Multiple Regression Analysis of Noncognitive Factors Affecting Academic Achievement of Juvenile Delinquents

by

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Abstract

A review of the literature showed there was evidence to suggest many incarcerated juvenile delinquents experience lifelong problems. The problem addressed by this dissertation was to provide a description and analysis of the plight of first-time-detained juvenile delinquents and the impact of noncognitive attributes and academic achievement on grades. Since first-time-incarcerated juvenile delinquents were at risk for future failure in school and life, understanding causes of academic failure could improve graduation rates and transition back into society. Social learning theory and labeling theory suggested students behave by what the youths learned from other juveniles and the labels received from peers, parents, and the community. Adaptive leadership was used as the theoretical framework because teachers in juvenile detention centers face a myriad of problems and concerns beyond traditional school which require more than technical solutions. The research questions inquired about the degree of correlation between noncognitive attributes, academic achievement, and grades. Using a non-experimental, *ex post facto* design, a multiple regression analysis was conducted on archival data for first-time-detained juvenile delinquents. Three predictor variables were statistically significant and influenced academic performance measured by grades: verbal ability, social self-esteem, and prosocial skills. For juvenile delinquents (n = 72; males = 58, females = 14) aged 10-18 (M =15.3; SD = 1.6; range 10-18), the three predictor variables predicted English grades (adjusted R^2 = .280) and Mathematics grades (adjusted R^2 = .225). Other noncognitive attributes were discussed, and recommendations for policies and future research were outlined. The results of the study support past research findings on the interaction between student achievement, noncognitive attributes, and the need to improve communication skills of juvenile delinquents.

Dedication

Since I started college years ago, I had the goal of completing a doctorate for personal fulfillment. Wanting to improve the lives of juvenile delinquents made the journey easier. Having worked with juvenile delinquents for over a decade, I know failure and recidivism are all too common. Everyone means well, but there are no outcomes beyond the activity is the objective. Many people discount these children, and firsthand I have heard and seen teachers who do not believe these children are worth the time and effort. I want to change this situation for the children.

My son, Brandon, knew my commitment to completing this dissertation was important, and he sacrificed a great deal of time to allow me this pursuit over the past four years. Without his support and reassurance, this journey would not have been possible. Our faithful companion, Kona, an elderly German Shepherd, stayed by my side at all times. They went on the journey with me. Sadly, my parents, Warren and Patricia, and my brother Jason, were not able to be with me to see me complete my studies.

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There were many people who assisted me along the way. Kim Chappell, a Professor of Education at Fort Hays State University, gave me my first glimpse into what it means to write at the doctoral level. In many ways, she made me realize doctoral studies can totally transform one's outlook on the world. She showed me the way, and I will be forever grateful.

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Chapter 1: Introduction

The school experience of juvenile delinquents has become an important issue in the field of education. In 2017, the Office of Juvenile Justice and Delinquency Prevention (2017a, 2017b), as administered by the United States Department of Education, found over one and a half million juveniles and young adults arrested per year, with over 43,000 incarcerated on a given day. Juvenile delinquents in the United States were shown to be a diverse group from different cultural, racial, and socioeconomic backgrounds, with minority students over-represented in juvenile detention (Office of Juvenile Justice and Delinquency Prevention, 2015). Despite the challenges of the population, most school teachers were neither prepared nor understood the characteristics of this population, and the teachers experienced a cultural shock. Many educators made assumptions about these students which staff members universally believed, such as thinking these students had low self-esteem, poor self-concept, and little motivation (Macomber et al., 2010).

Students released from juvenile correctional facilities face several problems, with one study showing only 44% reentering school, and students with emotional and learning disabilities had poor high school graduation rates (Cavendish, 2014). A mitigating factor might be juvenile delinquency and incarceration in correctional facilities caused the downward spiral of juveniles, as one large-scale study showed high school graduation rates and four-year college enrollment decreased for students detained (Kirk & Sampson, 2013). Tens of thousands of juveniles are incarcerated each year, and even after decades of research, poor outcomes predominated after entering a system designed to rehabilitate and correct.

The struggles of students in juvenile detention carry over into adulthood, where juvenile delinquents with honesty problems, lack of conformity, and poor family life have been shown to

face grave problems in employment, personal decisions, and in society which often resulted in dependence on public welfare (Makarios, Cullen, & Piquero, 2017; Mercer et al., 2016; Osgood, 2005). In the United States, governments spent over $6 billion per year, with costs of $88,000 per juvenile for incarceration; yet, high school graduation and adult independence followed incarceration (Aizer & Doyle, 2013). For many juvenile delinquents, entering adulthood meant no more support or services, and an immediate placement into the adult criminal justice system after reaching the age of majority, often with inconsistent results (Bekbolatkyzy, Yerenatovna, Maratuly, Makhatovna, & Beaver, 2018; Osgood, 2005).

Past research produced mixed results. Juvenile delinquents with high rates of recidivism had low academic achievement, and research-based academic interventions in traditional schools correlated to lower rates of incarceration (Katsiyannis, Ryan, Zhang, & Spann, 2008). Students in alternative settings showed improved academic achievement but had a higher rate of delinquency (Fine et al., 2018). The background of the study provided the research context, including a detailed review of juvenile delinquency and detention. This chapter includes the significance and background of the problem, research questions, hypotheses, theoretical framework, definition of terms, assumptions, limitations, delimitations, and significance.

Background of the Problem

Historically, researchers examined the connection between juvenile delinquency and self-concept. Lund and Salary (1980) found considerable differences between delinquent and nondelinquent youth concerning self-respect and self-concept, which supported previous findings. In a study of 30 incarcerated juvenile delinquent students and 90 nondelinquent students using Harter's Perceived Competence Scale for Children, juvenile delinquent students differed on social and general self-worth (Cole, Chan, & Lytton, 1989). Juvenile delinquents, in

another study of students committed to a residential program, were well below grade level in math and reading, and delinquents had significantly lower self-concept. There was not a strong relationship between self-concept and IQ, though (Brookover, Thomas, & Paterson, 1964; Zinkus & Gottlieb, 1978). Studies documented students' academic achievement and motivation in juvenile detention, but the studies looked at juveniles after being committed for longer periods of time, making the question of what, if any difference, there was for newly incarcerated juveniles who were new to the label of incarcerated juvenile delinquent.

Juvenile detention centers did not always offer appropriate educational placements for students incarcerated. Even though state and federal law provides for a free and appropriate public education for students in juvenile detention, many correctional facilities offered poor or little educational services, and some detention centers did not even offer school, even for students with disabilities (Leone & Meisel, 1997; Leone & Wruble, 2015; Twomey, 2008). There was an overrepresentation of youths with disabilities in juvenile detention, especially among minority youths, and one large meta-analysis suggested students in juvenile detention were 10 times as likely to suffer from psychosis (Denzel, van Esch, Harte, & Scherder, 2016; Fazel, Doll, & Långström, 2008; Murphy, 1986; M. M. Quinn, Rutherford, Leone, Osher, & Poirier, 2005). Students in juvenile detention have been found to have substance abuse issues, with one long-term study showing over 90% persisted well into adulthood (Welty et al., 2016).

The background of the problem was juvenile justice involvement better predicted dropping out of high school than demographic factors, school attendance, and socioeconomic status (Robison, Jaggers, Rhodes, Blackmon, & Church, 2017). Exploring characteristics of students newly admitted to juvenile correctional institutions can assist decision making on how to approach a population with dismal long-term outcomes and poorly understood interplay of

academic motivation and academic achievement at the cusp of entering incarceration. Addressing the self-appraisal of noncognitive factors and the incongruence with academic performance and ability of first-time juvenile detainees could be important in improving services and outcomes.

Statement of the Problem

The problem was the influence of noncognitive attributes and academic achievement on English and math grades, for first-time-detained juvenile delinquents, was unknown. Research findings of juveniles in Florida, using Poisson regression, suggested six factors which caused juvenile delinquency were statistically significant: academic performance, drug abuse, peer influence, gang involvement, and neighborhood qualities (Kennedy, Edmonds, Millen, & Detullio, 2019). Since many first-time juvenile delinquents were at risk for future failure in school and life, understanding causes of academic failure could improve graduation rates and transition back into society.

The need to quantify and qualify students in juvenile detention facilities is great, both from a societal and economic standpoint. Improving educational outcomes, especially for students first-time incarcerated, could help break the cycle of the school to prison pipeline. The estimated societal costs were $4.9 million for each juvenile delinquent who continued committing crimes (Ellison, Owings, & Kaplan, 2017). One author claimed teaching students to read would prevent youths from being juvenile delinquents (Vacca, 2008). Juvenile delinquency and detention, especially for students of color, resulted in high rates of educational and economic failure which often landed young adults back in prison (Lea & Abrams, 2017).

Gabel (2016) conducted grounded qualitative research on 14 juvenile detentions centers, and found there was little guidance, poor technology, and unprepared teachers. Interventions,

even when sound methodologically and research based, often were haphazardly implemented and produced little positive effects (Baetz et al., 2019). To understand the significance and importance of further research of academic achievement and impact of noncognitive factors for students incarcerated in juvenile correctional facilities, exploring newly incarcerated juvenile delinquents' educational experiences could be beneficial. Exploring characteristics of students newly admitted to juvenile correctional institutions can assist decision making in how to approach a population with dismal long-term outcomes and a poorly understood interplay of academic motivation and academic achievement upon entering incarceration.

Purpose of the Study

The purpose of this quantitative ex post facto study was to determine the relationship of noncognitive attributes (predictor variables of grit, academic self-concept, self-esteem, and mental health) and academic achievement on English and math grades. This research sought to determine if noncognitive skills and academic achievement impacted students' grades, and the results may be useful to improve instructional practices. Public schools and society traditionally relied on suspensions, alternative schools, and juvenile detention centers for disruptive and dangerous children, with little understanding of effectiveness, long-term repercussions, or the effect schools had on such labels (Vanderhaar, Muñoz, & Petrosko, 2014). Analyzing the National Longitudinal Survey of Youth 1997, juveniles involved in delinquency and incarceration had reduced high school and college graduation rates (Ward & Williams, 2015). Research and exploration of these variables may be helpful in determining why many students incarcerated in juvenile correctional facilities fail to thrive, succeed in education, or achieve rehabilitation back into society. Results and findings may be helpful in improving rehabilitation

by giving educators tools to improve the social, emotional, and academic methods and outcomes for newly incarcerated juvenile delinquents.

Care should be taken in drawing conclusions between juvenile delinquency and educational achievement, as not all factors affected outcomes equally (Grigorenko et al., 2015; McCord, Widom, Bamba, & Crowell, 2000). Juveniles have been found to have a variety of needs, making any research complex and messy, with younger juveniles age 14–16 found to be much more selfish than older juveniles (Erofeeva et al., 2019). This study focused on a narrow subset of all juvenile delinquents and used a convenience sample of juveniles detained for the first time and detained at least three weeks at a small juvenile detention center in central Illinois. The purpose of this study was to analyze and describe the characteristics of first-time-detained juvenile delinquents and the youths' self-appraisal of noncognitive factors. Since first-time-detained juvenile delinquents were at risk for future failure in school and life, understanding causes of educational failure could improve graduation rates and reintegration back into society.

Significance of the Study

The study was directly designed to improve educational programs and outcomes for juvenile delinquents. Suitts (2014) found juvenile correctional facilities have shown little progress in successfully educating detained juvenile delinquents, stating "most juvenile justice schools have had little positive, enduring impact on the educational achievement of most children and youth in state custody" (p. 15). Small juvenile correctional facilities resulted in worse overall academic achievement than traditional schools (Suitts, 2014). Involvement in juvenile courts and correctional facilities increased chances of dropping out, as detailed by a large study which followed youths in the National Longitudinal Survey of Youth in 1997 (Sweeten, 2006). By understanding a juvenile delinquent's noncognitive attributes, direct service

providers in juvenile correctional facilities could better meet the needs of a population which were often not student centered.

Mathur and Schoenfeld (2010) found little research in what works in instructional practices in juvenile detention. Research about educational practices in juvenile detention was often lacking, as there were limitations in the ability to conduct research, and interventions showed promise but produced little long-term change (Ashford & Gallagher, 2019; Jolivette, 2013). Teaching in prison was a culture shock, and though teachers lacked preparation, teachers in corrections had positive experiences and showed commitment to the teachers' students (Michals & Kessler, 2015; Wright, 2005). Few studies addressed the relationship of noncognitive factors to academic ability and performance in juvenile detention, and fewer still explored the characteristics of first-time detainees. Interventions are needed to target multiple social domains and the interrelatedness of different social factors (Pyle, Flower, Williams, & Fall, 2019). The findings could change the nature and scope of educational programs in juvenile detention centers across the nation.

Knowing detained juvenile delinquents' noncognitive factors and organizations' labels of student motivation and achievement could help to clarify the goals the educational institutions believe will best serve the needs of these students. Understanding these conceptions may also show gaps in services versus needs. Juvenile detention center practices were woefully inadequate, with one study noting,

> The high recidivism and low school re-engagement data serve as an urgent call to action. It is clear that greater investments in JDC [juvenile detention center] staffing, professional development, instruction and transition planning are needed. The solutions must be forged on a community-wide level, and include a greater focus on community

> partnering, instructional practices, mentoring and transition planning, as well as other areas where JDC data reveals high needs. (Benner, Zeng, Armstrong, Anderson, & Carpenter, 2016, p. 43)

Additionally, understanding these divergences could assist in formulating curriculum for social, emotional, and academic learning of detained juvenile delinquents. This exploration of noncognitive attributes could serve to make recommendations which may help schools better serve the needs of first-time-incarcerated juvenile delinquents. The results could also serve juvenile detention centers working with first-time-incarcerated juvenile delinquents to improve curriculum and programming policies and procedures.

Research Questions

Due to the gap in the literature, this research study investigated how noncognitive factors and academic achievement related to math and English grades for first-time-detained juvenile delinquents age 10–18 in a juvenile detention facility. This study's research questions were based on a theoretical framework where juvenile delinquents received labels and learned behavior from others, and adaptive leadership by practitioners could improve outcomes. The research may aid juvenile detention centers and schools in improving interventions and responses to discipline problems and delinquency, as well as provide direction on preventative programs.

The following research questions guided this study:

Research Question 1: What is the degree of correlation between noncognitive attributes and academic achievement on grades in English for students first detained in juvenile detention facilities?

Research Question 2: What is the degree of correlation between noncognitive attributes and academic achievement on grades in mathematics for students first detained in juvenile detention facilities?

Hypotheses

Backward regression analysis and correlation showed the relationship of variables. For predictor variables, mental health (overall, emotional, conduct, hyperactivity, peers, and prosocial), academic self-concept (math and English), academic achievement (math, verbal, math computation, math application, reading comprehension, vocabulary, and language mechanics), grit, and self-esteem were examined for correlation and, or regression to the criterion variables of grades in mathematics and language arts after three weeks. The purpose of the research was to see if cognitive and noncognitive variables impacted student learning and grades. Chapter 3 gives the data analysis procedures, including a list of predictive and criterion variables and instruments used to measure each construct. The following hypotheses were tested:

$H1_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H1_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H2_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and math grades.

$H2_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and math grades.

Theoretical Framework

The concepts of students' self-appraisal and academic motivation both appeared as factors through which youths formed conceptions of self in negotiating experiences in school, and many sources influenced and determined academic self-concept (Trautwein & Möller, 2016; Winne, 2005; Zimmerman, 2008). Labeling theory and social learning theory were the lenses to explore the intersection of students' self-appraisal and academic motivation within the confines of attending and learning in juvenile detention. Social learning theory and labeling theory have been found to give competing demands between formal school labeling and socially constructed views of self and the reasons students self-appraise (Adams, 1996).

Longitudinal studies suggested social learning theory strongly related to differential association and antisocial attitudes, and well into adulthood, being labeled influenced behavioral outcomes (Lopes et al., 2012; Pratt et al., 2010). Social learning theory described the intersection of learners directing one's own efforts toward outside goals, with students being proactive versus reactive to the educational experience (Rendell et al., 2011; Zimmerman, 2013). Punitive measures have been shown to increase the harmful effects of labeling (Liberman, Kirk, & Kim, 2014). Students were not passive vessels, but rather noncognitive factors, developed through socialization at home and the community, determined a large part of the reasons for academic and behavioral outcomes. Being labeled can further erode positive self-image of students before and after release from juvenile detention (Restivo & Lanier, 2015).

Adaptive leadership is not focused on technical problems, but rather there needs to be a leader who disrupts, reregulates, and rearranges existing structures (Heifetz, Grashow, & Linsky, 2009). No one personality or style was effective in school leadership all the time, and school leaders who established a clear focus, managed change, and built a purposeful community

impacted student achievement positively (Goodwin, Cameron, & Hein, 2015). Teachers need to be leaders, utilizing a theoretical framework and model to analyze and change current practices to create system-wide change (Boylan, 2018). Unlike traditional schools, teachers in juvenile detention centers have greater autonomy by testing students, creating a schedule of classes, and determining what instructional strategies to use, with little formal guidance or oversight. Adaptive leadership theory was apt because ultimately teachers should develop a school experience catering to the specific needs of the individual juvenile.

Definitions of Terms

The following terms were specific to this dissertation. Words with common, accepted meanings were not included. Where needed, terms were clarified.

Delinquency: Conduct by minors which is not accepted by moral and legal standards of society. If an adult committed the act, the act would be considered a crime (M. J. Taylor, Nanney, Welch, & Wamser-Nanney, 2016).

Juvenile correctional facility: A juvenile correctional facility is a detention center which confines juveniles by court order in secure facilities (K. Sullivan, 2018). Juvenile correctional facilities only housed juvenile. For the present study, juvenile correctional facility meant run by a local jurisdiction. Synonymous with juvenile correctional facility is juvenile detention center.

Juvenile delinquents: Children who committed crimes and identified by law enforcement as receiving special status due to age (Hewitt & DeLisi, 2016). Children were between the ages of 10–18 and detained by a local court. Each juvenile might be preadjudication, adjudicated, or postadjudication.

Noncognitive factors: All skills and traits which are not assessed by cognitive and knowledge tests (West et al., 2016). Noncognitive factors were nonacademic factors. For the

present study, noncognitive attributes included self-esteem, academic self-concept, grit, and mental health.

Recidivism: A person's relapse into criminal behavior after being convicted of a previous crime (Tuttle, 2019). Recidivism means a juvenile has been rearrested after being sentenced for a previous crime.

Limitations

The limitations in this study, common in educational research, were the instruments, subjective grades, and the sample (Greener, 2018). Nardi (2018) stated limitations can be minimized by empirical observations, well-defined methods, and objective, reproducible procedures. One facility provided a small sample, but the sample was as large as possible and had all participants with similar characteristics. Jeon (2015) stated this limitation can be minimized by power analysis to develop a sample of adequate size, allowing causal connections to be drawn. Concerning instruments, two issues were possible: Students guessed and, or did not fully understand the questions (Price & Murnan, 2004). Though the instruments were survey in nature, the instruments had adequate validity and reliability, which allowed the variables to be controlled and explained in a uniform fashion (Rahman, 2017). Finally, numerous studies showed grading was a subjective process, with teachers grading based on how teachers felt about students (Peterson, Rubie-Davies, Osborne, & Sibley, 2016).

There were four ways to enhance transferability: narrowly define the population, choose participants by random, control for self-selection and mortality, and providing clear descriptions of the sample and instruments (Brown, 2015). The methodology reduced bias, with Creswell (2012) stating quantitative research showed differences and could be used to predict cause and

effect. Multiple regression minimized limitations by showing relationships between variables and explaining different educational factors (Lazar, Faciu, Mata, & Lazar, 2016).

Scope and Delimitations

Whereas limitations are shortcomings encountered during research, delimitations are biases and boundaries introduced by the researcher (Price & Murnan, 2004). The scope of the study focused on the students from a specific juvenile detention center in the Midwest concerning academic achievement and noncognitive factors which influenced grades. Defining the boundary, the only students included were first-time detained in a juvenile detention center, present for at least three weeks, and completed all assessments during the 2016–2017 school year. The quantitative methodology reduced subjectivity and limited bias.

The researcher controls the delimitations, and factors to be considered typically are objectives, questions, variables, theories, populations, purpose, and methodologies (Chambers, 1960; Mackenzie, 1970; Simon, 2011). The main theoretical delimitation was a focus on noncognitive factors versus historical understanding of academic problems as reading and mathematical deficits. The research methodology lacked a control group, as the study used archival records. Since the study was ex post facto, all research had been collected and entered, limiting the ability to check the collection of data. Two other delimitations of this study included focusing on only certain noncognitive attributes and grades after three weeks. These delimitations meant other factors, which might be important, were not considered. The study could have value to be generalized and transferred to other juvenile detention centers, and the results could be a springboard for further investigation.

