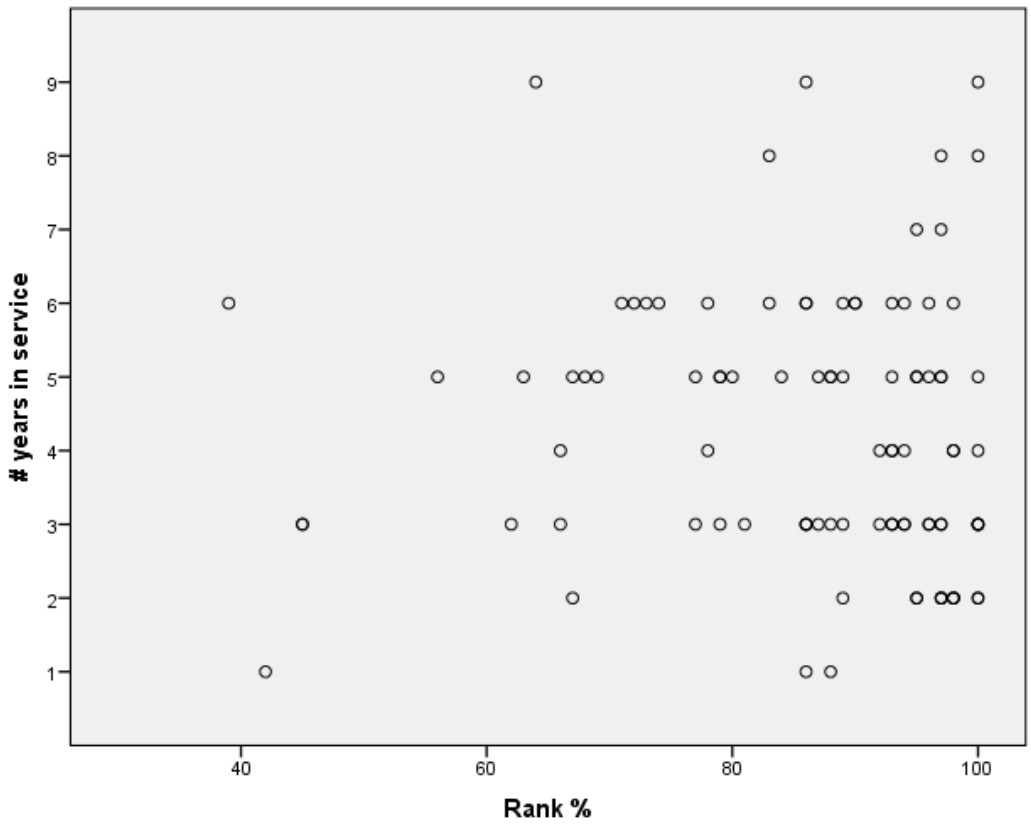


*Figure 2.* Scatterplot of years students received gifted services and class rank.

**Research Question Three**

3. What is the correlation of high school attendance and years spent in gifted services?

$H3_0$: There is no correlation of high school attendance and years spent in gifted services.

$H3_a$: There is a correlation of high school attendance and years spent in gifted services.

A Pearson product-moment correlation coefficient was computed to assess the relationship between each student's attendance and number of years spent in gifted programming. There was a positive correlation between the two variables [$r = 0.120$, $N = 95$, $p = 0.248$] (see Table 3). A scatterplot summarizes the results (see Figure 3). For this reason, the null hypothesis was rejected; there is a more positive linear relationship of attendance for students who spend more time in gift programming as compared to students who spend less.

Table 3

*Pearson Product-Moment Correlations for Attendance and Years in Gifted Services*

| | | Years | HS Attendance |
|---|---|---|---|
| Attendance | Correlation | 1 | .120** |
| | Sig. (2-tailed) | 95 | .248 |
| | *N* | | 95 |
| Years of Gifted | Correlation | .120** | 1 |
| | Sig. (2-tailed) | .248 | |
| | *N* | 95 | 95 |

*Note.* **Statistical significance is noted at the 0.01 level.