Assumptions

Assumptions are out of the researcher's control, but assumptions are what give a study meaning and utility (Simon, 2011). Creswell (2012) stated there are four major types of assumptions in quantitative studies: ontological or nature of reality, epistemological or how one knows knowledge is true, axiological or value of research, and methodological or the methods utilized. Three major assumptions were access to the sample, the sample of sufficient size, and the results of surveys and tests were accurate and meant what each survey purported to do. Another assumption was the knowledge each juvenile understood the surveys and answered questions honestly. Concerning axiology, there was the assumption the manner of research and results will prove useful in not only understanding juvenile delinquency, but the results could be used to reform and improve services. Finally, there was the assumption the method utilized answered the research questions and provided a valid, reliable way to find practical and statistical significance.

Chapter Summary

This chapter introduced the persistent failure and miseducation of juvenile delinquents. Explored was the lack of progress and future success of juvenile delinquents, showing there were few interventions and research in improving outcomes for juvenile delinquents. A review of the literature revealed there was a paucity of research into effective instructional practices and outcomes for first-time-detained juvenile delinquents. The significance of the research was results could improve educational outcomes and reduce recidivism for juvenile delinquents. Noncognitive factors were well understood and utilized in designing educational programs for students across many domains (McGeown, St Clair-Thompson, & Clough, 2016), yet there was little application to juvenile delinquents. Without exploring the academic motivations of students

incarcerated, educational policy makers cannot fully address the needs of a population with little long-term success.

Students have been found to enter juvenile detention centers newly labeled, and educators often have little formal training to approach juvenile delinquents. Juveniles often showed a history of trauma and struggled with issues of fairness and safety (Lujan & Fanniff, 2019). Chapter 1 provided an introduction and a discussion of the nature of juvenile delinquents and educational outcomes. In Chapter 2, there is a literature review outlining characteristics of juvenile delinquents incarcerated and the theoretical frameworks which impact educational programming. Current research about noncognitive attributes, mental health, and academic achievement is explored.

Chapter 2: Literature Review

Incarceration affects children well into adulthood. As of 2014, there were 700,000 persons in U.S. prisons, and within three years, 40% of these former inmates were reincarcerated (Davis et al., 2014). Despite all the research, formerly incarcerated juvenile delinquents struggled in school before and after incarceration, and approximately 70% were diagnosed with mental health or substance abuse issues (Rice, Musil, Kretschmar, & Warner, 2018). There were several factors hindering the success of juvenile delinquents. The purpose of this quantitative study was to determine whether noncognitive factors and academic achievement correlated to grades for first-time-detained juvenile delinquents.

Little research was found about short-term juvenile detention centers; students come and go at a moment's notice, and stays were generally short (Babel et al., 2016). Self-views for juvenile delinquents were generally negative, important in determining academic and social outcomes, and the views of others influenced one's self-view (Kõiv, 2016; Walters, 2016). Reviewing research conducted on juvenile delinquents and mental illness, the results suggested 95% of juvenile offenders with major mental illness diagnoses failed to receive evidence-based treatments (McCart & Sheidow, 2016). Despite these hurdles, juvenile delinquents do persevere and achieve success in juvenile detention. This section starts with explaining the search strategies and theoretical framework before discussing the characteristics of juvenile delinquents, juvenile detention centers, schooling and instructional needs, and barriers and interventions. Research addressing barriers to success, including self-esteem, grit, mental health, and academic self-concept, will also be presented.

Literature Search Strategy

Research in juvenile delinquency has produced few research-based findings. For example, a meta-analysis of qualitative studies found only 18 studies rigorous enough for inclusion, and other studies found little research in best practices (García-Poole, Byrne, & Rodrigo, 2019; Nurse et al., 2018; Snyder, 2018). Juvenile delinquency and education are broad terms which encompass social, emotional, and academic factors. Rigorous, evidence-based research studies were scant in comparison to other educational topics. There were several suggestions for improved interventions and programs for juvenile delinquents, but scant scientific evidence existed (Brauers, Kroneman, Otten, Lindauer, & Popma, 2016).

Following Okoli's (2015) guidelines, the literature review flowed from identifying peer-reviewed articles or authors without conflicts and with sound methodological procedures which produced broad themes and theories which were then divided into subtopics. Google Scholar, EBSCO, and Microsoft Academic guided initial searches for relevant articles and books. To find research, the following key words were used to start the process: *juvenile*, *delinquent*, *detention*, *alternative school*, *grit*, *mental health*, *drug addiction*, *self-esteem*, and *academic self-concept*. Key words and factors were then culled from results, and bibliographies of seminal articles were mined.

Theoretical Framework

Applying theory to research assists in explaining situations, finding cause and effect, and developing new programs to improve practices (Hayes, 2018). Creswell (2012) stated the theoretical framework explains the perspective and lens through which researchers approach problems. Researching juvenile detention centers required looking at the leadership level and the student level. Educating the whole child means there should be an understanding of the

characteristics of juvenile delinquents, the nature of educational services offered, and the impact leadership had on services (Gonsoulin, Clark, & Rankin, 2015). The conceptual framework starts with adaptive leadership, and then social learning theory and labeling theory explain the interaction of academic and noncognitive factors.

Adaptive Leadership

The theoretical framework for leadership which supported the research was adaptive leadership. The roots of adaptive leadership derived from the biological perspective, which stated leadership evolved from the need to adapt and grow, with the integration of competence and capabilities driven by knowledge management (Jayan, Bing, & Musa, 2016). Adaptive leadership means leaders cope with unpredictability and complexity by motivating and mobilizing individuals within an organization (Arthur-Mensah & Zimmerman, 2017). Implementing adaptive leadership requires leaders possess humility, and the leaders honor and value team competence (Chiu, Owens, & Tesluk, 2016). In this sense, this kind of leadership melds adaptive and transformative leadership to build teams, as building a conceptual framework with faculty members can improve results (Nicolaides & McCallum, 2013; Woolard, 2018).

Adaptive leadership has five key tenets which define the theory: interventions are built off the past, change happens through experimentation, requires diversity and values diverse perspectives, new adaptations potentially disrupt and displace the old ways of doing things, and adaptations change takes time. A key factor was developing diagnosis through an iterative process of the self and the system, and change cannot be construed as linear and quick (Heifetz et al., 2009). Chubbuck and Ellwood (2016), using a qualitative framework, found a superintendent's adaptive leadership style in attempting to reduce racial inequity showed promise when the leader encouraged competing perspectives but worked to avoid staff members

developing resistance to change. Situations organizations face can be volatile, uncertain, complex, and ambiguous, requiring leaders to open communication with stakeholders, accept compromises and clarifications of goals and values, and to progress with a mix of old and new ideas (Castillo & Trinh, 2018; Preece, 2016).

Adaptive leadership develops a systems-thinking approach, where knowledge is created, brokered, and shared across networks (Boylan, 2018). Complex organizations have shown a need for adaptive leadership to deal with novel situations, form new relationships and partnerships, honor conflicting, diverse perspectives, and foment positive interdependence (Arena & Uhl-Bien, 2016). Short-term juvenile detention centers are in constant flux. Focusing on creating an environment of win–win, leaders can empower individuals at the lowest level to develop strategies based on the unique needs of each juvenile.

Social Learning Theory

Bandura (1971) suggested vicarious, symbolic, and self-regulated experiences mediate and impact learning as much as direct experiences, and a person's capacity of observation and reflection were central to one's ability to learn. Social learning theory postulates there is a link between behaviorism and cognitivism which allows for vicarious experiences, and there are four stages which affect imitation: attention must first be given to the stimuli, retention to internalize situations which may later prove useful, reproduction if required or desired and often preceded by mental and physical rehearsal, and motivation or views on rewards and punishments (Crain, 2015). Many students in juvenile detention, according to studies, had parents who did not supervise, discipline, or develop an attachment with one's children, resulting in problems with rules and norms in society which can only be changed by moving into new neighborhoods and

establishing new friends (Abrah, 2019; Meldrum, Connolly, Flexon, & Guerette, 2016; Vashisht & Tanwar, 2018).

Jensen (2017) reviewed research and found social learning theory explained crime and deviancy better than other theories because differential association and imitation produced conforming behavior. Associational preferences formed much of the central aspect of social learning before and after incarceration; juveniles, especially ones scoring high on psychopathology scales, have been shown to have a reference group which did not comply with the rules and norms of society and led to further problem behavior (Tatar, Joseph, Cavanagh, & Cauffman, 2016). Applied to incarcerated juvenile delinquents' schooling, social learning theory supported the exploration of expected academic achievement and actual performance as viewed from the internal struggles juveniles faced (Engel, 2017; Herrman & Sexton, 2017). Zimmerman (2000) found students with high self-efficacy often took on more demanding goals, but how self-efficacy applied to incarcerated juvenile delinquents remained unknown and was a purpose of the present study.

Four main components make up social learning theory, as applied to delinquency and crime: differential association, imitation, definitions, and differential reinforcement. In a research review, including meta-analysis of studies from 1974 to 2013, two major conclusions stood out: Differential association and definitions were the strongest factors in explaining crime, and social learning theory, compared to other theories, had the greatest main and direct effects for explaining crime (Winfree, 2015). Brezina and Piquero (2017), in an exploratory study of adolescent drug and alcohol use, found within differential reinforcement, nonsocial cues had much less impact than social cues. Others, reviewing research in meta-analysis, found differential reinforcement and definitions showed strong support for causes of crime, though

gender appeared to be a mediating variable (Koon-Magnin, Bowers, Langhinrichsen-Rohling, & Arata, 2016; Pratt et al., 2010).

Labeling Theory

According to Restivo and Lanier (2015), labeling theory states educational institutions label and sort students based on different factors, and these labels impact students' success and continuance in school as a social control factor. Bernburg and Krohn (2003) suggested there were two factors at work when labeling theory applied to organizations such as schools for juvenile delinquents: A change in self-concept and in opportunities afforded. Applying labeling theory to first-time-incarcerated juvenile delinquents was ripe for research because there were juveniles newly incarcerated, with little background information known by staff members or juveniles and little time for the delinquent to assume a new role. Labeling theory has long related to students with learning disabilities, and the framework in special education suggested there can be a self-fulfilling prophecy, with labels having different, sometimes conflicting meanings dependent on whom and when applied (Kroska, Lee, & Carr, 2017).

Labeling is complex and multifaceted, and parental labels seemed to be more controlling of future deviance than formal labeling by law enforcement (J. S. Lee, Tajima, Herrenkohl, & Hong, 2017). Whether parents, schools, self, or local law enforcement, labeling theory suggested juveniles in contact with the criminal justice lived up to the new expectations. Furthermore, previous contact left a mark on juveniles arrested and incarcerated and brought about increased attention from law enforcement. Besides juveniles reacting to formal labeling, there was evidence rearrest might increase more because law enforcement was looking for delinquency because of prior contact (Liberman et al., 2014).

A juvenile delinquent is a youth, typically 10–18, charged with a crime, and most delinquents had social, emotional, and academic problems within school before incarceration exacerbated once labeled (Pereira, Ribeiro, & Maia, 2018). As one research study suggested, labels were more powerful when there was no prior observation to conflict (Reschly & Lamprecht, 1979). Juvenile delinquents develop protective mechanisms to maintain self-perceptions often divorced from reality, and the youths seek to negotiate and navigate the world by learning from the rewards and punishments both inside and outside school. The theoretical framework suggested students were downward labeled as the youths went through school, from at risk to alternative to formally labeled as juvenile delinquent, and students approached school by developing an internal framework to mediate these roles (Kavish, Mullins, & Soto, 2016).

Arredondo (2003) found though a great deal of history existed on juvenile delinquents, many caregivers were not aware of prior histories before interacting with newly incarcerated juveniles, and juvenile correctional facilities were often nothing more than dumping grounds for seriously mentally ill children who were at the mercy of antisocial cohorts. A longitudinal study by J. S. Lee, Taxman, Mulvey, and Schubert (2018) found juveniles in poverty and with persistent school problems were most at risk for failure in secure placements. Reviewing current findings and meta-analyses revealed a cause for further research:

> The second important issue in relation to the effectiveness of interventions is that it was found that most interventions applied do not bring any short term positive results. This means that no radical structural changes in the way the child operates are achieved, and the positive effects of these interventions occur at the level of external behavior for a limited time only. (Stavrou & Kourkoutas, 2017, p. 134)

A theoretical framework offers a clear explanation of phenomena and allows findings to be generalized (Grant & Ozanloo, 2014). The premise of the study was newly incarcerated juvenile delinquents arrived with a great deal of social and emotional issues, and initially the youths were adjusting to a new label and a social learning situation from both fellow students and correctional authorities. Consequently, examining what a juvenile's label was and social mores before transformation by incarceration could improve outcomes for juvenile delinquents. By understanding juveniles before labels were fixed and internalized, research will inform policies for improved educational outcomes which rests on assumptions from long-term incarceration.

Research Literature Review

Three years after release from secure detention, 20% of the juveniles were found, using generalized estimation equations and logistic regression, to have marked impairment in functioning, and substance abuse and psychiatric diagnoses increased risk factor for future violence (Abram, Choe, Washburn, Romero, & Teplin, 2009; Elkington et al., 2015). The purpose and structure of schools in the United States were not designed to manage the social, emotional, and academic needs of juvenile delinquents. The current structure was ill equipped to serve the psychological and academic needs of this population (Gonsoulin et al., 2015). The literature review concentrated on noncognitive factors of juvenile delinquency and detention. Concentrating on the whole child, the literature review is broken down into the following sections: juvenile delinquents, juvenile detention centers, instructional needs, barriers to success, and interventions.

Juvenile Delinquents

Juvenile delinquents are discussed from the perspective of home and family, education, and social interactions. While delinquents are diverse as a group, there were common themes and patterns. Drug abuse, mental health issues, and poor school and life outcomes are explored.

Characteristics of Juvenile Delinquents

Juvenile delinquents showed a multitude of problems which separate delinquents from nondelinquent peers. First-time offenders generally had a long history of problem behavior before escalating to charges and arrest, and first-time juveniles incarcerated displayed much higher rates of mental illness and aggression (Barrett & Katsiyannis, 2017). The following statistics describe the typical juvenile delinquent:

- 85% were male
- 51% were between 16 and 17 years of age
- One third was White and one third was Black
- Females were typically nonviolent offenses, with two-fifths of all crimes against persons
- One third stayed in juvenile detention less than 60 days
- 76% were enrolled in school versus 88% of nondelinquents
- Twice as likely to be retained (Sedlak & Bruce, 2016)

Further compounding the juvenile delinquents' problems was for many, incarceration was the first time juveniles were separated from the youths' parents, and most juvenile detention centers strictly limited parent and guardian contact (Shulman & Cauffman, 2011). Another issue was juvenile delinquents disproportionately suffered from medical problems which go untreated (Balogun, Troisi, Swartz, Lloyd, & Beyda, 2018; Barnert, Perry, & Morris, 2016).

Once a juvenile fell behind in school, catching up was nearly impossible to get back on track to graduate high school. Early problems seemed to lead to a lifetime of difficulties. In a large-scale study of delinquent and nondelinquent students, parenting problems and developmental delays were the two major variables which separated the two cohorts (Barrett, Katsiyannis, Zhang, & Zhang, 2014). In what was possibly the first long-term longitudinal study of juvenile delinquents five and 12 years after incarceration, the conclusion was "positive adult outcomes after incarceration are the exception and not the rule, particularly for racial/ethnic minorities. To succeed, delinquent youth must be helped not only to desist from crime but also to overcome barriers to social stability and employment" (Abram et al., 2017, Conclusions section, para. 1). The most significant risk factors were the following: externalizing behaviors, smoking during pregnancy, if parents were married, and mother's education. Children with three or more risk factors had an eight times more likely chance of being delinquent (A. E. Green, Gesten, Greenwald, & Salcedo, 2008). A 50-article systematic review showed students with parents with problems of one's own were more susceptible to later delinquency, especially when mediated by low income (Corbett, 2019).

Several factors contributed to juvenile delinquency, with a meta-analysis of 55 articles revealed criminal history, alcohol and drug abuse, and aggressive behavior being most important, though relationships with the mother and siblings mattered in childhood (Assink et al., 2015). The lack of self-efficacy was a mediating factor in violence and delinquency (Farrell, Henry, Schoeny, Bettencourt, & Tolan, 2010; Tangney, Boone, & Baumeister, 2018). Early indicators placed a child on a trajectory which increased chances of future delinquency and incarceration. Adverse childhood experiences, such as maladaptive personality traits and persistent problems,

had a direct influence on the nature and severity of juvenile crime in adolescence and adulthood (Levenson et al., 2017; Perez, Jennings, & Baglivio, 2018).

Lacking coherent and well-maintained social bonds were the factors common in these studies, and the results for juveniles were strong predictors of deviancy and problems in school. Furthermore, juveniles with antisocial behavior, attention deficit hyperactivity disorder (ADHD), and conduct disorder were much more represented in delinquency and much more likely to have future recidivism (DeLisi, Neppl, Lohman, Vaughn, & Shook, 2013; Gordon & Moore, 2005; Philipp-Wiegmann et al., 2018). Children in foster care were much more likely to struggle academically and experience interaction with law enforcement (Alltucker, Bullis, Close, & Yovanoff, 2006; Dyce, 2015).

Incarcerated juveniles, on average, were a standard deviation below peers on standardized academic achievement, and there was a prevalence of disabilities and psychiatric illnesses, especially personality disorders (Krezmien, Mulcahy, & Leone, 2008; Vaughn, Salas-Wright, DeLisi, Maynard, & Boutwell, 2015). A large study in Cook County, Illinois, revealed 66% of juveniles had psychiatric disorders (Wood, Wood, & Mullins, 2008). Juvenile delinquents were found, on average, overaged for one's grade levels and performed poorly in school in academic and behavioral domains. Exposure to violence and personal victimization stigmatized the majority of youths in juvenile justice, which also caused problems in academic and social functioning (Beckford, 2016; Cedeno, Elias, Kelly, & Chu, 2010).

Problems with delinquency as a child does not end with adulthood. In the longitudinal Oregon Youth Study, delinquents aged 29- and 30-year-olds were examined concerning employment. Short-term and long-term outcomes for children after release suggested much was still needed to improve the behavioral and academic abilities of students served in alternative

settings. The number of arrests and mental health issues predicted the number of months unemployed, and poor inhibitory control and substance abuse increased probability of being fired (Wiesner, Kim, & Capaldi, 2010). Unfortunately, many students left the juvenile justice system worse than when the youths entered, and approximately 50% of juvenile males in one study persisted in crime, with 38% escalating to more serious crime (Lemos & Faísca, 2015).

Educational achievement. One of the most important factors in contact with juvenile justice was educational achievement (Blomberg & Pesta, 2017). The results from a mixed-effects logistic regression model revealed being academically behind and receiving suspensions and expulsions strongly predicted dropping out and later juvenile delinquency (Jaggers, Robison, Rhodes, Guan, & Church, 2016). Most students involved with juvenile justice displayed discipline problems and were prone to dropping out. Of the approximately 100,000 juveniles released from detention each year, about 50% returned to school, and about 16% dropped out within five months (Benner et al., 2016).

Juvenile delinquents were found a part of the most at-risk population a school serves, regardless of special education. Juvenile delinquents were found below grade level in all areas, though not generally more than one standard deviation, and students in special education and males were usually much lower academically than non-special education students and females (Thompson & Morris, 2016). Behavioral issues and lack of parental support hampered efforts to intervene with this group of students. Juvenile delinquents generally had IQs in the low-average to below-average range, and there was a robust history of academic and school failure which might partly be explained by attention deficit (Falligant, Alexander, & Burkhart, 2017; Foley, 2001; Hoffmann, 2018). Being retained in a grade was the strongest predictor of later juvenile delinquency (Katsiyannis, Thompson, Barrett, & Kingree, 2012).

According to Tesoro, Thompson, and Morris (2014), in a large study of juvenile delinquents, White students had higher academic test scores and grade point average than all minorities, with the exception of Asians. Minorities in poverty had a greater propensity for entering the juvenile justice system, and most were behind academically. Lavin (2016) found in a case study family structure, organizational inequity, discrimination, and labeling had a disparate impact on shaping expectations for at-risk students.

Beyond social and emotional disabilities, students incarcerated were much more likely to have pervasive learning problems which caused problems across the school setting. Students with disabilities had a negative effect on academic achievement the longer detained (Grigorenko et al., 2015). Compounding the problem of assisting juveniles incarcerated was often enrollment in school in correctional facilities was short and frequently changing due to reassignment to another facility, release, and, or security concerns. Dyslexia and reading difficulties, related to poor executive functioning and low self-esteem, were much more prevalent in juvenile delinquency, related to impulsivity, and were not easily remedied without intensive, long-term interventions (Baker & Ireland, 2007; Crosby, Algood, Sayles, & Cubbage, 2017; N. O'Brien, Langhinrichsen-Rohling, & Shelley-Tremblay, 2007; Wheldall & Watkins, 2004).

Besides disabilities, mental health issues affected educational achievement, which in turn caused deterioration in quality of life. Comparing delinquent youths matched to nondelinquent youths, foster care and poor parenting were contributory factors to later delinquency, but learning disabilities and emotional disorders were also strongly predictive. Of all the factors, psychological diagnosis of aggressive behavior, usually manifested as conduct disorder, was the strongest predictor of future delinquency (Barrett, Katsiyannis, Zhang, & Zhang, 2013). The duality of mental illness and poor academic achievement was well documented, though causality

was not well defined. In addition, juvenile delinquents also had higher than average impaired cognitive functioning in academic abilities and receptive vocabulary skills (Lansing et al., 2013).

Academic achievement was shown to be different by not only juvenile delinquency, but achievement can be mediated by juvenile court involvement. Sweeten (2006) found labeling can impair future behavior; the study suggested appearing in court in high school increased chances of dropping out at a high rate. Students matched to juvenile justice often did not receive the services needed to be successful in school and later life. Of those incarcerated, many felt further alienated and despondent because of the lack of future prospects in employment, with poor academic attainment by those with any mental illness most prevalent (Caldwell & Curtis, 2013; Schubert, Mulvey, Hawes, & Davis, 2018).

Special education. A well-established connection between learning disabilities and juvenile delinquency has been found, though the connection and causes were not clear (Bachara & Zaba, 1978; Chandra, 2018). Students with disabilities were the norm in juvenile detention centers, and learning and behavioral problems comprised a large percentage of students served. In juvenile detention centers, approximately one third were diagnosed disabled, versus 5% of the nondelinquent population, and behavioral diagnoses predicted academic achievement better than grades (Ennis, Evanovich, Losinski, Jolivette, & Kimball-Greb, 2018; M. M. Quinn, Rutherford, & Leone, 2001; M. M. Quinn et al., 2005; Sedlak & Bruce, 2016).

Many juvenile detention systems experienced similar overrepresentation of students with disabilities. Students with emotional and learning disabilities have to adapt to a new school and residential setting literally overnight. Reporting by juvenile detention centers in Connecticut showed the range of learning disabilities was 13% to 40%, with the average 24.9%, and many other students had difficulties with reading, mathematics, and language (S. A. Anderson, Hawes,

& Snow, 2016; Grigorenko et al., 2015). Many reading intervention studies were not rigorous, rendering difficulty in drawing conclusions (Sander, Patall, Amoscato, Fisher, & Funk, 2012). Sedlak and Bruce (2016) found one third of students stayed only 60 days or less, which created difficultly in identifying and processing students.

For juvenile delinquents, developmental delays were found to be common and caused problems with desistance after detention (Crosby et al., 2017). If students returned to school, maintaining satisfactory relations in school on the cusp of adulthood were markedly problematic for delinquents with disabilities. There was a lack of research, but outcomes of juvenile delinquents suggested the youths manifested physical and mental problems and struggled finishing high school, gaining employment, and living independently (Bejarpas & Soleimani, 2017; Zajac, Sheidow, & Davis, 2015).

The outcome for delinquents with disabilities was shown to be bleak, and students with disabilities, especially social and emotional disabilities and other health impairment, had higher number of offenses and disparate sentencing compared to nondisabled or lesser disabled youths (Kincaid & Sullivan, 2019). Bullis and Yovanoff (2005) found delinquents were more likely to flunk a grade, to commit person-related crimes, and to be convicted of a felony. Research strongly supported the need for improved services across all spectra of juvenile justice programs to change the path of what was an all too common outcome for delinquents with disabilities. Stenhjem (2005) and Morgan et al. (2019) stated delinquents with disabilities need more intensive services to break the cycle, including transition and wraparound services.

Drug problems. In one study, a review of educators found teachers received standard training to deal with disabilities, but there were factors in this student population teachers were not prepared to manage. Juveniles entering secure detention commonly suffered from substance

abuse problems which involved multiple substances, and a cascade of social and emotional problems complicated the symptoms. One of the most important factors in delinquency was substance abuse, though lower IQ and impulse control were also found to be significant (DeLisi, Angton, Behnken, & Kusow, 2015; DeMatteo & Marczyk, 2005). Other studies suggested substance abuse did not matter as much as peer relations and attitudes of drug offenders (Papp et al., 2016).

Follow-up studies found mental illness, substance abuse, and delinquency exacerbated each another, including among low-level offenders (Dembo, Wareham, & Schmeidler, 2007; Ford, 2005; Kang, Wood, Louden, & Ricks, 2018). Schooling for students with delinquencies was more complicated by substance abuse and addictions for many already being retained, suspended, and behind academically. Many juveniles lacked strong familial bonds, increasing the likelihood of substance abuse, and juveniles incarcerated showed higher usage rates of illegal drugs the longer the youths were detained (Eren & Mocan, 2017; Fergus & Zimmerman, 2005).

Psychological problems. Beyond disabilities and substance abuse issue, most juveniles were found to suffer from mental illness. Studying a cohort of juvenile delinquents across the life span, delinquents had much higher rates of psychotic traits and future schizophrenia than nondelinquents (Lindberg, Miettunen, Heiskala, & Kaltiala-Heino, 2017). Conduct disorder with ADHD was predictive of psychopathy, but more important factors predictive of delinquency were impulsiveness and thrill seeking (DeLisi, Dansby, et al., 2014). Whether a student had a diagnosis for emotional or behavioral disorders in education, another large segment of those incarcerated have similar problems without services offered in the public schools.

In addition to conduct disorders, concerning juveniles incarcerated, about half had psychiatric disorder and two-thirds had lifetime personality disorders (Vaughn et al., 2015).

Black and White students have been found to react differently from psychosocial problems (maladaptive personality problems and adolescent peer problems), with Whites having severe first offenses and mental problems much more predictive of future offending. Blacks identified as having social and emotional problems in school were better predictors of delinquency than other factors (Barrett & Katsiyannis, 2015; Perez et al., 2018). A sibling-comparison study which used multivariate latent modeling found children with adverse childhood effects had difficulties across all areas of life, though adverse childhood experiences were less predictive over the long term (Connolly & Kavish, 2019).

The effects of mental illness last long beyond childhood. Juvenile delinquents with mental illness tracked into one's 50s had twice as many criminal issues as delinquents without mental illness, and externalizing disorders and comorbidity were much more prevalent in future criminality than other behaviors (Sampson & Laub, 2003; Wibbelink, Hoeve, Stams, & Oort, 2017). For long-term outcomes, lacking protective factors of cooperation, lack of daring, and low hyperactivity were all associated with reduced criminal behavior (Craig, Piquero, Farrington, & Ttofi, 2017). Mental illness has been found to cause problems in school and throughout life, and often children and later adults never received proper therapy to improve one's lives.

Even when teachers have juvenile delinquents with mental illness, there were other comorbid factors which affected students' behavior and academic performance. Adolescents with rapid cognitive tempo, callous–unemotional traits, poor inhibition, and high impulsivity ended up in juvenile detention at higher rates and with higher substance abuse problems (Carroll et al., 2006; Ray, Thornton, Frick, Steinberg, & Cauffman, 2016). Juvenile delinquents also who were callous–unemotional had poor treatment outcomes, but strong, warm parenting styles mediated such effects (Ray et al., 2017). All these behaviors can be associated with disruptive,

defiant, and apathetic behavior in the classroom. Classroom interventions or security concerns often did not account for these student problems.

Then there were manifestations of problems from mental illness. Juveniles with problem behaviors congregated with deviant peers at a higher rate than nondelinquent peers, though effective parenting with warmth and supervision and associating with nondelinquent peers showed improved behavior and educational outcomes (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Hershberger & Jones, 2018; Ray et al., 2017). Besides poor peer associations, the Rochester Youth Development Study found students with problem behavior and substance abuse issues had poor school engagement, with increased rates of dropping out and problems across childhood (Henry, Knight, & Thornberry, 2012). Many juveniles were found to be loners, which research connected with aggression and theft (Houghton, Carroll, Tan, & Hopkins, 2008).

Educators were found to lack proper preparation to deal with the emerging issue of trauma-informed education, and the behavioral and academic concerns were both physical and mental. Many juveniles acted out because of an inability to cope with past experiences. Children in juvenile correctional facilities had much higher rates of stress from trauma, with 21% of juveniles incarcerated found to suffer from posttraumatic stress disorder (PTSD) versus 6% of the nondelinquent population (Falk, Thompson, & Sanford, 2014). Huskey and Tomczak (2013) reported abused and neglected children had a 30% higher arrest rate, and trauma can cause neurological changes which result in dysfunctional behavior. Polyvictimization was a major predictor of PTSD, and there was an association between PTSD and high rates of depression and self-harm (McNair et al., 2019).

For many juveniles, the first time the youths received an evaluation for mental illness was upon being incarcerated. The Ohio Behavioral Health Juvenile Justice program showed promise

in evaluating and diverting juveniles with mental illness and trauma histories (Kretschmar, Butcher, Flannery, & Singer, 2014). Regardless, most juvenile detention centers were filled with children who were academically behind, addicted to drugs, and suffering from a multitude of psychosocial disorders. Ample research findings suggested health, legal, and educational services should develop a systematic approach to juveniles involved in the juvenile justice system (Lansing et al., 2013). All of these problems converged on teachers in juvenile detention centers every day, and there were not enough resources to focus on underlying problems.

Juvenile Detention Centers

Understanding the education juveniles receive in correctional facilities requires exploring three components: the form of school, instructional practices, and transition services. Generally, schools in juvenile detention centers offered services from elementary to postsecondary, and computer instruction and individualized tutoring were the most common instructional strategies (Steele, Bozick, & Davis, 2016). Besides the few youths serving life sentences, most juveniles incarcerated will one day reenter society, and education had been shown to provide empowerment and skills to live independently (Tannis, 2014).

Security was the primary concern of all policies, and juveniles regularly were funneled into these schools where there was little knowledge or concern for services provided in public schools. Schooling in juvenile detention have to adhere to the demands of security and control, with teachers answering to both the judicial and educational authorities, and students had irregular schedules because of court appearances, counseling, and other appointments (Davey, 2017; Young, Phillips, & Nasir, 2010). Consequently, students often did not receive the services the youths qualified for, resulting in detention centers reporting a wide variance in disabilities

(Forbes, 1991; Mazzotti & Higgins, 2006). For example, juveniles benefitted from vocational training, but few juvenile detention centers offered such programs (Newton et al., 2018).

In juvenile detention centers, students with disabilities were theoretically afforded all protections and services required by state and federal law, but most juvenile facilities failed to deliver (Leone & Wruble, 2015). Nevertheless, though most juvenile detention centers utilized standardized tests for placement, most schools regularly did not provide services, certified teachers, or met procedural safeguards, as evidenced by 33 class action lawsuits from 1977 to 2004 which challenged the insufficiency of education in juvenile correctional facilities (Foley & Gao, 2002; Katsiyannis & Murray, 2000; Leone & Cutting, 2004). Juvenile detention centers demonstrated a population with high mobility and often substandard services for students with some of the most severe cases. Many schools have been shown to not provide ancillary special education services as well. There was the paradox the most at-risk population often received the least amount of interventions and services (Sacks, 2019).

Teachers generally had the view educators can positively impact juvenile delinquents, but there were often low expectations after graduation and unequal treatment of boys and girls (Galardi & Settersten, 2018; Sinclair, Unruh, Clark, & Waintrup, 2016). According to Donges (2015), juvenile delinquents had poor social skills and usually did not persist on academic tasks, with weak social relationships. A recommendation was proper training for educators and support staff to deal with the many needs of juveniles in detention centers must go beyond concerns in traditional schools (Mathur, Clark, LaCroix, & Short, 2018).

Within detention school, teachers spent more time with incarcerated juveniles than anyone else, and the attitude a teacher had can help to build relationships with juveniles which can result in a positive impact (Reed & Wexler, 2014). Teachers were an important factor in the

educational attainment of juvenile delinquents, but teachers picked to work in juvenile detention centers more for personal gain than personal fulfillment (Houchins, Shippen, Schwab, & Ansely, 2017). Unlike traditional school, juvenile detention centers were residential facilities, and school time was usually the longest block of time during a child's day.

The meta-analysis of 1,150 studies found five common academic interventions used in schools in juvenile detention centers: remedial, computer-assisted, personalized, vocational, and GED instruction (Steele et al., 2016). Those interventions with the largest effect size were computer-assisted instruction and personalized instruction for graduation and employment, but not all computer programs were researched based (Shelley-Tremblay, O'Brien, & Langhinrichsen-Rohling, 2007; Shippen, Morton, Flynt, Houchins, & Smitherman, 2012). Schoolwide leadership, professional staff, uniform behavioral supports, and effective instructions have shown improved educational outcomes of students, as well as smaller sized facilities and appropriate aftercare programs (Chester, Tracy, Earp, & Chauhan, 2002; Christle, Jolivette, & Nelson, 2005). Research exists which can lead to systematic school improvement, but there needs to be support from local districts.

Instructional Needs

Delinquent students, according to a quantitative study, performed poorly in school, with low grade point average, poor attendance, grade retention, and frequent discipline problems (Hoffmann, 2018; X. Wang, Blomberg, & Li, 2005). Reviewing National Association of Educational Progress results for 37 states, Petrocelli and Petrocelli (2005) found improved state commitment to education could strengthen social bonds, reducing crime. Many students needed school and mental health services, but most juveniles entered without receiving needed assistance and attend juvenile detention schools lacking multitier systems of support (Garfinkel

& Nelson, 2004; Pyle, Flower, Fall, & Williams, 2016). Education was all too often an afterthought, with little realization regardless of a delinquent's past history, the youths were first children. Perhaps nothing was more important in juvenile detention centers than giving students access to high quality, effective instruction, yet prior detention and court involvement predicted later problems in reading comprehension and computation (Gagnon & Barber, 2010; Renbarger, Rivera, & Sulak, 2019).

Hattie (2009) found in a meta-analysis of 304 studies and 597 effects for 42,000 students the use of direct instruction had a positive effect size for regular and special education students. For juvenile delinquents, learning style was primarily concrete learning, with creativity and memory being the strongest processing abilities (Karger & Currie-Rubin, 2013; Sheridan & Steele-Dadzie, 2005). Direct instruction with a focus on the strengths of the population served, including allowing for creativity and risk taking, was found to be a promising approach to increase the educational attainment of juvenile delinquents. Yet, a meta-analysis found preinterventions had little research which showed effectiveness in helping divert at-risk students from alternative school and poor outcomes (Iachini, Brown, Ball, Gibson, & Lize, 2015).

Findings have been consistent for decades: Approximately one third of juvenile delinquents incarcerated were illiterate, and 55% to 60% of incarcerated juveniles experienced major reading problems (Houchins, Jolivette, Krezmien, & Baltodano, 2008; Metsala, David, & Brown, 2017). Maternal problems and cognitive abilities about ages 4 and 5 predicted future achievement (Lebihan, Takongmo, & Olivier, 2018). Reading was perhaps the most pressing educational need for students incarcerated. State requirements limited many schools from teaching functional skills because there were the requirement schools teach all courses. Many students would benefit from intensive reading instruction. Reading difficulties were identified as

a major roadblock to school success, transition back to traditional school, and increased rates of dropping out, with poor executive functioning much higher for students with conduct problems (Kallitsoglou, 2018; Rabiner, Godwin, & Dodge, 2016; Snowling, Adams, Bowyer-Crane, & Tobin, 2000).

Most juvenile detention centers lacked a clear focus on reading, the basic foundation of most all educational achievement, and the results could be improved by systematically implementing research-based programs. Though there were research-based reading programs, most juvenile detention centers did not utilize such resources (Houchins, Jolivette, Shippen, & Lambert, 2010; Leone, Krezmien, Mason, & Meisel, 2005; Williams, Wexler, Roberts, & Carpenter, 2011; Yan & Wilkerson, 2017). Juveniles delinquents with poor reading skills showed the most promising gains using a multisensory phonics, repeated readings, and word-reading program, though students with higher IQ and high prereading skills showed the most gains (Allen-DeBoer, Malmgren, & Glass, 2006; Coulter, 2004; Metsala et al., 2017; Scarlato & Asahara, 2004; Valleley & Shriver, 2003; Warnick & Caldarella, 2015).

Best practices in mathematics for juvenile detention centers identified six factors: pre-teaching reading, direct instruction, technological use, grouping, concrete-representative-abstract, and strategy modeling (Burstein et al., 2017; Maccini, Gagnon, Mulcah, & Leone, 2006). A synthesis of articles on instruction in juvenile detention centers from 1970 to 2012 suggested explicit, targeted interventions had the most promise, but there were comparatively few rigorous studies and a strong need to research higher order math skills for students with emotional and learning problems exists (Murphy & McCormick, 1985; Templeton, Neel, & Blood, 2008; Wexler, Pyle, Flower, Williams, & Cole, 2014). A review of records revealed most juvenile delinquents lagged behind academically, and reading and computation deficiencies

problematized teaching middle and high school math topics, with African American and Hispanic youths further behind White students (Mason, 2016). Absent intense interventions, a multiple regression and structural equation model analysis found most students did not have the intrinsic motivation and self-efficacy to be successful in mathematics (Skaalvik, Federici, & Klassen, 2015).

Protective factors, such as self-efficacy, positive relations with educators, and family support, were shown to prevent problems in the classroom and lower the risk for misbehavior (Back & Lee, 2018; Burdick-Will, 2018; Simöes, Matos, & Batista-Foguet, 2008; M. T. Wang & Eccles, 2013; M. T. Wang & Fredricks, 2014). Many youths who entered juvenile detention centers were antisocial, drug addicted, and in disorganized neighborhoods, requiring programs which included positive behavioral support which should be tied to instructional methods to increase academic achievement (Scott et al., 2002; Smith, Auyong, & Ferguson, 2018). In many juvenile detention centers around the nation, students acted out and were disruptive, preventing learning. Teaching the whole child, with an explicit focus on the unique social and emotional needs, could be a promising transformation of schooling in juvenile correctional facilities. Juveniles with social supports in the classroom with positive classroom experiences and adaptive disciplinary policies tailored to the needs of students resulted in improved outcomes (Sander, Sharkey, Olivarri, Tanigawa, & Mauseth, 2010).

Robertson (2013) pointed out because of the security concerns and residential nature, juvenile detention teachers needed different methods and procedures to teach students if there was to be success. In addition to stress from teaching a highly at-risk population, teacher satisfaction and preparation influenced instructional methodologies. Instead of smaller classrooms and more support, juvenile detention centers often warehouse children until the

children were moved to another placement. Teachers in Georgia's juvenile detention system reported, though, staff members were dissatisfied with working conditions, newer teachers struggled more than experienced teachers, and disruptive behavior and a large workload made juvenile justice education jobs difficult to manage (Houchins, Shippen, & Cattret, 2004).

Despite the needs of children, many juvenile detention centers still showed little focus on teaching the whole child or developing vocational abilities, and different areas reported graduation rates from 12 to 24% (Eren & Mocan, 2017). Students in the juvenile justice system need more than recreating the regular classroom in juvenile detention centers. Schools in juvenile correctional facilities had dismal outcomes, with few finding students improved educational ability and reformed behavior. Generally, most studies failed to demonstrate effectiveness in instructional outcomes after incarceration or proper referral for educational services, and most teachers did not feel principals were properly prepared (Benner et al., 2016; Hirsch, Dierkhising, & Herz, 2018; Sander et al., 2012).