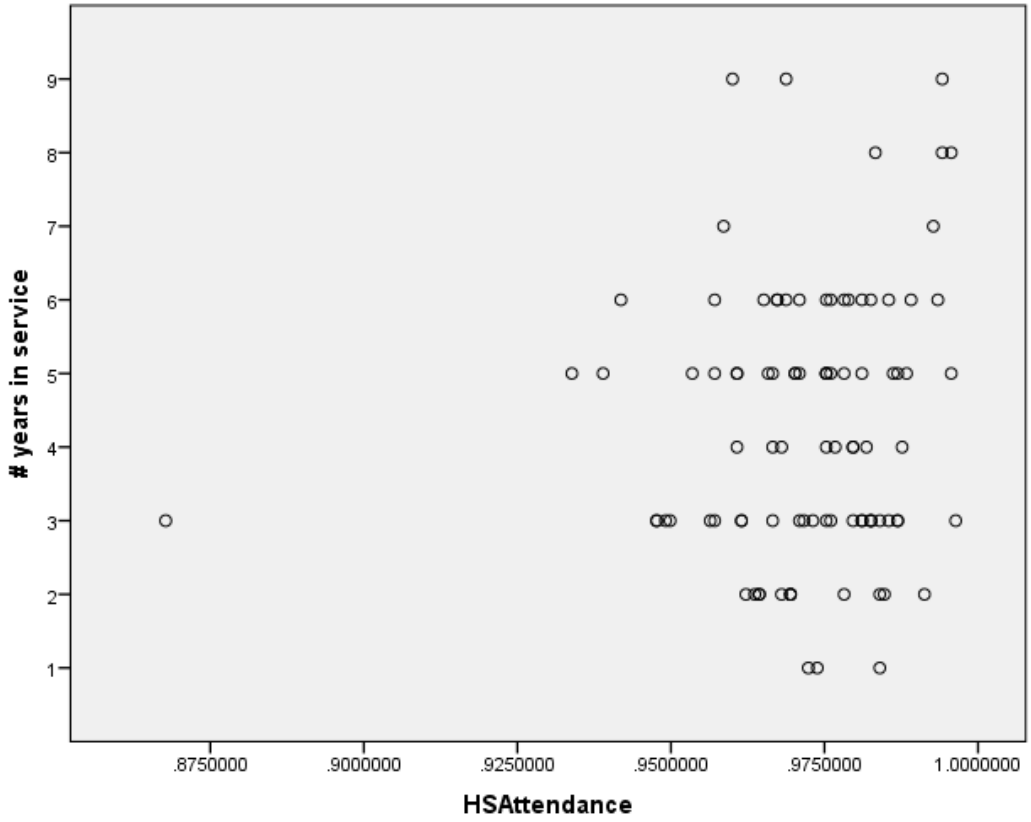


*Figure 3.* Scatterplot of years students received gifted services as related to student attendance.

**Research Question Four**

4. What is the correlation of grade point average and years spent in gifted services?

$H4_0$: There is no correlation of grade point average and years spent in gifted services.

$H4_a$: There is a correlation of grade point average and years spent in gifted services.

A Pearson product-moment correlation coefficient was computed to assess the relationship between each student's grade point average and number of years spent in gifted programming. There was a negative correlation between the two variables [$r$ = -0.046, $N$ = 95, $p$ = 0.658] (see Table 4). A scatterplot summarizes the results (see Figure 4). For this reason, the null hypothesis was not rejected; there is a more negative linear relationship between grade point average for students who spend more time in gift programming as compared to students who spend less.

Table 4

*Pearson Product-Moment Correlations for Grade Point Average and Years in Gifted Services*

| | | Years | GPA |
|---|---|---|---|
| Grade Point Average | Correlation | 1 | -.046** |
| | Sig. (2 tailed) | | .658 |
| | *N* | 95 | 95 |
| Years of Gifted | Correlation | -.046** | 1 |
| | Sig. (2 tailed) | .658 | |
| | *N* | 95 | 95 |

*Note.* **Statistical significance is noted at the 0.01 level.