Behavioral management. Alternative settings which focused on implementation fidelity and social validity showed promising results in reducing behavioral problems, though most juvenile detention centers struggled with implementation of tier two and three interventions for serious behavior (Alonzo-Vaughn, Bradley, & Cassavaugh, 2015; Farkas et al., 2012; Gagnon, Barber, & Soyturk, 2018). In addition to academic deficits and social problems, schools in juvenile detention need to recognize the need for sound behavioral management programs. Comprehensive academic and behavioral planning should be combined to assist students who historically cannot function in regular settings. Emerging issues juvenile detention schools need to tackle have been categorized into the following areas: ecological congruence, roles clearly defined, theoretical change and collaboration, proactive and prevention strategies, data-driven

decision making, and achievement outcomes (Houchins, Jolivette, Wessendorf, McGlynn, & Nelson, 2005).

Juvenile detention centers were shown more like traditional schools than different, and properly formulated positive behavioral support systems improved instructional practices and outcomes (Simonsen & Sugai, 2013). Adopting a sound behavioral management theory for detention centers can be challenging, as one study found strict punishments contributed to juvenile delinquency, but lax programs showed similar results (Peguero, Marchbanks, Varela, Eason, & Blake, 2018). Positive behavioral support had been shown to expand opportunities for data collection and focused interventions to improve behavior in juvenile detention facilities. An example included Texas juvenile facilities which adopted positive behavioral supports, and the facilities experienced decreased discipline problems, increased satisfaction with rules and expectations, and improved academic outcomes (L. E. Johnson et al., 2013). Matching services for juvenile delinquents based on targeting criminal thinking and application of cognitive and behavioral changes have proven successful (Andrews et al., 1990). Intensive, robust social and behavioral supports provided stability for incarcerated students and increased academic achievement. Juveniles who did not receive services to develop prosocial skills showed problems in school and an inability to gain employment after reaching adulthood (Leone, Lockwood, & Gagnon, 2017; Pelcovitz et al., 2017).

Transitions. Poor literacy, high dropout rates, being a parent, and high unemployment rates made research-based transition programs difficult to gauge (Abrams & Franke, 2013; Platt, Bohac, & Wade, 2015). Blomberg, Bales, and Piquero (2012) and Rocque, Jennings, Piquero, Ozkan, and Farrington (2017) investigated juveniles released from detention in a large longitudinal study and found two salient factors contributed to successful transition: above-

average school attendance in public school and above-average academic achievement. Students with social and emotional disabilities, though, were at higher risk of being arrested and dropping out of school, and teachers generally had low expectations after graduation (Cavendish, 2014; Hong, Ryan, Chiu, & Sabri, 2013; Sinclair et al., 2016). The importance of school and receiving an education cannot be overstated, and children in juvenile detention who did not matriculate showed diminished employment and stability across the lifespan. When students entered juvenile detention centers with large academic deficiencies, the results of transitioning back to school and society were generally poor, especially the longer the detention a juvenile experienced (Fite, Pederson, & DiPierro, 2018).

Transitions for juvenile delinquents should include student-focused planning, student development, interagency collaboration, family engagement, and program structures (Kohler, Gothberg, & Coyle, 2018). The National Council on Disability listed several principles of successful transition planning, including assessment instruments, mental health interventions, community resources, and appropriate aftercare assistance (N. O'Brien et al., 2007). Intensive services after release resulted in improved transition back into the community, but quantitative research suggested most services were not offered with fidelity (Bullis, Yovanoff, Mueller, & Havel, 2002; Clinkinbeard & Zohra, 2011; Gill & Wilson, 2017). Schools need to commit resources to move beyond academic achievement to providing the social supports to move children successfully back into the community. Successful reintegration was possible if planned and coordinated with providers upon release, and the law requires services for students with disabilities (McDaniel, 2015).

Finally, coherent planning from entry to exit and beyond, including high quality programming, locus of control, and mentoring and support, were found to be the most promising

practices (Baltodano, Mathur, & Rutherford, 2005). Of all the factors, students with higher educational achievement and regular attendance fared better, but behavioral programs which were culturally sensitive showed promise (Belgrave & Brevard, 2015; Blomberg, Bales, Mann, Piquero, & Berk, 2011). Perhaps one of the most overlooked variables in successful transitions was mental health services, with nonconfrontational educational programs showing promise (Miner-Romanoff, 2015; Teplin, Abram, McClelland, Washburn, & Pikus, 2005). To accomplish improved transitions, a juvenile's views about self and relationship to school need to be altered in a positive, meaningful way. Research-based educational assessments focused on academic achievement were a critical factor in improving the lives of juvenile delinquents, but safety, support, social-emotional learning, and a challenging academic environment were just as important (T. L. Johnson, 2016; Osher, Penkoff, Sidana, & Kelly, 2016).

Barriers to Success

The same services intended to rehabilitate youths often unwittingly cemented the role of delinquency by housing children with other delinquents, and then there was little concern for the needs of juveniles to overcome barriers to reenter society (Heimer & Matsueda, 1994; Mathur, Clark, Hartzell, LaCroix, & McTier, 2019). Many schools in juvenile facilities were found to approach schools in the same manner which did not meet the needs of children before incarceration. This approach was not the only major problem. Instead of catering to the social, emotional, and academic needs of juveniles served in secure facilities, many facilities create and magnify existing problems. The curriculum and educational services in juvenile detention centers were unrealistic, disengaging, and did little to create a successful experience, especially for disabled students (Caldwell & Curtis, 2013; Houchins, Puckett-Patterson, Crosby, Shippen, & Jolivette, 2009).

In order for educators to effectively teach children incarcerated for delinquency, educators need to understand and respond to the unique characteristics which exist and develop during detention. As early as 8 years of age, many factors, such as conduct disorder, poor academic achievement, and lower IQ, collided to predict later juvenile delinquency (Fergusson & Horwood, 1995; Silver & Nedelec, 2018). The common bond of juvenile delinquents was the social dysfunction and impact on learning in school. Juvenile delinquents presented with higher rates of ADHD, conduct disorders, anxiety, and substance abuse issues, and the youths had an impaired ability to rationally and effectively cope with stress (Ireland, Boustead, & Ireland, 2005; Margari et al., 2015).

Protective factors, such as positive parenting styles, academic achievement, and positive relationships with peers, were significant in reducing delinquency (Hart, O'Toole, Price-Sharps, & Shaffer, 2007; Patowary & Gopalan, 2019). Living close to others with high incidences of juvenile delinquency and social learning theory suggested differential association and antisocial attitudes had a large effect size for delinquency (Mennis & Harris, 2011; Pratt et al., 2010). Prosocial behavior changed in students due to social exclusion, though feelings of empathy mediated feelings of rejection (Farrell, Thompson, & Mehari, 2017; Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007).

Student performance. Students usually entered behind academically with self-defeating behavior, and long-term outcomes did not support many practices. In recent years, state and local governments worked to improve the recidivism rate. After all the programs and research, a multiple-group covariance structure model found students incarcerated for juvenile delinquency as adults at age 27, 30, and 33 were more likely to have substance abuse issues and be a recipient of welfare benefits (Gilman, Hill, & Hawkins, 2015). One problem might be many students,

especially the most violent, lacked self-control techniques, which harmed the youths' chances at avoiding criminal problems and becoming gainfully employed (W. Evans, Brown, & Killian, 2002; Hein et al., 2017; W. Lee, Moon, & Garcia, 2019). Many of these problems existed in schools in juvenile detention centers, where students were not independent learners capable of managing time and expectations (McKee & Clements, 2000).

Within juvenile correctional facilities, being placed in a remedial group made a juvenile twice as likely to be a parole violator (Archwamety & Katsiyannis, 2000). The problems predated high school, as students entered high school behind, with a weak locus of control, and not being placed on an academic track meant a reduced chance of being successful (Capella & Weinstein, 2001). A further complication was juvenile detention centers are responsible for educating an at-risk population with often no records with which to make informed decisions. Smeets (2013) found many juvenile detention centers did not receive records for a large percentage of students, resulting in schools having no knowledge with which to make educational placements.

Many students in juvenile detention centers often felt unengaged in school and did not persist, seeking to blame others for causes of failure (DeLisi, Angton, et al., 2014; Finn & Rock, 1997). Feeling powerless and hopeless, many juvenile delinquents needed more than the same education on the outside which was not working. Furthermore, poverty correlated with poor decision-making ability, and there was a need to assist juveniles to develop long-term goals to reengage (Ewing & Sarra, 2018; Haushofer & Fehr, 2014; Wrosch, Scheier, & Miller, 2013).

Noncognitive factors. According to the literature, there were many attributes beyond academic ability affecting success in school and later transition back into society. One major area of impact was the importance of noncognitive attributes. Gutman and Schoon (2013) found self-

control, school engagement, and stable personality traits correlated to success in adulthood. Schools usually focused on behavior and academics, but there was emerging research suggesting sustained focus on improved noncognitive traits was just as important as strong academic instruction. Practitioners cannot distill noncognitive factors into a formula or a linear model, but the complex interaction was increasingly seen as important as cognitive ability. When students self-regulated behavior and developed accurate cognitive appraisals, juveniles displayed better mental and physical health (Gardner, Dishion, & Connell, 2008; Raftery-Helmer & Grolnick, 2018; Reynolds & Crea, 2015; Trzesniewski et al., 2006). The British Cohort Study, starting in 1970 and tracked every year since, found more important for adult success than academic ability were two factors: emotional health and proper conduct (Layard, Clark, Cornaglia, Powdthavee, & Vernoit, 2014).

Rigorous, aligned instruction was not enough. Tough (2012) found students from disadvantaged backgrounds needed character traits to succeed in college, and good academic skills simply were not enough. Beyond ability, lacking self-discipline was a major factor in school failure which cannot be explained with other factors, and there was a reciprocal relationship between self-concept and achievement (Duckworth & Seligman, 2005; Seaton, Parker, Marsh, Craven, & Yeung, 2013; Tan, Brown, & Leibowitz, 2018). Good teaching and high academic achievement were not enough to cause success after high school graduation. Most students in the juvenile justice system lacked the hardiness and support network to sustain success. When socioeconomic status was factored into student achievement, intrinsic motivation, school engagement, and length of education suggested improved educational practices have been shown to improve academic achievement (Froiland & Oros, 2014; Losel & Bliesener, 1994; Ritchie & Bates, 2013).

Students described as aggressive troublemakers and victims had poorer self-concept than those who did not possess the same self-view (Marsh, Parada, Yeung, & Healey, 2001). Education for juvenile delinquents was found to need more than feel good programs, as there were mixed results. Findings were inconsistent for some noncognitive factors, as students with higher grit did not necessarily outperform those with lower grit, but others postulated students might not always be accurate when completing questionnaires (Egalite, Mills, & Greene, 2015; Fan et al., 2006). Juvenile delinquents were found to not be a homogeneous group, and the characteristics should not be assumed. Still, one factor meta-analysis suggested self-concept was stable and strongly related to academic achievement (Seaton et al., 2013).

Moving beyond a strict academic focus has shown promise. Juvenile detention education which assessed, taught, and modeled noncognitive skills met the needs of a population with social and emotional problems from poverty, drugs, and trauma. For example, 21,000 male prisoners who attended a program focused on problem solving and empathy showed marked reductions in later offending (Travers, Mann, & Hollin, 2014). A small positive effect size existed when assessing self-beliefs and achievement by specific domain, and self-beliefs influenced and improved behavior and academic achievement in school (Valentine, DuBois, & Cooper, 2010). Improving students' noncognitive attributes was found important for all students. Academic achievement tests were missing a critical variable, and character skills were found important for success in all areas of life for juvenile delinquents (Kautz, Heckman, Diris, ter Weel, & Borghans, 2014; Veas, Castejón, Gilar, & Miñano, 2015).

Academic self-concept. Since the 1950s and 1960s, there has been an interest in self-concept among delinquents to prevent criminality (Brookover et al., 1964; Tangri & Swartz, 1967). Research was often contradictory, as delinquency was more a label than a defining

characteristic. There was the hope improved self-concept would lead to improved academic achievement, though initial studies found while most delinquents had initial negative self-concept, drawing conclusions was much more difficult (Culbertson, 1975; Marsh, Byrne, & Yeung, 1999). The length of detention and the moment in time one assessed juveniles yielded results on academic self-concept often at odds with each other. For example, students with learning disabilities and behavioral disabilities often had academic self-concept not congruent with actual achievement (Gage & Lierheimer, 2012; Gresham, Lane, MacMillan, & Bocian, 1999; Strein & Signor-Buhl, 2005).

Self-concept was found to be an important noncognitive factor for successful students, but most juvenile delinquents lacked the necessary prerequisites for success. Self-efficacy was found to be a precondition for development of self-concept, but high levels of self-enhancement correlated to lower self-concept later except when prior academic self-concept was high (Bong & Skaalvik, 2003; Marsh et al., 2016; Sticca, Goetz, Nett, Hubbard, & Haag, 2017). A consistent and moderately strong relationship was observed in research between positive academic self-concept and academic achievement, (Hamachek, 1995; Marsh & Shavelson, 1985; Susperreguy, Davis-Kean, Duckworth, & Chen, 2018; Wenglinsky, 1986). Juvenile delinquents, like twice-exceptional students, generally had few goals or commitments, and the children did not persist in pursuit of academic goals (Carroll, Gordon, Haynes, & Houghton, 2013; C. W. Wang & Neihart, 2015). Educators could improve instructional practices by promoting a positive academic self-concept and helping students avoid self-handicapping strategies (Marsh et al., 2016).

In applying the principles of self-concept, attitudes toward self were not unidimensional, and a delinquent's self-concept scores were at a rate so low to suggest severe pathology (R. C. Evans, Copus, Sullenberger, & Hodgkinson, 1996; K. S. Levy, 1997; Pottebaum, Keith, & Ehly,

1986). Such factors needed to be considered in juvenile detention centers, and these factors also related to all alternative schools. Others found low self-concept related to adjustment problems, and the reciprocal effect of academic self-concept correlated to interests and anxiety within a subject (Gogol, Brunner, Martin, Preckel, & Goetz, 2017; Marsh & Yeung, 1997; Sarsani, 2007). Inflated self-concepts appeared harmful, causing decreased academic achievement (Sticca et al., 2017).

In one study, most juvenile delinquents began with low self-concept and were then formally labeled, possibly from socialization within detention centers, which further eroded feelings of academic self-competence. Labeling students as delinquent resulted in a reduction of self-concept, and positive academic self-concept and a positive, vivid view of one's future correlated with higher performance as measured by course grades (Fortier, Vallerand, & Guay, 1995; Gerardi, 1990; Griffin, 1994; Mayer & Hoffman, 1982; Van Gelder, Luciano, Kranenbarg, & Hershfield, 2015). Ghazvini (2011) and Krannich et al. (2019) showed academic self-concept produced a sizeable effect on predicting scholastic outcomes except when students felt unchallenged.

By examining academic self-concept, many studies suggested there was a reciprocal effect of academic ability and positive self-concept, and prior grades had a lasting effect (Marsh, 1990a; Marsh et al., 1999; Prince & Nurius, 2014). Prior school experience, plus peer associations, intermingled to produce a picture of how students viewed oneself. Important to understanding the reciprocal effect was reflected appraisals, where peers were the main factor affecting students' self-concept (Brownfield & Thompson, 2005; Marsh, Parker, & Pekrun, 2018). Within a juvenile detention center, most students were failures in school, and the value students placed on school was found to infect other juveniles. A danger existed in artificially

raising academic self-concept: High academic self-concept related to narcissism and aggression in some individuals (L. D. Taylor, Davis-Kean, & Malanchuk, 2007).

Surveying high school students, results revealed academic self-concept, learning strategies, and achievement were all related and mutually supportive in multiple, complex pathways (McInerney, Cheng, Mok, & Lam, 2012; Niepel, Brunner, & Preckel, 2014). Schools cannot make students have a positive self-concept in isolation; changing attitudes required substantive real learning gains. Once a juvenile was incarcerated, a delinquent started to mold the academic self-concept based on peers. Further, self-concept was not only helpful in improving academic achievement but improved learning and cooperation (Marsh & Martin, 2011; Preckel, Niepel, Schneider, & Brunner, 2013). What was elusive, though, was raising academic self-concept without improving academic achievement hurt both variables (Marsh et al., 1999).

Self-esteem. There were two competing effects found within research of self-esteem: Low self-esteem increased delinquency, but once delinquent, there were raises in self-reports of self-esteem (Rosenberg, Schooler, & Schoenbach, 1989). Most juvenile delinquents showed low self-esteem, but once labeled, the peer group becomes the dominant focus in one's self-esteem. For example, the influence of peers significantly impacted one's own evaluation of self-esteem, but others found low self-esteem connected with aggression and antisocial behavior when emotional dysregulation was present (Barry, Grafeman, Adler, & Pickard, 2007; Chassin, Presson, Young, & Light, 1981; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Garofalo, Holden, Zeigler-Hill, & Velotti, 2016; Van Zalk & Van Zalk, 2015).

There were many who believed all delinquents have low self-esteem and the deleterious effects of detention can only be harmful. Delinquency might be a protective effect against low self-esteem, and alternative education programs should build student success (Gold, 1978).

Building off these pioneering studies, delinquency, specifically violence, probably increased self-esteem, and association with fellow delinquents enhanced self-esteem (Jang & Thornberry, 1998; Muslu, Cenk, & Sarlak, 2017; Woessner & Schneider, 2013). The stigma of delinquency by formal labeling might be a major factor in peer relations (Adams, 1996; Bernburg, Krohn, & Rivera, 2006). Furthermore, adolescents generally were found with rising self-esteem, and healthy self-esteem depended on one's coping ability and outlook on the future (Greve, EnZmann, & Hosser, 2001; Jackman & MacPhee, 2017).

Low self-esteem at age 15 related to later mental health problems, but other psychological factors, such as ADHD, were necessary to understand low self-esteem was not a standalone factor (Boden, Fergusson, & Horwood, 2008; Harpin, Mazzone, Raynaud, Kahle, & Hodgkins, 2016; Jennings et al., 2018). One suggested factor was self-verification or reflected appraisal, which meant self-esteem formed both within the individual and group context, and a discrepancy was found which negatively impacted emotions and conformity (Cast & Burke, 2002; Keith & Scheuerman, 2018). All too often there was the assumption raising self-esteem was a panacea, but much research did not support such a conclusion, and there was the question whether juvenile delinquents suffered from low self-esteem.

Like the construct of self-concept, focusing on raising self-esteem without merit did not produce the desired effects and could probably be better served by building resiliency in adolescents (Baumeister, Campbell, Krieger, & Vows, 2003; Martínez-Martí & Ruch, 2017). In juvenile detention centers, students brought psychological and substance abuse issues which placed the youth in a peer group similarly situated. There was evidence self-esteem and general well-being, though not related, remained stable during and after detention (Barendregt, van der Laan, Bongers, & Van Nieuwenhuizen, 2016).

Grit. Besides self-esteem and self-concept, another noncognitive factor which garnered much research was grit. Grit had shown more prominence in success than cognitive factors in many endeavors. Grit, which is defined as resilience in the face of adversity, influenced preventing substance abuse, improving school behavior and attendance, and improving self-concept and reading skills (Guerrero, Dudovitz, Chung, Dosanjh, & Wong, 2016; L. V. Thomas, Davis, Marsh, & Margolis, 2016; West et al., 2016).

When teachers push juveniles to be passionate and persevere, but the youth lacked the ability, failure and poor self-concept were two likely possibilities. Measuring grit in relationship to other noncognitive variables led to misleading results, and there were situations where individuals with high grit experienced harm due to failure to overcome adversity (G. E. Miller, Yu, Chen, & Brody, 2015; Peterson, 2015). Interest in grit offered explanations beyond ability and conscientiousness, which suggested grit was an important trait in academic achievement (Duckworth, Peterson, Matthews, & Kelly, 2007; Huang & Zhu, 2017). Educational achievement for juvenile delinquents, from findings in the research, was severely behind nondelinquent peers, and how grit interplays with dropouts was uncertain. Juvenile delinquents often felt hopeless and lacked self-determination, and both areas need included in correctional programs to decrease juvenile recidivism (Bolland, 2003; Houchins, 2001).

Improving grit in high school students led to positive results in academic achievement, but the effects were fleeting and might not apply to at-risk students, who often experienced anxiety from being pushed (Mills, 2018; Orosz, Péter-Szarka, Bőthe, Tóth-Király, & Berger, 2017). Feelings of hopelessness and ineffective coping with the predicament of delinquency and educational failure were factors which affected grit. Shulman and Cauffman (2011) found positive coping ability among newly incarcerated juvenile delinquents improved behavioral

outcomes. Possibly perseverance was the most important factor of grit, with a sample of 66,807 individuals found grit alone had a weak effect (Credé, Tynan, & Harms, 2017). As stated by Mills (2018) and Credé et al. (2017), no emerging consensus was found on what, if any, effect grit had on schooling.

Psychosocial factors. Juvenile delinquents experienced problems with empathy in a quantitative analysis and resisted accepting or giving help to others (Heynen, Van der Helm, Wissink, Stams, & Moonen, 2018). Besides not wanting to listen and comply with teachers, juvenile delinquents were found to dislike school in general. With incarceration, juvenile delinquents were placed in a highly controlled environment with little self-control, and the youths as a group had difficulty coping with the demands of any school environment, which structured programs were shown to improve (van der Stouwe, Asscher, Hoeve, van der Laan, & Stams, 2016).

Before a juvenile delinquent enters school, the student often had problems with behavior exacerbated by mental illness. Juvenile delinquency was shown to be learned behavior, and social learning theory stated the experiences juveniles had with peers, parents, and the community caused crime (Matza & Sykes, 2017). Successful coping with the demands of school was shown to be problematic, as was proper behavior outside of school. Mental illnesses, especially major depressive disorders and behavioral issues, were found commonly in juvenile delinquents and were largely undiagnosed (Gagnon, 2018; Ng, Roshni, Singh, & Singh, 2018). Juvenile delinquents with limited prosocial skills had higher rates of callous–unemotional traits, psychopathy, and higher rates of delinquency, but the effects differed between individuals and genders (Padilla-Walker, Memmott-Elison, & Coyne, 2017; Pechorro, Jiménez, Hidalgo, & Nunes, 2015). Using longitudinal data, results suggested juveniles started out with a similar

psychosocial development compared to non-justice-involved youths, but confinement negatively influenced psychosocial measures well into early adulthood and beyond (Schaefer & Erickson, 2019).

Getting along with others was a difficult skill set for most juvenile delinquents. Behavioral problems were common in juvenile delinquents, and the youths scored low on emotional intelligence in peer relations (Mohanty & Nanda, 2018). Juvenile delinquents did not pick up on social cues, did not cooperate, denied privileges, and instead of being taught the skills to be successful, schools suspended and expelled the students. Then the juvenile delinquents often ended up incarcerated. Often punitive measures were the major tools used to change juvenile delinquents, though therapeutic interventions proved more successful in long-term improvements in behavior (Mathys, 2017).

Juvenile delinquency has been shown to be a complex phenomenon, and there were many factors which increased the likelihood of being arrested or charged. Being the youngest in one's class was also a predictor of being involved in crime and increased chances of dropping out (Cook & Kang, 2016). Attending school and persisting to graduation improved a juvenile's economic outlook and decreased adult crimes. Dropping out of school related to significantly increased arrest rates for juveniles age 16–18 (D. M. Anderson, 2014).

School engagement and problem behavior were bidirectional for adolescents, and as students become more disengaged, behavior deteriorated and dropping out increased (M. T. Wang & Fredricks, 2014). Children with adverse childhood experiences had lower resilience and more physical and social problems, as well as low school engagement, than children with high resilience (Bethell, Newacheck, Hawes, & Halfon, 2014). Juvenile delinquents were found with a collective history of failure in and out of school, and the prevalence of behavioral problems

were the norm rather than the exception. Problem behavior cannot be examined in isolation, as improving satisfaction and engagement has the potential to improve outcomes of juveniles.

In juvenile correctional facilities, education was usually not the most important aspect of a juvenile's day. Education in secure detention often had more emphasis on security than learning, and often schools in corrections did not provide an appropriate education which similarly situated peers would receive in public schools (Young et al., 2010). Schools in juvenile detention centers should develop a coordinated response to juveniles, with educational interventions connected to mental health services (Gagnon & Barber, 2010). Rather, security concerns about housing and movement were more important than rehabilitation and restoration. Warehousing, not rehabilitation, was often the most important concept in a juvenile's stay, and assumptions about juveniles might cloud the judgment of caregivers. Furthermore, teachers often treated juvenile delinquents differently depending on if the juvenile was viewed as a victim or an offender; offenders were viewed more deserving of social justice (I. Levy & Reuven, 2018).

The history of juvenile delinquents before and after entering a secure detention facility was one of failure; most juveniles, by the time the youths entered the juvenile justice system, were many years behind in reading and math. Testing revealed juvenile delinquents were significantly behind similarly situated peers on all academic achievement batteries (Forsyth, Asmus, Stokes, & Forsyth, 2010). There was a need to determine which interventions improved engagement and academic achievement in juvenile detention centers. Schooling was difficult for juvenile delinquents, with over 80% found to experience chronic failure and over one third expelled from school (Sander, 2010).

Dealing with the whole child, by screening and developing interventions for the social, emotional, and academic wellbeing of each juvenile might prevent crime and further problems.

There was a lack of understanding about exactly how to educate juveniles who experienced persistent failure within public school. Continuing the same school programs which did not work in traditional school is not the answer. Students in juvenile justice felt disconnected, had poor self-concept, and were disengaged from school, and reading and studying one's agency might bring about change (Bower, Carroll, & Ashman, 2012; Seroczynski, Evans, Jobst, Horvath, & Carozza, 2016).

Incarcerated juveniles showed limited prosocial emotions and often appeared apathetic and disengaged because of psychological problems (Pechorro et al., 2015). Education should adapt to the needs of the students served, and the common thread was juveniles lacked the skills to feel engaged and valued. New ways to motivate, engage, and interact need studied to change the trajectory of juvenile delinquents. Education was found to be a key to improving the lives of juvenile delinquents, with juveniles who remained in school much less likely to be rearrested and continue criminality into adulthood (Blomberg et al., 2011).

Interventions

Within juvenile detention, most students showed marked impairment which lasted into adulthood after release, but students with high future aspirations and self-efficacy had reduced recidivism (Abram et al., 2009; Cuevas, Wolff, & Baglivio, 2017). Though results were not clear if poor academic achievement caused poor behavior or vice versa, there was a strong correlation between both variables for delinquents which academic achievement could mediate (Katsiyannis et al., 2008). Schools should focus on the whole child, but the efficacy of programs continues to need further research, with questionable results. Teaching positive, proactive social skills improved noncognitive skills, and programs such as 4Rs, Merging Two Worlds, and Second Step

reduced discipline issues and increased academic achievement (Belfield et al., 2015; Clark & Mathur, 2015; Gutman & Schoon, 2013).

Hirschi (1977) long ago theorized motives and restraint were factors which caused juvenile delinquency, but researchers often did not consider both factors. Concerning the student population in juvenile detention, juvenile delinquents have been found to possess poor decision-making capabilities, and negative social sanctions often caused a labeling effect which led to further delinquency (Haushofer & Fehr, 2014; Kaplan & Johnson, 1991). Academic interventions were difficult because of the myriad of social and emotional needs incarcerated children exhibit. Lack of self-control often caused positive factors to be superficial, and many juvenile delinquents were found to need training in psychosocial skills, such as responsibility and empathy (G. E. Miller et al., 2015; Schaefer & Erickson, 2016).

Best practices exist, but juvenile detention centers often did not implement and sustain quality therapeutic approaches, and there was little follow-up. Frequently, schools poorly identify juveniles with mental and social problems, and the youths did not remain in a facility long enough to plan interventions with any fidelity. Research in interventions produced few long-term studies, but two meta-analyses found fidelity issues were problematic, and therapeutic approaches showed more effective results than behavioral control (Evans-Chase & Zhou, 2014; Lipsey, 2009; Wong, Bouchard, Gravel, Bouchard, & Morselli, 2016). Successful interventions all found one characteristic in common: promoting secure attachment (Kautz et al., 2014).

After release, juvenile delinquents well into adulthood showed much higher rates of drug abuse, illegal activity, dropping out of school, and unemployment (Grosset, Frensch, Cameron, & Preyde, 2018; A. A. Miller & Therrien, 2018; Ramchand, Morral, & Becker, 2009). Juvenile detention centers cannot teach academic skills in a vacuum, but neither should facilities teach

social skills without marriage to academic content. Interventions which targeted specific areas and domains, such as multidimensionality of self-concept instead of the global dimension or a focus on problems such as verbal ability, demonstrated a strong effect size (Alloway & Stein, 2014; O'Mara, Marsh, Craven, & Debus, 2006). In addition, a strict focus on academic achievement had not produced desired results, and an intervention used to improve noncognitive skills resulted in higher graduation rates and a strong effect size in increased math achievement (Cook et al., 2014; McDaniel & Carter, 2018).

Unfortunately, students placed in juvenile detention centers only worsened the situation and increased deviancy by changing a student's identity which mirrored fellow incarcerated juveniles and made peer-led interventions often harmful (Asencio & Burke, 2011; Cullen & Jonson, 2014; Dishion, McCord, & Poulin, 1999). Many factors worked against mental health care professionals, educators, and security staff in ameliorating the conditions which caused delinquency. In juvenile detention centers, students commonly self-handicap, showed little resilience in achieving goals, and did not benefit from mental health interventions which ended as soon as release (Aalsma et al., 2015; Buckner, Mezzacappa, & Beardslee, 2003; C. R. Thomas & Gadbois, 2007).

The problems juvenile delinquents encountered were usually not properly assessed, and then facilities lacked the time to implement with fidelity interventions and programs which showed promise. Juvenile correctional facilities needed strategies to improve assessments, as improving connection with school, community, and families resulted in less deviancy and future delinquency (Campie, Pakstis, Flynn, & McDermott, 2015; Swann, Chang-Schneider, & McClarty, 2007; Walker & Sprague, 1999). For example, A. L. Sullivan and Sadeh (2014) found of all the social skills interventions surveyed, none was rigorous or scientifically validated. What

to do and when remained poorly defined for all populations, but one quantitative study found teaching emotional self-regulation reduced violent behavior (Chen, Chiou, & Ko, 2019).

Juvenile delinquents have been shown to possess difficulties in social settings, and programs which improved engagement and positive social interaction decreased recidivism. Positive experiences and student engagement improved grades, lowered antisocial behavior, and reduced further contact with the juvenile justice system (Mahler, Fine, Frick, Steinberg, & Cauffman, 2017). To improve juvenile detention education, schools need to examine how to present instruction beyond traditional methods. For example, moral engagement through structured activities improved behavior and reduced aggressive behavior (Walters, 2018).

Chapter Summary

The purpose of this study was to find if noncognitive factors and academic achievement correlated with students' grades in juvenile detention. Juvenile delinquents have been shown to suffer from drug addiction, mental health problems, and neglect which impacted behavior and grades in traditional school. Positive, long-term results suggested four-fifths of males and half of females did not become successful in employment, relationships, education, and parenting, with prior maltreatment being the most likely factor for continual failure (Abram et al., 2017; Vitopoulos, Peterson-Badali, Brown, & Skilling, 2018). Secure facilities tried to treat juveniles as children instead of adults, providing special education services and a variety of educational interventions to reduce recidivism (Artello, Hayes, Muschert, & Spencer, 2015). Yet, research in juvenile detention education had several barriers, which has resulted in fewer studies than traditional education (Mulcahy, Krezmien, Leone, Houchins, & Baltodano, 2008; Myers, 2015). Besides the overall lack of research, findings concerning juvenile delinquents newly incarcerated

were found severely lacking, and less was found on the interaction of noncognitive attributes and juvenile delinquency.

Juvenile detention centers should do no harm, but the results of previous research studies suggested incarceration was worse than most other alternatives and did not take childhood trauma into consideration (Benekos & Merlo, 2019; Kirk & Sampson, 2013). Alternative schools improved academic performance, but there was support for the premise housing children with behavioral problems increased delinquency (Fine et al., 2018). Being incarcerated for the first time was often the tipping point, with juvenile delinquents entering the system away from parents for the first time. After being incarcerated for a long time, research was found much more robust and clearer.

The understanding of noncognitive characteristics upon incarceration was a missing variable, and the results could be used in preincarceration programs and in designing individualized social, emotional, and academic interventions within juvenile detention centers for first-time-detained children (Harder, Knorth, & Kalverboer, 2015). Teachers cannot just teach academic subjects, as educators in juvenile detention centers need to identify and connect social and emotional problems with planning to transition children successfully back into the youths' homes and neighborhoods. Assessing newly incarcerated students' academic self-concept, self-esteem, mental health, grit, and academic achievement provides insight into the self-appraisal and self-belief of students as related to academic outcomes measured by grades. Results could improve educational programming and long-term outcomes for newly incarcerated juvenile delinquents. The next chapter describes the research design, population and sample, instruments, and methodology to carry out the research.

Chapter 3: Research Method

The purpose of the research was to determine if a relationship existed between noncognitive attributes and academic achievement on English and math grades for first-time-detained juvenile delinquents and to see if results might be useful to improve instructional practices. Despite the numerous challenges faced by juvenile delinquents, studies suggested two-thirds wanted to go to college, and the youths had positive expectations about the future chances of not dropping out and being rearrested (Mahler et al., 2017; Sedlak & Bruce, 2016). After all the programs, interventions, and time spent trying to improve the lives of juvenile delinquents, many dropped out of high school, and the chances for early death were much greater (Aalsma et al., 2016; Feinstein et al., 1998; Foley, 2001; Sampson & Laub, 2003). The costs for society were much more than the price of services; for example, research on 503 boys in the Pittsburgh Youth Study found the costs alone for these children and the youths' crimes were estimated to exceed $100 million (Welsh et al., 2008). Promising approaches in education and noncognitive skills exist, but research in juvenile detention was found lacking (Myers, 2015).

The problem was the influence of noncognitive attributes and academic achievement on English and math grades, for first-time-detained juvenile delinquents, was unknown. This nonexperimental, ex post facto quantitative study sought to determine if the independent (predictor) variables of noncognitive attributes (academic self-concept, mental health, grit, and self-esteem) and academic achievement (standardized testing in math and verbal) related to the dependent (criterion) variable of academic outcomes measured by students' grades in English and mathematics for first-time-incarcerated juveniles. Multiple regression analysis uses predictor variables to describe the variance or relationship with a criterion variable. Since the research was not experimental, predictor variables were used instead of independent variables, and criterion

variables were used instead of dependent variables (Garson, 2014; Heppner, Wampold, & Kivlighan, 2015; Kachigan, 1991). Backward multiple regression was used after meeting all assumptions, which allowed the construction of a model for the best fit (Garson, 2014). The results may be useful to improve educational programming for juvenile delinquents.

The primary research questions and hypotheses guiding this study were the following:

Research Question 1: What is the degree of correlation between noncognitive attributes and academic achievement on grades in English for students first detained in juvenile detention facilities?

Research Question 2: What is the degree of correlation between noncognitive attributes and academic achievement on grades in mathematics for students first detained in juvenile detention facilities?

$H1_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H1_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H2_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and math grades.

$H2_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and math grades.

Chapter 3 outlines the research methods and design used in the study. This chapter starts by restating the problem, purpose, and need for the study. The study's design and procedures are described, as well as the population and sample selection. Next, instruments used for research, operationalization of variables, and data collection procedures are discussed. The chapter ends

with discussing concerns about reliability, validity, and researcher ethics. Finally, there is a summary.

Research Design and Rationale

This nonexperimental, ex post facto quantitative study sought to determine if the predictor variables of noncognitive attributes (academic self-concept, mental health, grit, and self-esteem) and academic achievement (standardized test scores in verbal and mathematics) related to the criterion variable of academic outcomes (English and mathematics grades) of newly incarcerated juveniles. Correlation and multiple regression analysis were used to ascertain the relationship, if any, of many independent variables with a single dependent variable (Creswell, 2012). Associational research and correlational research are often used interchangeably, and unlike experimental design, one researches with two or more variables without influencing either the criterion or predictive variables (Fraenkel & Wallen, 2000). Backward regression analysis allowed an examination of a broad array of variables to find the best model possible to predict the dependent variable (Garson, 2014).

Correlational studies have independent or predictor variables related to dependent or criterion variables (W. E. Martin & Bridgmon, 2012). Results were evaluated by effect size, but one needed appropriate norms to assess the magnitude (Lipsey et al., 2012). In the following study, predictor variables were standardized scores in math and reading (as well as subscores of math computation, math application, vocabulary, language mechanics, and reading comprehension) measured by the Basic Achievement Skills Inventory–Survey (BASI–S), mathematics academic self-concept and English academic self-concept measured by the Marsh scales, grit measured by Grit–S, self-esteem (and subscores of performance, social, and appearance) measured by State Self-Esteem Scale (SSES) and Single-Item Self-Esteem Scale

(SISE), and mental health (emotional, conduct, hyperactivity, peer relations, and prosocial) measured by Strengths and Difficulties Questionnaire (SDQ). The criterion variables were mathematics and Language Arts academic outcomes measured by grades at the end of three weeks. The facility was a short-term facility, so grades were examined after three weeks. For purposes of the research, grades as close to the assessment would be most accurate and maintain fidelity to the purpose of the study.

Other methods were considered, but multiple regression was the best fit with the research purpose and design. Analysis of variance (ANOVA) could also have been used without multiple regression, but ANOVA requires a much larger sample and can waste information, as multiple regression uses all data in predictor variables for direct estimates of variance (Aiken & West, 1991). Linear regression for each predictor variable could have been conducted, but individual regression of each predictor does not consider the correlation of multiple variables on each other and the criterion variable (Garson, 2014). Another advantage of multiple regression correlation was the separation of the influence of different variables, especially in situations where variables cannot be controlled (Cohen, Cohen, West, & Aiken, 2002).

Research Procedures

To conduct the present study, permission from the regional juvenile detention center was secured. After receiving permission, within two weeks, the facility's registrar removed personal and confidential information and transmitted the data. All Excel files were checked for missing or erroneous values, and within a week or two, all information was converted to a CSV file for use in JASP (Jeffreys's Amazing Statistics Program). Using JASP, the data were run within four weeks.

Before collecting data, the institution and school must grant permission, as well as the university's institutional review board (Creswell, 2012). Maintaining anonymity and confidentiality were of chief ethical importance (Vogt, Gardner, & Haeffele, 2017). A regional juvenile detention center, housing juveniles from an 11-county area, was used to build a sample through archival review of records. The target population was first-time-detained juvenile delinquents age 10–18, and the juvenile detention center provided archival data. After completing Collaborative Institutional Training Initiative (CITI) training (Appendix A), letters were sent to the college's Institutional Review Board (Appendix B) and director of the regional juvenile detention center (Appendix C). Since the study was an archival study, participants were not notified, as the youths' descriptors were removed before access was granted. All students exited before initiation of the study.

Once the facility granted permission to collect data, the following steps were used to conduct the research:

1. Identified all students who met inclusion criteria: first-time detainee, completed all instruments, and earned grades at the three-week mark.
2. Ensured all personal identifiers have been removed, assigned a pseudonym to each person, and stored data as an Excel file.
3. Checked all data for accuracy, proper labels, and converted the file to CSV format.
4. Uploaded all information to JASP, and conducted analysis (Goss-Sampson, 2018). Descriptive statistics (mean, mode, variance, and standard deviation, etc.) were calculated for all demographic variables (age, gender, grade, race, and special education status). Correlation analysis was run first, and then multiple regression analysis was run for all predictor variables (mental health, grit, academic achievement, self-esteem, and academic

self-concept) and the criterion variable (students' grades). All associated tests for assumptions were run as well.

5. For post hoc analysis, entered information into G*Power and Soper to check for power and robustness.

Juvenile delinquents had an intake process which encompassed a broad array of instruments to develop a case study to inform an individual learning plan for school. All instruments were noninvasive, quick, and dealt with mostly noncontroversial subjects (as opposed to drugs, sex, and abuse, etc.), and the facility changes which instruments were used from time to time. All new juveniles entered school within two days of entering the facility, and noncognitive assessments were given on the second school day and academic achievement on Day 4. In all cases, if assessments were not given by Day 5, then students were not included in the current study. As a result, direct risks were minimal, and all parents and guardians permitted testing initially upon entry. For all students, the greatest risk was maintaining confidentiality and anonymity of students; before exporting data, all identifiers were removed.

The facility stored data on computers, with names and personal identifying information removed upon entry for purposes of the research. No information which could impact a juvenile's anonymity or confidentiality left the facility. Any assessments administered followed local procedures (juvenile detention centers follow state and Federal guidelines concerning privacy for both students and juvenile delinquents).

Survey data can be derived from standardized items or newly created items needing tested (Abbott & McKinney, 2013). All surveys utilized were standardized and given following a case study where all students completed the same process. Files were converted from Excel to CSV, and JASP was used to analyze the data. The study showed students' attitudes upon

entering juvenile detention, and an archival review of students' past achievement and discipline were examined to see if relationships existed among noncognitive attributes, academic achievement, and grades.