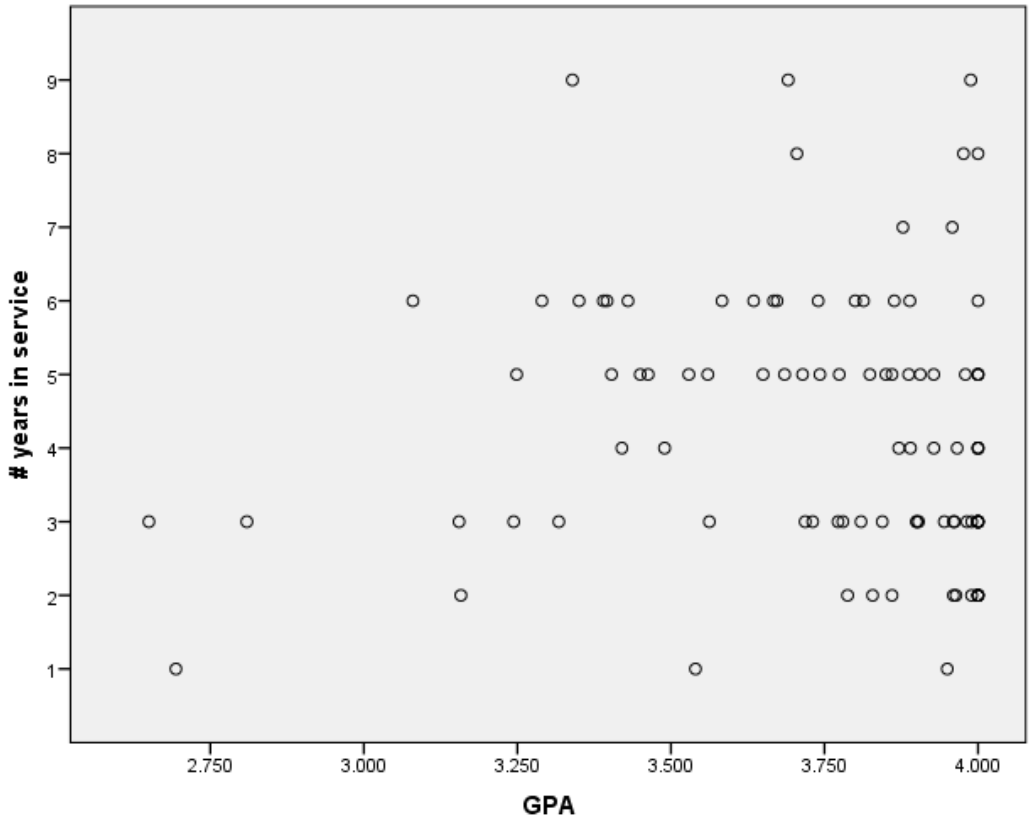


*Figure 4.* Scatterplot of years students received gifted services as related to GPA.

**Summary**

To evaluate the effectiveness and identify the ideal time in services for gifted programming, student data at School District A were analyzed. In response to research question one, the data suggested a negative correlation between ACT scores and number of years spent in gifted programming. In response to research question two, the data suggested a negative correlation between class rank and the number of years in gifted programming. In response to research question three, the data suggested a positive correlation between high school attendance and the number of years spent in gifted programming. Finally, in response to research question four, the data suggested a positive correlation between GPA and the number of years in gifted programming. In Chapter Five, the results and the significance of the data are discussed. Also in Chapter Five, suggestions for improvements to this study and for ways this study could be used to inform educators are made.

## Chapter Five: Summary and Conclusions

This study was conducted using archival data accumulated from School District A. Historical perspectives of gifted education were examined and a lack of research in cognitive studies involving gifted education was noted. The purpose of the study was to determine if there are sensitive learning periods for gifted students during which the students benefit the most from gifted programming. During the development of the study, the researcher became interested in a more readily quantifiable question associated with this cognitive question – to develop a method to determine the optimal amount of time a gifted student should spend in gifted services.

Archival data at School District A associated with academic performance were evaluated. The ACT scores, class ranks, GPAs, and absences during high school of gifted students were selected by the researcher as the academic markers to use in the study. These were selected because they were readily available and have been recognized by schools as relevant predictors of future academic and professional success. Care was taken to maintain integrity during the retrieval of data. Once the data were accumulated, it was sorted into meaningful segments. The data were analyzed using Pearson's product-moment correlations. The data were translated into numerical scores and assigned placement onto scatterplot graphs.

Chapter Five includes a review of the findings. Conclusions are also shared and used to suggest implications for future practice. Chapter Five concludes with suggestions of areas for future research.

## Findings

This study was designed to determine the correlation between years spent in gifted classes and increased academic performance. The findings of this study are presented as a review of the correlation associated with each research question. In response to research question one, the data suggested a negative correlation of -.056 between ACT scores and number of years spent in gifted programming. In response to research question two, the data suggested a negative correlation of -.059 between class rank and the number of years in gifted programming. In response to research question three, the data suggested a positive correlation between high school attendance and the number of years spent in gifted programming. Finally, in response to research question four, the data suggested a negative correlation of -0.46 between GPA and the number of years in gifted programming.

These findings indicate the students who spent the most time in gifted programming at School District A had a higher instance of negative correlation for ACT scores, class ranks, and GPAs. Interestingly, the longer a student attended gifted education classes, the more likely he or she was to have increased attendance and fewer absences.

## Conclusions

The conclusions for this study were arrived at after careful examination of the findings and critical thinking about the limitations associated with this study. The primary limitation identified was using archival data from one source. The purpose of the study was to identify and understand better any correlation between the years spent in gifted programming and improved academic results.

Students at School District A exhibited a negative correlation between years spent in gifted programming and three of the four data points focused upon in this study. Students who attended multiple years of gifted programming scored lower on the ACT, had lower class ranks, and had lower GPAs than students who only attended gifted services for one or two years. In fact, the longer a student was in gifted programming, the worse he or she performed on these academic indicators. Perhaps the curriculum for gifted programming at School District A may have a negative impact and should be reevaluated for improvement.

This study's methodology may be used as an effective way of evaluating gifted programming. In the review of research, no method of evaluating a gifted program was discovered. This study provides a model schools could use to evaluate gifted programming. The purpose of the study was to determine if a sensitive learning period would indicate a best practice for length of time students should be exposed to gifted programming.

The results indicated, in the case of the curriculum provided at School District A, practices may need to be adjusted. The teachers and administrators, before this study, had no method for evaluating if the curriculum was improving student performance, because the gifted students typically outperformed the general student population on academic markers. In conclusion, the results of this study revealed a potential model curriculum evaluation method for districts that is not invasive. It can be applied for use immediately and yields numeric and practical results.

Correlation does not prove causation (Fraenkel et al., 2015). It is important to note potential additional conclusions to be considered in addition to the ones presented elsewhere in this chapter. The lower performance of students in the gifted program could indicate students who are most gifted chose not to participate in the gifted program for the maximum number of years. Dias Carvalho and Cruz (2017) reminded:

> School, in the eyes and voices of these youngsters, is a challenging context of little interest not because they do not have an interest or will for learning but rather because the routine and uniformity make it into a space and time of tedium and monotony without dilemmas, creativity, critical spirit and anxiety. (p. 1152)

Students could choose to opt out of gifted services to pursue other opportunities or more academically enriching classes. While these conclusions would skew the data and should be considered, if true, they would also simultaneously corroborate the perceived need for curriculum restructuring.

Another possibility is students who leave the gifted program after one or two years feel the program provided them with everything they needed academically, and therefore, they no longer need to attend gifted classes. These students could, theoretically, be proving the effectiveness of the gifted program while skewing the results of this study. Students and families might feel the need to stay in the gifted program only if there persists a need for more enrichment. In the opinion of this researcher, these additional conclusions are not the most likely but are valid points to ponder when considering future research.