Population and Sample Selection

The participants were from a regional juvenile detention center in a small town in central Illinois which housed up to 26 juveniles, and the sample's demographic data by age, sex, race, school status, grade, and special education status were collected. All records were archival, so there was no direct participation, and all students left by the time data were collected. Most students had short-term detainments in juvenile detention center. To be included, students were first-time-detained juvenile delinquents, enrolled long enough to earn grades, and completed all survey instruments within five school days upon entering school (generally all noncognitive tests and the Test of Silent Contextual Reading Fluency–2 (TOSCRF–2) were given on the second school day, and the BASI–S was given on the fourth school day). Initial intake by juvenile officers screened juveniles to determine if enrollment was the first time in secure detainment.

Creswell (2012) suggested a researcher should always try to pick the largest sample possible to minimize sampling error, though a correlational study needs at least 30 participants. Testing statistical significance of multiple correlation coefficient did not require as large a sample for a prediction equation, but the sample must be larger than needed to reject the null hypothesis (Knofczynski & Mundfrom, 2007). A priori sample size suggested a minimum of 76 was needed for a multiple regression analysis with three predictor variables, anticipated effect size $f^2 = 0.15$, desired statistical power of 0.8, and a probability level of .05 (Soper, 2019). Access to a regional juvenile detention center helped to build a representative sample, and access of the archival database provided necessary data.

Approval for records from the regional juvenile detention center was received after the institutional review board granted approval. A letter was sent to the juvenile detention center, with explanations and purposes of research, to obtain approval. Data were stripped of a student's name and identifying information upon entry in an Excel database by juvenile detention staff prior to sharing data, so any data taken off premises in electronic storage did not have any personal indicators (e.g., name, birth date, other identifying information).

The sampling strategy used was convenience sampling, which was affordable, easy, and used subjects readily available. Convenience sampling operates under the assumption the population would not be different from the sample (Etikan, Musa, & Alkassim, 2016). Regardless of sample size, all samples suffer from errors which one can reduce by making the sample closer to a probability sample, and convenience or nonprobability sampling can be useful because researchers often are interested in a select group of the population (Creswell, 2012; Vogt et al., 2017). All students who entered juvenile detention in this setting who completed the instruments and met the parameters were included, and the sample represented students which mirrored national statistics.

Setting

The setting was a short-term regional juvenile detention center in a small midwestern town in central Illinois. The average stay at the juvenile detention center was 30.5 days, with a range of one to 250 days. Up to 26 students can be housed at once, though sometimes the facility was at overcapacity. The students were required to attend school, though many were only enrolled for a short time before either going home, state correctional facilities, or residential treatment. Though the detention center was in an urbanized area, the population came from an 11-county area and ranged from rural to urban. In a given year, approximately 160–250 students

passed through the juvenile detention center, and recidivism was high (approximately 25% or more of the population were repeat offenders). Many of the students stayed less than a week or got released the next day.

The school had two full-time teachers and two substitutes. School was in session 257 days per year and operated off a modified block schedule (four core subjects, physical education, two electives by computer-guided instruction, response to intervention as needed, and remediation on tablets). Curricular materials and technology were well funded, and the facility had a library, computer lab, mobile tablet lab, and a whiteboard. Drug and mental health counselors were available daily to meet with students. Medical care was available, with a nurse on staff during weekdays, and students were sent out to specialists as needed.

Instrumentation

In structured data collection, everyone answers the same closed questions (Mligo, 2016). The instruments were all standardized across many ages and provided insight into a student's academic, social, and emotional status. Intake procedures required juveniles complete all instruments within five school days of entering school (generally all noncognitive tests and TOSCRF–2 were given on the second school day, and the BASI–S was given on the fourth school day). Predictor variables were measured by SSES (including subscales of performance, social, and appearance), SISE, math academic self-concept, English academic self-concept, BASI–Survey (including subscores of math computation, math application, vocabulary, language mechanics, and reading comprehension), TOSCRF–2, Grit–Short Scale, and SDQ (including subscales of emotional, conduct, hyperactivity, peer, and prosocial). All scales, except the Grit–Short Scale, were added for a total; higher scores for all, except the SDQ (excluding the prosocial subscale, which higher is better), were suggestive of a positive measure of the construct

measured. High scores on the SDQ were indicative of mental health problems, and low scores were indicative of absence of mental problems. The Grit–Short Scale also has a Likert scale but averaged the scores. Concerning the criterion variables, grades obtained after three weeks in English and math were used to be as close to the noncognitive assessments administration and because the facility studied was a short-term facility.

Basic Achievement Skills Inventory–Survey (BASI–S). The BASI-S was introduced in 2004 and provides math and verbal scores for children and adults (Broxterman, Mok, & Beukema, 2017). Validity and reliability scores are available from the publishers, indicating over 2,400 persons in a stratified sample were used to norm the test, and all sections and questions had adequate psychometric properties. The test is used with people age 8–80. The BASI-S has two major tests, math and reading (verbal), and five subscores (math computation, math applicability, vocabulary, language mechanics, and reading comprehension). Each test generates a number of scores: standardized scores, age range, grade range, subscores, percentiles, confidence intervals, and descriptors.

Test of Silent Contextual Reading Fluency–2. The TOSCRF–2 was normed with 2,375 individuals and had a coefficient alpha of 0.86, meaning the test had adequate reliability and correlated to the Woodcock-Johnson (Dumont, Willis, Veizel, & Zibulsky, 2013). The test only takes three minutes to administer, and the results can be generalized to reading comprehension. The TOSCRF–2 gives raw scores, standard scores, percentiles, and age and grade equivalents.

State Self-Esteem Scale. The work of Heatherton and Polivy (1991) developed the SSES to measure short-lived changes in self-esteem by standardizing the scale with college students over three trials (all studies had greater than 100 participants). The scale has reliability above 0.70, stability on test–retest, and correlated well with other measures. Heatherton and Polivy

(1991) stated the instrument measured three correlated factors (performance, social, and appearance), and the SSES provided a global score of self-esteem. Both authors went on to state the SSES provided a valid measure of changes in self-esteem, and the instrument was found psychometrically sound and gauged changes between mood and self-esteem. In use with adolescents, the SSES demonstrated adequate validity and reliability (Linton & Richard, 1996).

For the present study, the SSES measured self-esteem by recent event changes. The SSES has 20 questions on a 5-point scale, with several reverse scored. Results give three subscores (performance, social, and appearance) and a global total which show an individual's self-esteem at a given time.

Single-Item Self-Esteem Scale. One measure of self-esteem which provided a measure of global self-esteem was the SISE, which has good psychometric properties, though results should be viewed with caution in childhood. The test was standardized on 489 undergraduates, and the test had a mean of 3.5 (*SD* = 1.1) and correlation above .73 with Rosenberg's Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001). A major use of SISE was comparisons with the SSES; the instrument is one question with a 7-point scale and is unobtrusive. The SISE's measure of global self-esteem was compared to global self-esteem score of the SSES.

Academic self-concept. Academic self-concept is a construct with many dimensions and becomes more complex as children age (J. Green, Nelson, Martin, & Marsh, 2006). Following the Marsh/Shavelson model, subject-specific models for language arts and mathematics were developed and analyzed, suggesting each scale measured single subjects versus broad generalities. The language arts and mathematics Academic Self-Concept (ASC) Scales both have adequate internal reliability (Marsh, 1990b). Marsh (1990b) gave the test to 234 fifth- to 10th-grade students, and the language arts ASC Scale had a coefficient alpha of 0.86 and mathematics

ASC Scale coefficient alpha of 0.85. Each survey is four questions and measures academic self-concept in language arts or mathematics; the questionnaire is a 6-point scale, with some reverse scored. High scores mean a high academic self-concept.

Grit–Short Scale. The Grit–Short Scale was found to possess adequate predictive power, and the instrument was shown to be psychometrically sound (tested over 2,800 students in four trials, with a Cronbach's alpha greater than 0.73 for all trials) with other measures when normed with college, middle, and high school students (Duckworth & Quinn, 2009). The survey assesses grittiness of a student, with the higher the average, the higher one's grit. There are eight questions in the survey, with some of the questions being reverse scored. The questions are on a 5-point scale, from not at all like me to very much like me.

Strengths and Difficulties Questionnaire. The SDQ was developed as a brief screener for ages 4–18 to identify mental health problems in students concerning adjustment and psychopathology (Arman, Amel, & Maracy, 2013). The SDQ was shown to be psychometrically sound (Cronbach's alpha above 0.80), being administered to 10,367 in the 2001 National Health Interview Survey (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005; R. Goodman, 2001). Other advantages were the SDQ listed strengths as well as difficulties and gave coverage to peer relations and prosocial behavior (R. Goodman, 1997). The SDQ is a mental health screener to locate students with conduct and emotional disorders, as well as ones with positive prosocial skills. The survey has 20 questions on a 3-point scale, with the subscales of emotional, conduct, hyperactivity, peer, and prosocial. The prosocial scale is a separate component and does not contribute to the omnibus score of the SDQ. The following constructs make up SDQ:

- Emotional and internalizing factors
- Conduct and problems and oppositionality

- Hyperactivity and inattention
- Peer relationships
- Prosocial is interpersonal interaction and concern for others (e.g., helping, cooperating, sharing; Koskelainen, Sourander, & Kaljonen, 2000).

Operational Definitions

An operational definition is how a variable is specifically measured (Randolph, 2009). Definitions clarify what was studied. The research comprised the following predictor variables.

Academic achievement. Academic achievement is a student's ability in math and verbal areas by grade equivalency, age equivalency, and standard score measured by standardized tests. The BASI–Survey measured academic achievement: reading (verbal) standardized score, mathematics standardized score, and subscores of mathematics application, mathematics computation, reading comprehension, language mechanics, and vocabulary. The TOSCRF–2 measured reading fluency, and the instrument provided standardized scores and percentiles.

Self-esteem. Self-esteem is how a student measures one's self-worth at a given time, with components of social (how people believe others perceive), performance (feelings of general competence), and appearance (how people feel about one's won physical bodies; Heatherton & Polivy, 1991). The SSES (total score, performance, social, and appearance) and SISE measured self-esteem.

Grit. Grit is the measurement of a person's passion and perseverance, or if a person keeps striving in the face of adversity (Duckworth, 2016). The Grit–S scale measured grittiness.

Academic self-concept. Academic self-concept is one's perception and knowledge about one's own academic ability (Marsh & Seaton, 2013). Academic self-concept showed at least two

components, math and English, and an extreme separation of the two variables was found (Marsh, Byrne, & Shavelson, 1988). The Marsh ASC Scale for language arts and math measured academic self-concept.

Mental health. Mental health is a multidimensional measure of conduct, emotions, hyperactivity, peer relations, prosocial skills, and overall total mental health. High measurement of any of the factors on the SDQ, except prosociality, was found to predict psychopathology as measured by clinical disorders (A. Goodman & Goodman, 2009). The SDQ measured mental health, and the scale has a total score and subscores of emotional, conduct, hyperactivity, peer relations, and prosocial.

The research comprised the following criterion variable:

Grades. Grades for English (Language Arts) and math were collected after three weeks of enrollment because the facility was a short-term facility (students arrive and leave daily). The scale has 6 points (6 = A, 5 = B, 4 = C, 3 = D, <2.5 = F). Grades were assigned holistically by mastery learning; instead of percentages, students received grades based on mastery learning. A student with a 0 showed little or no growth, 1–2 were higher F's, 2.5 was a low D signifying emerging competency, and 3 = D, 4 = C, 5 = B, and 6 = A were analogous to mastery from emerging to exemplary.

Data Collection

If schools removed all personally identifiable information and one cannot reasonably determine who participants are, schools can release records to researchers without prior consent or violating Family and Educational Rights and Privacy Act (Johns Hopkins University, 2018). Access to archival data was requested from the local juvenile detention center by listing the inclusion and exclusion criteria (first-time detained, completed all instruments, and had grades at

the three-week mark in English and mathematics). After writing a letter and asking for permission from the juvenile detention center, all personal descriptors were removed and saved as an Excel file. Since there were no personal identifiers, storage and security were of minimal concern, as the records could be shared with others to verify findings or conduct secondary research.

Though all data were archival, the facility used the following procedures. The juvenile detention center conducted a case study on all new juveniles using a variety of assessments. The reason was many juvenile delinquents had poor school attendance and a lack of school records. All new juveniles entered school within two days of entering the facility, and the following schedule was used to administer surveys: Second school day, student took the TOSCRF–2, Grit–S, SSES, SISE, SDQ, ASC–M, and ASC–E; fourth school day, student took the BASI–S. Any student not tested by Day 5 moved to a different testing schedule and would not be included because initial assignments could also be used as qualitative measures of academic ability; students can be ill or have court appearances, delaying testing. Students infrequently cannot complete testing. The concern was students who completed substantial academic work did not need testing, as embedded formative testing provides enough information.

Variables need operationalized, so there are specific meanings and measures (Creswell, 2012). All staff members received training in assessment procedures, and teachers administered all assessments upon entry within the first five days of school upon entry. The school staff members collected demographic data on the basis of age, sex, gender, grade, and special education status. Initially staff members placed all data (scores from the instruments) into a Microsoft Excel spreadsheet. Since data were anonymous and archival, the data set could be shared with other researchers.

Juvenile detention centers have students entering and leaving most every day. With an average stay of 30 school days, there was a robust turnover in population in a short period of time. Staff members reviewed students' records for compliance with timelines and completion of all instruments. A search was conducted for students whom were first detained, completed assessments, and earned grades at three weeks.

Correlational data analysis and multiple regression analysis require selection of variables of appropriate controls (e.g., age, gender, race), and selection was guided by controls used in published research (Creswell, 2012; Dattalo, 2013). Besides accounting for assumptions, significance of each variable determined if each variable were included. Demographic data were collected to identify factors which might influence results of different relationships. Age, gender, grade level, special education status, and race were factors necessary to interpret research findings.

Data Preparation

All data were stored as an Excel file. Personal identifiers were removed by the facility prior to receiving the file. All headings were checked to be one cell each, as multiple cells were incompatible with statistical analysis programs. After checking for the presence of all demographic, predictor, and criterion headings, the file was converted to a CSV file, which was readable by statistical software.

Data Analysis

Initially, staff members entered all data into a Microsoft Excel spreadsheet maintained on a secure server. All student personal data (name, date of birth, and school) were removed before being taken off site, making the data impossible to identify students. Each column was reviewed for accuracy and completeness, and descriptive statistics were reviewed to see if data were

missing or erroneous. Data were sorted and analyzed by demographic, predictor, and criterion variables.

Demographic variables were used to describe the sample and for comparison to nondelinquents in Table 1. All records were archival, but descriptors of how the information were collected show how the data were originally collected. Special education status and grades showed a students' placement and gave a comparison to a student's age.

Table 1

Demographic Variables

Variable	Definition	Categories
Age	Juvenile age reported on school forms.	Range: 10–18
Race	Race was self-reported on intake.	Races: Black, White, Hispanic
Gender	Gender was self-reported on intake.	Male or female
Special education	Students self-report and records obtained where possible.	Special education (with diagnosis), unknown, or not special education
Grade	Students self-report and records were obtained.	Grade levels of 5–12

After examining demographics in Table 1, Table 2 has the predictor variables broken down by variable, instrument, and scale. The noncognitive instruments measured self-esteem, grit, academic self-concept, and mental health. Academic ability was measured with two instruments: BASI-S and TOSCRF-2. While the TOSCRF-2 measured reading fluency, the BASI-S measured reading and mathematics ability, and the instrument provided a variety of subscores.

Table 2

Predictor Variables

Predictor variable	Instrument	Scale
Self-esteem; performance self-esteem; social self-esteem; appearance self-esteem	State Self-Esteem Scale (SSES) with three subscores and a total and Single-Item Self-Esteem Scale (SISE).	SSES has a 100-point scale, with Performance, Social, and Appearance are the subscores. SISE is a 7-point Likert scale
Grit	Grit–Short Scale	Students answer 8 questions on a 5-point scale.
Academic self-concept: math and English	Marsh's Academic Self-Concept for Mathematics and English.	Students answer 4 questions on a 6-point scale for each question.
Mental health: emotional, conduct, hyperactivity, peer, prosocial, and total	Strengths and Difficulties Questionnaire.	Students answer 20 questions on a 3-point scale: not true, somewhat true, or certainly true.
Verbal	Basic Achievement Skills Inventory–Survey (BASI): Verbal	Standardized scores, age equivalency, and grade equivalency.
Verbal—Language mechanics	BASI: A subscore of Verbal measured with a standard score.	Scores range from 1 to 10
Verbal—Vocabulary	BASI: A subscore of Verbal measured with a standard score.	Scores range from 1 to 10
Verbal—Reading comprehension	BASI: A subscore of Verbal measured with a standard score.	Scores range from 1 to 10
Mathematics	BASI: Mathematics	Standardized scores, confidence intervals, age equivalency, and grade equivalency.
Mathematics—Computation	BASI: A subscore of Mathematics measured with a standard score for computation.	Scores range from 1 to 10
Mathematics—Application	BASI: A subscore of Mathematics measured with a standard score for application.	Scores range from 1 to 10
Reading fluency	Test of Silent Contextual Reading Fluency–2:	Standardized scores, confidence intervals, and grade equivalency.

The demographic variables from Table 1 and noncognitive and academic variables from Table 2 were regressed on the criterion variables of students' grades for language arts and mathematics to develop a model. The grade scale (Table 3) was 6 = A, 5 = B, 4 = C, 3 = D, and <2.5 = F. Grades were assigned holistically; rather than percentages, students received grades based on mastery of the activity assigned.

Table 3

Criterion Variables: Students' Grades

Subject	Definition	Scale
Language arts	Grades after three weeks	Grades are on a 6-point scale: 6 = A, 5 = B, 4 = C, 3 = D, <2.5 = F
Mathematics	Grades after three weeks	

A nonexperimental, quantitative research design, using a correlative model and multiple regression, was used (Creswell, 2012). JASP conducted all statistical tests. Multiple regression analysis was used to predict the relationship between noncognitive attributes, academic achievement, and grades in math and English. Predictor and criterion variables, shown in Table 2 and 3, were entered for descriptive statistics, Wilcoxon tests, correlation, and multiple regression. Each variable was measured with the instruments herein listed. Demographic data were entered and analyzed with the different variables to try to ascertain patterns.

Multiple regression analyzes correlation between two or more variables, and requires the following assumptions: reliability of measurement, normality, homoscedasticity, linearity, independence of errors, and multicollinearity (W. E. Martin & Bridgmon, 2012; Osborne & Waters, 2002). Plots can be used to find strong and weak correlations, and the largest sample possible was procured to obtain a valid effect size and for power considerations (Abbott &

McKinney, 2013). Multiple regression analyses checked for relationships between noncognitive attributes, academic achievement, and grades in English and math at three weeks for first-time-detained juvenile delinquents. After checking for all assumptions, a power test checked for adequate sample size and possibility of a Type II error.

A backward elimination model was used to selected variables for inclusion in the multiple regression model, but backward elimination performed the same way as forward and stepwise methods. Hierarchical regression techniques, such as forward, backward, and stepwise methods, make large numbers of variables manageable in multiple regression analysis (Oti, Adeyeye, & Abiobaragha, 2016). JASP statistical software developed the model and test assumptions. Using regression and beta coefficients, as well as the coefficient of determination, the relationships were identified. An ANOVA table provided information if the model was significant at the .05 level. A regression equation was developed. Soper's calculator for power analysis and G*Power conducted post hoc tests.

JASP tested all assumptions by plotting residual plots, Q-Q plots, and running tests for outliers, variance inflation factors (VIFs), and tolerance (Goss-Sampson, 2018). If a problem was found with the data, then data transformation would have been tried. Other tests would have been conducted if assumptions could not be met.

Reliability and Validity

Research studies have two major limitations: threats to internal and external validity (Brutus, Aguinis, & Wassmer, 2013; Price & Murnan, 2004). Limitations were more than just analyzing and understanding threats to internal and external validity; researchers need to interpret how errors and validity impact research findings (Ioannidis, 2007). Research hinged on selecting a design which would reveal what matches objectives, and errors should be kept to a

minimum. Internal and external validity, as well as reliability and objectivity, were crucial to maintaining the ability to believe results were accurate, precise, and generalizable.

Internal validity is concerned with how well an experiment was conducted, while external validity referred to how well the study can be generalized to other settings. There were three primary ways to mitigate problems with validity: strong controls, careful design, and systematic measurements (McDermott, 2011). Concerning internal validity, there were concerns if the instruments accurately captured noncognitive attributes and academic achievement. Administration of instruments by strictly following protocols for each instrument, along with data procedures for the present study, minimized threats to validity. By examining a number of important but close variables, the study discriminated between different characteristics which affected students' grades. Internal validity was controlled by selecting instruments with adequate validity and reliability.

External validity means one can generalize causal findings to other settings and the population from the sample (Steckler & McLeroy, 2008). A limit on external validity results was having to rely on a convenience sample which might not capture the variability of juveniles in detention and correction facilities. In analyzing archival data in this correlational study, consideration for the sample from a regional juvenile detention center imposed a limit. There were no recognizable problems in data collection. Subjects taking surveys should possess a sufficient reading ability to understand what was read, and students should answer truthfully. Using a diverse sample of sufficient size will allow the generalization of findings to the broader juvenile delinquent population.

Objectivity and reliability are concerns in every research study, as well. All instruments met Drost's (2011) criteria for reliability: equivalency, stability over time, and internally

consistent. Being a quantitative study, instruments with adequate reliability were used. Objectivity means results were independent of who did the research, and the beliefs and opinions of the researcher did not influence the study (Payne & Payne, 2004). Since the study was archival, there were no direct influences on either collection or analysis. Furthermore, there were no fiduciary or personal interests in results. Data were collected for all students, and quantitative research reduced threats to objectivity, as standard statistical tests were used.

Ethical Procedures

Ethical research means reporting accurately and soundly all results, and nothing is more important than nonmaleficence, especially with participants who cannot give informed consent (King & Churchill, 2000). Ethics in research involve two major components: treatment and intervention of participants and reporting truthfully and accurately results. The research involved measurement and scores, which meant there was no possibility to violate children's ethical concerns for reporting one's own experiences (Hill, 2005). There were no direct threats to participants, and the main concern centered on protecting confidentiality and anonymity. Students had long since completed the instruments used in the study, following local and state policies for assessment and evaluation. The school did not transmit the file before removing personal descriptors (school, name, entry/exit information, and date of birth). All results were shared with the local school as well, as the findings could be used to improve schooling for students.

The Belmont Report called for protection of vulnerable populations, but in a primarily administrative task, archival review, the main concern was ensuring anonymity (Parker, 2016; C. R. Quinn, 2015). Noddings (1986) stated educational research should ultimately have fidelity toward a culture of caring. First, do no harm is important, and the corollary was deciding to

intervene during a study, even if the results will no longer be accurate. Since the study was archival, there were no ethical issues with harming participants beyond anonymity and confidentiality.

As Michael Foucault noted, knowledge operates under constraints, and sometimes agencies restricted what was communicated to protect image (Haggerty, 2016). Though the findings were shared with the school, no permission was needed to transmit whatever findings might happen. There were not constraints on reporting findings, as results can be politically charged, such as race, gender, and disabilities. Wherever the research led, the findings were reported with fidelity and honesty.

Chapter Summary

Correctional education is relatively a new field, and a lack of systematic, quality research existed among the participants in the juvenile justice system (Davis et al., 2014). The purpose of the research was to determine what relationship existed between noncognitive attributes and academic achievement on English and math grades for first-time-detained juvenile delinquents, and to see if results might be useful to improve instructional practices. Noncognitive attributes were measured in four areas: grit, self-esteem, academic self-concept, and mental health. Academic achievement was measured by verbal and math ability. Using archival data from a juvenile detention center, data were collected to perform statistical analysis. In Chapter 3, the research design and procedures were outlined. The different instruments and setting for selecting the sample were described. The method to run the multiple regression analysis was described, and the ethical considerations were outlined.

Examining the education experiences of juvenile delinquents as the experiences related to noncognitive attributes, academic achievement, and grades may improve educational outcomes.

All too often assumptions were made concerning what a juvenile delinquent was supposed to be like, but usually there was little data to back up the claims. Noncognitive attributes were increasingly being examined as important in shaping the educational needs of students. Assisting juvenile delinquents in transitioning back to the community has a real price tag: Failure results in crime and loss of productivity across the lifespan. In the next chapter, analysis will be presented to examine relationships between academic achievement, noncognitive attributes, and grades.

Chapter 4: Results

The problem was the influence of noncognitive attributes and academic achievement on English and math grades, for first-time-detained juvenile delinquents, was unknown. The results of the collection of student data were used to conduct analyses for the influence of academic and noncognitive factors on student grades. Descriptive statistics described demographics and social, emotional, and academic variables of students. Correlations and Wilcoxon tests compared juvenile delinquents to nondelinquents. Multiple regression analyses were conducted, and tests of assumptions were evaluated. Post hoc, power, and effect size analyses were then conducted to further evaluate results.

A juvenile detention center provided archival data of student achievement from the 2016–2017 school year. Seventy-two students were included in the final results. All subjects were first-time-incarcerated students at a juvenile detention facility, and as part of the school program, teachers collected regular testing data within the first five days of entry. Language arts and mathematics grades were recorded at the three-week mark. The juvenile detention center housed up to 26 students, and two teachers were present in a ratio of 1:13. Students were on a tutorial model, but there were also computer-assisted and -directed studies. A special education teacher worked daily at the facility, and drug and mental health counseling were on site as well as medical care. All students stayed in single cells, and cameras were in all common areas. The detention center rarely had violence.

The chapter provides an overview of the sample by describing the demographics. There is a comparison of juvenile delinquents and nondelinquents, and correlational analysis provides data to construct a multiple regression analysis. Reliability and validity are discussed, and the chapter ends with a summary.

Data Collection and Descriptive Statistics

A small regional juvenile detention center, with all students incarcerated by the local courts, provided an archival record for the 2016–2017 school year. Permission for access to archival records, in Appendix C, was granted as long as confidentiality and anonymity would be protected by removing personal information. An Excel spreadsheet was provided with all requested information, and Appendix D shows how data were coded. Reliability and validity of all instruments were provided in Chapter 3. In seeking permission, the data were checked to confirm each student was suitable for the study. The only criteria for inclusion were students were incarcerated for the first time, completed all surveys, and had grades at the three-week mark. All procedures outlined to the Institutional Review Board were followed.

There were 72 students included in the study from a large geographical area. The facility was a coeducational facility housing students in a residential program. The average age was 15.3 (*SD* = 1.6; range 10–18), but 73.6% were between the ages of 15–17 (Table 4). Students were incarcerated for offenses which as adults would be a felony or misdemeanor. All students included in the study experienced problems in traditional school. The average length of stay at the detention center was 30.5 days. Race was coded as 3 for Black, 4 for Hispanic, and 5 for White. Students self-reported race. The sample was comparable to the population of juveniles incarcerated in detention nationally (Sedlak & Bruce, 2016).

Table 4 breaks down all students by age. Over 72% of students were aged 15-17, showing most students were high school age. Very few students were at either extremes of middle school or 18 and over. Younger students were relatively rare, with only 5.6% of students aged 10-12. Few students were in middle school compared to the overall population. Older high school students, at the ages 16 and older, predominated. A conclusion from Table 4 suggested the

average juvenile in the sample was 15.3 years of age, male, in the 9th grade, and a higher than normal rate of being in special education. Most students had not earned enough credits to be counted as juniors or seniors, placing most students at risk of dropping out of high school.

Table 4

Frequencies for Age

Age	*f*	%	Valid %	Cumulative %
10	2	2.778	2.778	2.778
12	2	2.778	2.778	5.556
13	6	8.333	8.333	13.889
14	8	11.111	11.111	25.000
15	17	23.611	23.611	48.611
16	14	19.444	19.444	68.056
17	22	30.556	30.556	98.611
18	1	1.389	1.389	100.000
Missing	0	0.000		
Total	72	100.000		

Most students were male (male = 58; female = 14), as the facility was a coeducational juvenile detention center (Table 5). Using Tables 4 and 5, most students were males, between the ages of 15-17, and in high school. Females made up 19.4% of the entire population. Females were similar to males in grades and special education status. Both males and females were

educated together, though males predominated in juvenile detention. Males were overrepresented as well, which meant the sample mirrored trends seen nationally.

Table 5

Frequencies for Gender

Gender	*f*	%	Valid %	Cumulative %
Female	14	19.444	19.444	19.444
Male	58	80.556	80.556	100.000
Total	72	100.000		

A further breakdown of demographics from Tables 4-5 was examined. Of the 72 students, 39 (54%) were Black, 2 (2.7%) were Hispanic, and 31 (46%) were White (Table 6). Students self-reported race upon intake. There were slightly more Black students than White. The Hispanic population was very low.

Table 6

Frequencies for Race

Race	*f*	%	Valid %	Cumulative %
Black	39	54.167	54.167	54.167
Hispanic	2	2.778	2.778	56.944
White	31	43.056	43.056	100.000
Total	72	100.000		

Though 50% of students were 16 years of age and over, the students as a collective were behind academically and at risk of school failure. The race of students from Table 6 was further broken down. There were 22 (30%) students 17 years of age, yet only 21% were in 11th and 12th

grade. From reviewing Table 7, one sees there was the ninth-grade bulge. Students were over age compared to the students' grade level and lacked sufficient credits to be on track to graduate. Special education was overrepresented, with 32% of students receiving services (seriously emotionally disturbed was most prevalent, comprising 18% of the total population). As Table 7 shows, most students were in high school, and most students, from comparing to Table 4, were not at grade level.

Table 7

Frequencies for Grade Level

Grade level	*f*	%	Valid %	Cumulative %
5	2	2.778	2.778	2.778
6	1	1.389	1.389	4.167
7	7	9.722	9.722	13.889
8	9	12.500	12.500	26.389
9	22	30.556	30.556	56.944
10	14	19.444	19.444	76.389
11	9	12.500	12.500	88.889
12	6	8.333	8.333	97.222
13	2	2.778	2.778	100.000
Total	72	100.000		

Demographic data were collected for all students upon entry, as shown in Tables 4-8. All students who entered received a full case study, akin to a special education initial evaluation. Instruments measured social, emotional, and academic progress to be used to assess students for

services. Social and emotional assessments were the SSES, SISE, and SDQ. The SSES and SISE provided average scores of 71 and 69, which were similar and confirmatory of overall value.

Special education was overrepresented, with 32% of students receiving services (seriously emotionally disturbed was most prevalent, comprising 18% of the total population). As Table 8 shows, students with special needs made up approximately one third of the facility, and most students were behind academically regardless of disability. Being overaged, undercredited, and disabled were conclusions drawn from Tables 4-8.

Table 8

Frequencies for Special Education

Special education	*f*	%	Valid %	Cumulative %
504 Plan	2	2.778	8.696	8.696
Emotional disability/other health impairment	1	1.389	4.348	13.043
Learning disability	2	2.778	8.696	21.739
Other health impairment	6	8.333	26.087	47.826
Seriously emotionally disturbed	11	15.278	47.826	95.652
Seriously emotionally disturbed/hearing impaired	1	1.389	4.348	100.000
Regular education	49	68.056		
Total	72	100.000		

Students with disabilities, as shown in Table 8, were overrepresented. For the SSES, subscores of performance (M = 71.9, SD = 15.849), social (M = 71.5, SD = 14.992), and appearance (M = 71.6, SD = 16.742) were provided in Table 9. The SISE revealed similar scores to the SSES, suggesting concurrent reliability. All subscores of the SSES, performance, social, and appearance, were similar.

Table 9

Descriptive Statistics: State Self-Esteem Scale, Subscores, and Single-Item Self-Esteem Scale

Statistic	PSE	SSE	ASE	SSES	SISE
Valid	72	72	72	72	72
Missing	0	0	0	0	0
Mean	71.903	71.597	71.611	71.403	69.625
Std. error of mean	1.868	1.767	1.973	1.529	3.297
Std. deviation	15.849	14.992	16.742	12.972	27.975
Minimum	37.000	37.000	33.000	44.000	14.000
Maximum	100.000	97.000	100.000	96.000	100.000
25th percentile	63.000	60.000	59.250	61.000	43.000
50th percentile	72.500	74.000	71.500	72.500	71.000
75th percentile	83.000	83.000	80.750	81.000	100.000
Valid	72	72	72	72	72

Note. PSE = Performance Self-esteem, SSE = Social Self-esteem, ASE = Appearance Self-esteem, SSES = State Self-Esteem Scale, SISE = Single-Item Self-esteem Scale.

Besides screening for the SSES, shown in Table 9, mental health was screened by the SDQ (M = 14.4, SD = 5.296), with five subscores (Table 10), which suggested over 42% of all juveniles needed further evaluation for psychiatric problems. The SDQ-E and SDQ-H suggested many students had difficulties with emotional regulation and hyperactivity. On the SDQ-PRO, the average and standard deviation suggested a quarter of the population were statistically different in a negative way.

Table 10

Descriptive Statistics: Strengths and Difficulties Questionnaire

Statistic	SDQ–E	SDQ–C	SDQ–H	SDQ–PEER	SDQ–PRO	SDQ
Valid	72	72	72	72	72	72
Missing	0	0	0	0	0	0
Mean	4.139	3.417	4.403	3.028	7.542	14.403
Std. error of mean	0.323	0.210	0.220	0.210	0.225	0.624
Std. deviation	2.739	1.782	1.866	1.784	1.906	5.296
Variance	7.502	3.176	3.483	3.182	3.632	28.047
Range	10.000	8.000	8.000	8.000	8.000	19.000
Minimum	0.000	0.000	1.000	0.000	2.000	5.000
Maximum	10.000	8.000	9.000	8.000	10.000	24.000
25th percentile	2.000	2.000	3.000	2.000	7.000	10.000
50th percentile	4.000	3.000	4.000	3.000	8.000	13.000
75th percentile	6.000	4.000	6.000	4.000	9.000	20.000

Note. Factors: Emotional (SDQ–E), Conduct (SDQ–C), Hyperactivity (SDQ–H), Peer (SDQ–PEER), Prosocial (SDQ–PRO).

Students' self-perceptions, concerning abilities and work ethic were measured with the Grit–Short Scale, math academic self-concept, and English academic self-concept. Grit–Short results, in Table 11, revealed an average of 3.3 (*SD* = 0.68). Percentiles suggested students had average to high average grit. Though students were delinquent and had long histories of school failure, students in juvenile detention reported resiliency in schoolwork. Tables 10 and 11 described students' mental health and grit at the time of entry.

Table 11

Descriptive Statistics: Grit-Short Scale

Statistic	Grit
Valid	72
Missing	0
Mean	3.387
Std. error of mean	0.081
Median	3.380
Mode	3.250[a]
Std. deviation	0.685
Variance	0.469
Range	3.120
Minimum	1.880
Maximum	5.000
25th percentile	2.880
50th percentile	3.380
75th percentile	3.880

[a]More than one mode exists, only the first is reported.

Grit, from Table 11, was average. On the math ASC, in Table 12, students had an average of 14.1 (*SD* = 4.2), and the English ASC had an average of 16.3 (*SD* = 5.0). Students, on average, felt more confident in ability and aptitude in English than math. Percentiles suggested students viewed academic self-concept by subject differently.

Table 12

Descriptive Statistics: Academic Self-Concept Factors: Math and English

Statistic	Math	English
Valid	72	72
Missing	0	0
Mean	14.111	16.319
Median	14.000	18.000
Std. deviation	4.211	5.046
Minimum	5.000	6.000
Maximum	24.000	24.000
25th percentile	11.000	12.250
50th percentile	14.000	18.000
75th percentile	17.000	20.000

Whereas Table 12 showed academic self-concept, measures of academic achievement were conducted using BASI–S, TOSCRF–2, and grades at three weeks for math and language arts. The BASI-S verbal scores, in Table 13, revealed students were behind similarly situated peers. All scores and subscores showed students were behind academically. The standardized scores average was 85.7 (*SD* = 12.8), which showed most students were between low average to average. The BASI age equivalency suggested students were average age of 11 (*SD* = 2.7). All subscores were similar and toward the low average end of the scale.

Table 13

Descriptive Statistics: Basic Achievement Skills Inventory—Verbal Scores

Statistic	B SS R	B GE R	B AE R	B–VOC	B–LM	B–RDG
Valid	72	72	72	72	72	72
Missing	0	0	0	0	0	0
Mean	85.681	6.065	11.010	7.264	6.861	7.278
Std. deviation	12.809	2.446	2.714	3.957	2.874	2.894
Minimum	60.000	3.000	3.000	2.000	1.000	4.000
Maximum	114.000	12.900	18.000	18.000	11.000	18.000

Note. Factors: Verbal Standardized Score (B SS R), Verbal Grade Equivalency (B GE R), Verbal Age Equivalency (B AE R), and subscores: Vocabulary (B–VOC), Language Mechanics (B–LM), and Reading Comprehension (B–RDG).

Salient factors were the BASI verbal scores (M = 85.6; SD = 12.8) matched closely with the TOSCRF–2 (M = 85.4; SD = 11.7), with more information in Table 13 and 14. As evidenced by the age equivalency on both (approximately 11 years old), these findings showed students were behind compared to an average age of 15.3. Table 14 shows many students were extremely behind, especially when examining the 25th percentile. As a group, juvenile delinquents struggled in reading and verbal abilities. Comparing the age equivalencies in Table 13 and 14 to average age, both the reading fluency test and test of verbal ability showed students were about four years behind similarly situated peers.

Table 14

Descriptive Statistics: Test of Silent Contextual Reading Fluency–2

Statistic	Raw score	AE	GE	Percentile	SS
Valid	72	72	72	72	72
Missing	0	0	0	0	0
Mean	95.347	11.714	6.074	22.167	85.486
Median	93.000	11.300	5.500	16.000	85.000
Std. deviation	29.995	3.064	2.896	19.177	11.787
Variance	899.723	9.388	8.387	367.746	138.929
Minimum	31.000	7.000	1.000	1.000	53.000
Maximum	169.000	19.000	13.000	91.000	120.000
25th percentile	74.000	9.300	3.850	9.000	80.000
50th percentile	93.000	11.300	5.500	16.000	85.000
75th percentile	113.750	13.650	7.725	31.500	91.750

Note. Factors: Raw Score, Age Equivalency (AE), General Equivalency (GE), and Standardized Score (SS).

Students in math were further behind on the BASI math assessment, with a standardized score of 79.1 (*SD* = 11.7) and age equivalency of 10.7 (Table 15). Compared to reading ability in Tables 13 and 14, students were in the low range in mathematics. Overall, students' skills were similar to upper elementary and lower middle school, though most students were in high school. Math computation and application were low average (Bardos, 2004).

Table 15

Descriptive Statistics: Basic Achievement Skills Inventory—Math Subscores

Statistic	B SS M	B GE M	B AE M	B–MC	B–M APP
Valid	72	72	72	72	72
Missing	0	0	0	0	0
Mean	79.194	5.525	10.785	6.111	5.833
Std. deviation	11.779	2.404	2.525	2.709	2.998
Minimum	60.000	3.000	3.100	1.000	1.000
Maximum	115.000	12.900	18.000	12.000	15.000

Note. Factors: Math Standardized Score (B SS M), Math Grade Equivalency (B GE M), Math Age Equivalency (B AE M), and subscores: Math Computation (B–MC) and Math Application (M–APP).

Academic achievement in Tables 13-15 showed students lacked many of the skills necessary to be successful in middle and high school. Grades were assigned as holistic scores on a mastery learning scale of 0 = F, signifying little to no effort, higher F's of 1–2, minimal passing of 2.5, and letters assigned by 3 = D, 4 = C, 5 = B, and 6 = A. Traditional averages were not assigned, as the grade scale worked on the principle of mastery learning. Initial grade averages for both groups, shown in Table 16, revealed the average grade was a D for math and language arts (standard deviation for both was from an F to a B). BASI-S scores showed students, on average, were far behind academically, and grades were mostly poor.

Table 16

Grade Scale: 6 = A, 5 = B, 4 = C, 3 = D, <2.5 = F Descriptive Statistics

Statistic	M–3WKS	LA–3WKS
Valid	72	72
Mean	2.222	2.535
Median	2.000	2.000
Mode	1.000	1.000
Std. deviation	1.937	1.990
Variance	3.753	3.960
Minimum	0.000	0.000
Maximum	6.000	6.000

Note. M-3WKS = math grades at the 3-week mark; LA-3WKS = language arts grades at the 3-week mark.