**Implications for Practice**

The conclusions from this research suggest two separate implications for practice. One suggestion for practice is that the gifted curriculum at School District A needs to be reevaluated. The other implication for practice is that this research method presents an approach district administrators could use to evaluate gifted programs, or even special education programs otherwise challenging to assess.

The gifted curriculum at School District A is an enrichment curriculum. The curriculum should be evaluated to determine if there are areas more closely tied to academic performance. The administrators, teachers, and curriculum directors at School District A should investigate if there are connections within the gifted curriculum to the curriculum evaluated by GPA and ACT scores. If there are insufficient connections within the gifted enrichment connecting it to other academic areas, adjustments should be made. If these connections exist but are weak in nature, they should be strengthened.

Teachers, directors, and administrators with enrichment and differentiation expertise should be involved in revamping the gifted program to bring the academic indicators associated with this study into the realm of influence of the gifted education program at School District A. Teachers, administration, and counselors may investigate additional variables in the correlation. Is there a lack of support for students in gifted programming? Do these students lack respect for the general education classes that could be reinforced in the gifted classroom?

Another implication identified by this study is a practical method for evaluation of difficult-to-evaluate school programs including gifted programs. Administrators may use the methodology described in this study to evaluate their own gifted programs. Programs

are not always transferable, and what works in one school or with one teacher may not work in a different setting (Berliner & Glass, 2015).

Districts could use this methodology as a way of determining if a new initiative is producing the desired results. Every year, administrators could update the data as students graduate. The data could then be used to yield an additional indicator for the evaluation of gifted programs. Administrators would only need to access their own archival data.

For each graduating class, administrators could evaluate the gifted students on the same academic markers by using a Pearson's product-moment correlation to show any existing correlation between academic markers and years spent in gifted programming. Administrators could note changes in correlation when curriculum or other factors are altered. In addition, administrators could use other academic indicators or the same methodology to evaluate another curriculum. For example, using the same method, an administrator could find a correlation between academic success and the number of years in special education, art, music, or physical education courses.

**Recommendations for Future Research**

There persists a need for future research on gifted education (Kroesbergen et al., 2015). Research into the identification of gifted students is vital (Kroesbergen et al., 2015). Current research into gifted cognitive studies has been identified by other researchers as insufficient (Kroesbergen et al., 2015).

Researchers need to determine what giftedness truly is (Kroesbergen et al., 2015). Why do some students show an inclination for giftedness, but fail to reach their potential?

How can schools best use limited resources to meet the needs of gifted students? Is it even necessary or ethical to use valuable, limited school resources to augment the already proficient or advanced?

When it comes to gifted curriculum, there are several questions which need to be answered (Cooper, 2011). Researchers are not sure if enrichment or acceleration or some combination thereof is the best practice (Kroesbergen et al., 2015). Districts do not have a clear blueprint for how to develop, implement, assess, and evaluate gifted programming (Kroesbergen et al., 2015).

This research shows it is possible for students to persist in gifted classes to the detriment of their academic success. More research is warranted on additional approaches. Perhaps this same format and same methodology could be used by other school districts to find a curriculum model that results in the opposite outcomes to those found in this study. Perhaps researchers could find a curriculum model in which the amount of time spent in services results in steady, continued, sustainable increases in academic performance.

Additional research should be conducted to determine if the findings are unique to the site of this study. School District A lies in an impoverished area of Missouri, a variable which may require careful consideration. VanTassel-Baska and Fischer Hubbard (2016) cited Aamidor (2007, p. 4) and the Project Spring project:

> To effect a positive change in the academic achievement and aspiration outcomes of rural, economically disadvantaged, gifted children, the findings of this study would suggest that when alternative identification is employed, the curriculum intervention must be sufficiently challenging and consistently implemented to

> mediate between the expectations of school and the child's early experiences. (p. 287)

The findings may explain why over 100 students represented in this study showed regression in performance in correlation with time spent in the gifted program.

Examination of the socioeconomic status of the 100 students should be considered. Specifically, researchers should contemplate the impact of a pull-out type gifted program versus a push-in full-inclusionary program and migration toward placement of students with higher socioeconomic status. Steenbergen-Hu and Olszewski-Kubilius (2016) found inclusionary gifted education creates "improved achievement for students of all ability levels (gifted, average, or even underachieving students) of diverse ethnic and SES [socioeconomic status] backgrounds and in a variety of educational settings" (p. 105). This may be because of the oversight of placement of gifted students from lower socioeconomic status (Steenbergen-Hu & Olszewski-Kubilius, 2016). Educators should receive professional development to identify "students with academic potential, especially underrepresented minority, and low-income students, particularly when used after some training regarding the characteristics of gifted students" (Steenbergen-Hu & Olszewski-Kubilius, 2016, p. 105).

Surveys, exit interview questions, case studies, or another methodology not previously considered herein might illuminate this question. Any administrator who uses this methodology and experiences similar results to those in this study would be wise to identify additional contributing variables which may influence why gifted students showed a negative correlation for ACT scores, class ranks, and GPAs.

**Summary**

There are millions of gifted children in the world today (Landis & Reschly, 2013). Students across all demographics show an inclination described as giftedness (Landis & Reschly, 2013). These students can and often do succeed despite the quality of their education, but it is also true that the gifted dropout and fail to reach their potential at an alarmingly high rate (Landis & Reschly, 2013). This rate exceeds the national dropout rate for students as a whole (Landis & Reschly, 2013).

When a school district decides to use its resources to build a program to help these students, it works (Landis & Reschly, 2013). Gifted students benefit from enrichment and acceleration (Landis & Reschly, 2013). The research presented in this study shows gifted studies have an interesting history.

The nation has, at points, supported gifted education, while at other times seeming indifferent to the plight of the intellectually gifted (Landis & Reschly, 2013). There is a dearth of research into the cognitive implications of gifted education (Landis & Reschly, 2013). The curriculum is not consistent, and quality of instruction often depends upon which state and in which region of the state a student lives (Cooper, 2011).

There is no consensus on best practices (Cooper, 2011). There is no evaluation tool to determine if gifted programming is successful (Baker, 2001). Administrators do not know how long or when to recommend gifted programming to achieve maximum student growth (Baker, 2001).

This study demonstrated a method to assess gifted students and gifted curriculum. Students at School District A were evaluated and found to show negative correlation between time spent in gifted service and academic success on several key indicators. The

results indicate School District A should reevaluate the gifted curriculum. The methodology used in this study can be used to evaluate school programs at School District A and beyond.

# Appendix A

## Institutional Review Board Approval

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

| | |
|---|---|
| DATE: | October 4, 2016 |
| TO: | Tim Perkins |
| FROM: | Lindenwood University Institutional Review Board |
| STUDY TITLE: | [956636-1] Examination of the Educational Impact of Delayed Identification for Gifted Students |
| IRB REFERENCE #: | |
| SUBMISSION TYPE: | New Project |
| ACTION: | DETERMINATION OF EXEMPT STATUS |
| DECISION DATE: | October 4, 2016 |
| REVIEW CATEGORY: | Exemption category # *1* |

Thank you for your submission of New Project materials for this research study. Lindenwood University Institutional Review Board has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will put a copy of this correspondence on file in our office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

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## Vita

Tim Perkins is principal of a small school in Missouri. Tim lives with his wife, Malina, and his son, Nolan. Tim's daughter, Devin, is a first-year medical student. Education was always important to Tim. His mother became a teacher when Tim was in his early teens. As a child, Tim was involved in gifted programming at his local school. He has always had an interest in science, psychology, and cognitive development. As an educator, Tim has enjoyed the opportunity to work with young people and help mold their understanding of themselves and the world around them. In his free time, Tim enjoys learning, reading, basketball, and spending time with his family.