To compare juvenile delinquents' results to nondelinquents on national norms, Wilcoxon tests were conducted to compare each population. Table 16 showed students did not do well in school at the detention center. The Wilcoxon test was chosen over a *t* test due to issues of normality and variance. Unless noted, all alpha levels were .05. Students differed significantly from national norms in many respects. Academically and socially, first-time-incarcerated juvenile delinquents were behind similarly situated peers. Wilcoxon signed-rank tests were used, and the comparisons were made to nationally-normed data by utilizing effect size.

Grades suggested most students struggled in the school in juvenile detention. Most students entering juvenile detention have long histories of failure. Alternative school placements, expulsion, and dropping out were common among juvenile delinquents. Table 17 summarizes the findings.

Table 17

Comparison Delinquents Versus Nondelinquents: Wilcoxon Test Results

Measure	Nondelinquents *M*	Statistic & α level	Effect size
State Self-Esteem Scale (SSES) (*M* = 71.403; *SD* = 12.972)	67.7	*Z* = 2.831 *p* =.005	0.334 Moderate
Performance/SSES (*M* = 25.196; *SD* = 5.543)	22.5	*Z* = 4.973 *p* = <.001	0.586 High
Social/SSES (*M* = 24.919; *SD* = 5.098)	25.0	*Z* = -0.129 *p* = .897	-0.015 No effect size
Appearance/SSES (*M* = 21.483; *SD* = 5.023)	19.5	*Z* = 4.315 *p* = .001	0.509 Moderate
SDQ (*M* = 14.403; *SD* = 5.296)	7.9	*Z* = 9.680 *p* = <.001	1.141 High
SDQ-Emotional (*M* = 4.139; *SD* = 2.739)	1.6	*Z* = 11.968 *p* = <.001	1.410 High
SDQ-Conduct (*M* = 3.417; *SD* = 1.782)	1.3	*Z* = 11.225 *p* = <.001	1.323 High
SDQ-Hyperactivity (*M* = 4.403; *SD* = 1.866)	2.8	*Z* = 5.440 *p* = <.001	0.641 High
SDQ-Peer (*M* = 3.028; *SD* = 1.784)	1.4	*Z* = 9.208 *p* = <.001	1.085 High
SDQ-Prosocial (*M* = 7.542; *SD* = 1.906)	8.6	*Z* = -8.980 *p* = <.001	-1.058 High
Grit-Short (*M* = 3.387; *SD* = 0.685)	3.4	*Z* = -0.134 *p* = .893	-0.016 No effect size
Math ASC (*M* = 14.111; *SD* = 4.211)	14.91	*Z* = -1.779 *p* = .038	-0.210 Small
English ASC (*M* = 16.319; *SD* = 5.046)	16.58	*Z* = -0.374 *p* = .708	-0.044 No effect size

Note. *N* = 72; *p* = .05 two tailed. Normative data for the SSES from Heatherton & Polivy, 1991; SDQ from Strengths and Difficulties Questionnaire, 2001; grit from Duckworth & Quinn, 2009; math and English ASC from Marsh, 1990b.

Overall, academically, students were far behind academically similar peers, with lower self-esteem and higher prevalence of mental disorders as evidenced by the SDQ. Grit (p = .893) and English academic self-concept (p = .708) were not significantly different from the general population. For SSES (p = .005, ES = 0.334), math ASC (p = .038; ES = -0.210), and performance self-esteem (p = <.001, ES = 0.586), juvenile delinquents first time incarcerated had a low to high effect size compared to nondelinquents. Of 51 high school students, 48 were overaged, undercredited (with 12 being dropouts). Regular education students had a BASI SS verbal score of 88.40 (SD = 11.97) and BASI SS math 82.35 (SD = 12.14), with an average age of 15.33 (SD = 1.55). Special education students were similar, with a BASI SS verbal 82.54 (SD = 14.59) and BASI SS math 77.83 (SD = 13.81), and an average age of 15.38 (SD = 2.00). Combined, all students were significantly behind similarly situated peers, as shown in Table 17.

The data presented in Tables 4-17 showed several trends. Students were, on average, overaged and undercredited. Special education students were one-third of the sample. Compared to nondelinquents, juveniles in secure detention were academically behind, had problems with mental health, but the students appraised abilities, aptitude, and resilience similar to students in traditional school.

Data Analysis and Results

Data analysis was conducted for both math and language arts grades at the three-week mark. First, correlation analysis was used to determine relationships to build a multiple regression model. After testing for all assumptions, a multiple regression model was developed for math and language arts. Power analysis was then conducted on each model.

Correlation

Correlation is used to establish a relationship between two variables but does not provide what variable influences the other (D. O'Brien & Scott, 2012). Grit and academic self-concept for math and English were examined for correlation. The reason was both were theorized to exist equal or higher to national norms if students were doing well, and in the alternative, there should be a negative correlation if students were doing poorly in school. Theory holds there was a reciprocal model of academic self-concept; as students do better, academic self-concept rises. To test grit and math and English academic self-concept, each one was considered by grades in math and English.

In math, grades after three weeks were selected as a variable to correlate. For grades, no variable selected showed correlation except BASI Standardized Scores in math (Pearson's r = .287, p = .015), social self-esteem (Pearson's r = .285, p = .015) and SSES (Pearson's r = .293, p = .012). Math academic self-concept showed significant correlation with SSES (Pearson's r = .414, p = <.001) and grit (Pearson's r = .384, p = <.001). No other variable had statistical significance with math academic self-concept. Table 18 shows relationships with M–3WKS, which is grades after three weeks in math.

The results of the correlation analysis in Table 18 showed variables which might be significant in the multiple regression analysis. Statistically significant with math grades at three-weeks were self-esteem, social self-esteem, and BASI-S mathematics standardized scores. Grit and the SDQ did not correlate.

Table 18

Math Grades Week 3 Pearson Correlations

Variable	Statistic	M–3WKS	Math	SSE	SSES	Grit	B SS M	SDQ–PRO	SDQ
M–3WKS	Pearson's *r*	--							
	p value	--							
Math	Pearson's *r*	0.204	--						
	p value	0.085	--						
SSE	Pearson's *r*	0.285*	0.161	--					
	p value	0.015	0.176	--					
SSES	Pearson's *r*	0.293*	0.414***	0.746***	--				
	p value	0.012	<.001	<.001	--				
Grit	Pearson's *r*	0.072	0.384***	0.039	0.241*	--			
	p value	0.550	<.001	0.743	0.041	--			
B SS M	Pearson's *r*	0.287*	0.109	0.007	0.100	0.084	--		
	p value	0.015	0.364	0.954	0.402	0.484	--		
SDQ–PRO	Pearson's *r*	0.203	0.138	-0.251*	-0.017	0.222	0.177	--	
	p value	0.086	0.247	0.033	0.888	0.061	0.136	--	
SDQ	Pearson's *r*	-0.109	-0.215	-0.475***	-0.672***	-0.292*	0.013	-0.029	--
	p value	0.362	0.069	<.001	<.001	0.013	0.911	0.810	--

Note. M-3WKS = math grades at 3-week mark; Math = math ASC; SSE = social self-esteem. SSES = Social Self-Esteem Scale; Grit = Grit-Short Scale; B SS M = BASI Standardized Score for math; SDQ-PRO = Strengths & Difficulties Questionnaire-Prosocial; SDQ = Strengths & Difficulties Questionnaire.
*p < .05, **p < .01, ***p < .001.

For math (Table 18), grit did not have a statistically significant correlation (df = 70) with math grades after three weeks (Pearson's r = .072, p = .550). Grit did not correlate with grades but correlated with math academic self-concept, SSES (Pearson's r = .241, p = .041), and SDQ (Pearson's r = -.292, p = .013). Within math, grit and math academic self-concept were correlated together and with self-esteem and negatively with mental health problems reported by the SDQ.

In English, grades after three weeks were selected as a variable to correlate. For grades, no variable selected showed correlation (df = 70) except BASI standardized scores in verbal (Pearson's r = .376, p = .001), SSES (Pearson's r = .280, p = .017), and SDQ–Prosociality (Pearson's r = .333, p = .004). Correlation for grit and English academic self-concept were tested and showed no significant relationship. Grades for English after three weeks did not show correlation with grit (Pearson's r = .082 p = .493) and English academic self-concept (Pearson's r = -.104, p = .384). English academic self-concept did not have correlation with any other variable. For grit, the results showed correlation with SSES (Pearson's r = .241, p = .041) and SDQ (Pearson's r = -.292, p = .013). In correlation analysis, grit showed the same negative correlation with SDQ for both math and English grades (Table 19).

Multiple Regression

Before developing a regression model, assumptions for the parametric test of multiple regression had to be met. Two regression models were developed: math grades and English grades. The dependent variables were grades, and backward multiple regression analyses were run for each subject matter. Math grades are explored first and then English grades.

For each dependent variable, the following assumptions were checked: multicollinearity, linearity, absence of outliers, homoscedasticity, normality, and independence (D. O'Brien & Scott, 2012). To improve model development, relying on theory was used to develop predictor variables and build a model (Rosopa, Schaffer, & Schroeder, 2013). Correlation analyses, such as Tables 18 and 19, were reviewed.

Table 19

Language Arts Grades Week 3 Pearson Correlations

Variable	Statistics	LA–3WKS	English	SSE	SSES	Grit	B SS R	SDQ–PRO	SDQ
LA–3WKS	Pearson's *r*	--							
	p value	--							
English	Pearson's *r*	-0.104	--						
	p value	0.384	--						
SSE	Pearson's *r*	0.180	-0.192	--					
	p value	0.130	0.105	--					
SSES	Pearson's *r*	0.280*	0.038	0.746***	--				
	p value	0.017	0.754	<.001	--				
Grit	Pearson's *r*	0.082	0.168	0.039	0.241*	--			
	p value	0.493	0.158	0.743	0.041	--			
B SS R	Pearson's *r*	0.376**	0.115	-0.116	0.017	0.186	--		
	p value	0.001	0.337	0.332	0.886	0.117	--		
SDQ–PRO	Pearson's *r*	0.333**	0.137	-0.251*	-0.017	0.222	0.145	--	
	p value	0.004	0.251	0.033	0.888	0.061	0.224	--	
SDQ	Pearson's *r*	-0.089	-0.031	-0.475***	-0.672***	-0.292*	0.057	-0.029	--
	p value	0.458	0.794	<.001	<.001	0.013	0.633	0.810	--

Note. LA-3WKS = language arts grades at 3-week mark; English = English ASC; SSE = social self-esteem; SSES = Social Self-Esteem Scale; Grit = Grit-Short Scale; B SS R = BASI standardized score for verbal; SDQ-PRO = Strengths & Difficulties Questionnaire-Prosocial; SDQ = Strengths & Difficulties Questionnaire.
*$p < .05$, **$p < .01$, ***$p < .001$.

Math multiple regression assumptions. The criterion variable was math grades after three weeks. A backward regression model was run to explore relationships, and a model was selected. Tables 20 and 21 provide a summary for the model. All assumptions were tested.

Multicollinearity was tested by checking the VIFs for independent, continuous variables. Since the values for VIF were under 4–10, the variables were not considered collinear. Tolerance was also found to be adequate. The condition index revealed no predictor variable had

correlation greater than .90 (Hair, Black, Babin, & Anderson, 2009). One concludes the independent variables did not predict each other.

Linearity of continuous variables was tested using partial plots. Scatterplots revealed if the residuals were normally distributed by visual inspection. Because there were three independent variables, three scatterplots were examined. Figure 1 showed BASI SS verbal, Figure 2 showed SDQ–Pro, and Figure 3 showed social self-esteem. There were no curvilinear patterns. Also, since there were no problems with normality or homoscedasticity, the model was considered linear. The conclusion was linearity was met.

Outliers were tested with casewise diagnostics. There were no outliers, and residuals (Figures 1–3) did not reveal any values had high influence or leverage. The conclusion was there were no outliers.

Homoscedasticity was tested by examining Figure 1 to Figure 3 to see if the data were evenly distributed. Scatterplots were used and were found to be normal to satisfy homoscedasticity, as most residuals were within -2 or +2 standard deviations. White's test can help check for violation of homoscedasticity, as visual inspection can be difficult (Berenson, 2013). Using Microsoft Excel, the abridged White's test was conducted to test for heteroscedasticity ($F[2,69] = 2.892$, $p = .062$), failing to reject the null hypothesis the data were homoscedastic.

The BASI-S standardized scores for verbal were examined compared to language arts grades at the three-week mark in Figure 1. Homoscedasticity was examined, with residuals within +/- 3.3 standard deviations, for samples under 1000, used as the standard to confirm absence of heteroscedasticity (Tabachnick, Fidell, & Ullman, 2007). No problems with homoscedasticity were found.

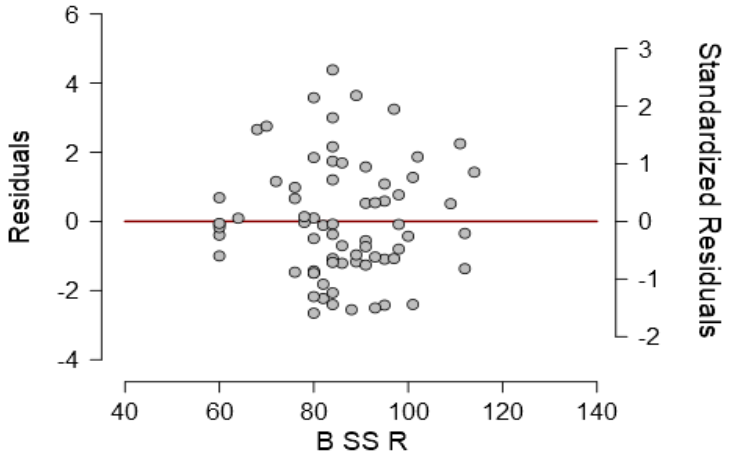

Figure 1: Math grades residuals versus Basic Achievement Skills Inventory standardized scores verbal (B SS R).

Like Figure 1, Strengths and Difficulties Questionnaire-Prosocial were compared to language arts grades at the three-week mark in Figure 2. Checking for residuals within +/- 3.3 standard deviations, homoscedasticity was confirmed (Tabachnick et al., 2007). From visual inspection, no problems existed.

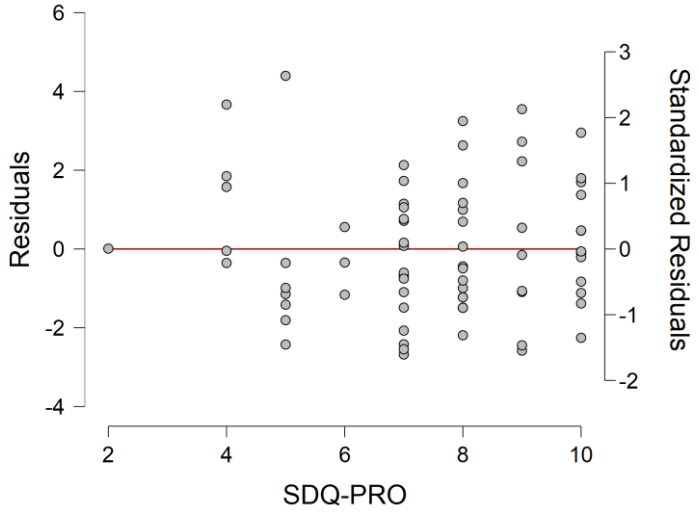

Figure 2: Math grades residuals versus Strengths & Difficulties Questionnaire–Prosocial (SDQ–PRO).

After examining residuals in Figure 1 and 2, Figure 3 shows residuals for social self-esteem for language arts grades at the three-week mark. With the residuals within +/- 3.3 standard deviations, no problems with homoscedasticity were found (Tabachnick et al., 2007). All predictor variables, from examining Figures 1-3, revealed the assumption of homoscedasticity was met.

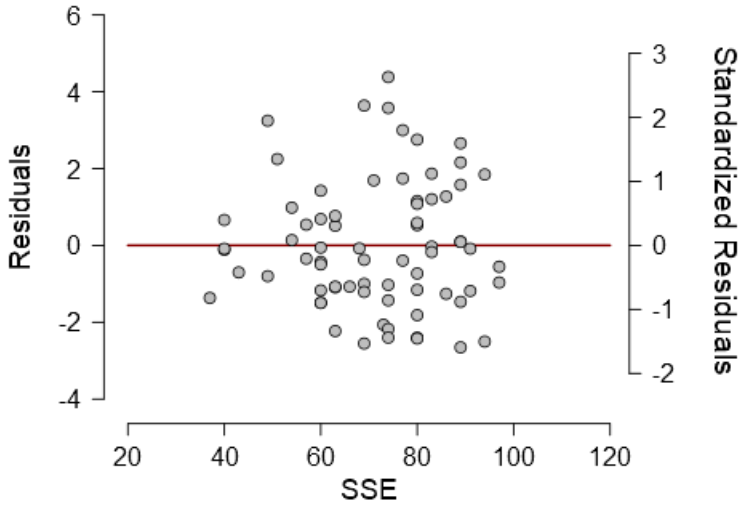

Figure 3: Math grades residuals versus social self-esteem (SSE).

Normality was tested by examining the Q-Q plot (Figure 4). The Q-Q plot compares theoretical to actual residuals to determine if both samples were derived from the same sample. The residuals were close to the best-fit line, suggesting the predicted values and actual values were within a normal range. Since the study was cross-sectional as opposed to longitudinal, all values were gathered independently from each other. There were no concerns.

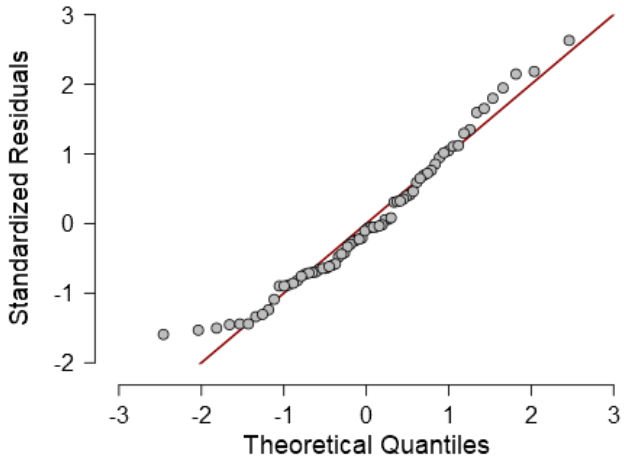

Figure 4: Math grades Q-Q plot standardized residuals.

Figures 1-4 were examined for homoscedasticity and normality. All assumptions were met. A further inference was because normality and homoscedasticity were met, linearity can be assumed for the model for language arts. Overall, the model showed good fit.

Math multiple regression analysis. Since all assumptions for multiple regression were met, a backward approach was used to construct a model for multiple regression analysis. ANOVA results (Table 20) indicated the model was a significant predictor of math grades, $F(3,68) = 7.879$, $p = <.001$, meaning one can conclude the results were not by chance.

Table 20

ANOVA: Math Grades After Three Weeks Linear Regression

	Model	Sum of squares	*df*	Mean square	*F*	*p*
1	Regression	68.730	3	22.910	7.879	<.001
	Residual	197.714	68	2.908		
	Total	266.444	71			

Multiple regression analysis was used to test if noncognitive and academic factors significantly predicted students' grades after three weeks in math. All assumptions were met. The results of the regression indicated the three predictors explained 22.5% of the variance (R = 0.508, adjusted R^2 = .225, F[3,68] = 7.879, p = < .001).

When math grades after three weeks were predicted, BASI verbal standardized score (β = 0.047, b = 0.314, p = .004), social self-esteem (β = 0.050, b = 0.386, p = <.001) and prosocial (β = 0.259, b = 0.255, p = .022) were significant predictors (Table 21). The partial correlations revealed each variable provided a unique value for the model: BASI verbal (r = 0.309, p = .004), social self-esteem (r = 0.372, p = <.001), and prosocial (r = 0.245, p = .022). Unstandardized coefficients can be used to build a predictive model. The final predictive model, derived from Table 21, was

Math Grade—3 wks = -7.366 + (0.047*BASI SS R) + (0.050*Soc. SE) + (0.259*Pro.).

After including all predictor variables, three variables produced the strongest model, as shown in Table 21. One predictor, BASI SS math, confounded other variables and was removed. Standardized test scores for verbal as measured by BASI (BASI SS R), social self-esteem (SSE), and Strengths and Difficulties Questionnaire–Prosocial (SDQ–PRO) were significant. Standardized coefficients showed all three variables had significance from 0.255 to 0.386. Grit, math academic self-concept, state self-esteem, and math ability were not statistically significant. Other variables which did not show significance were BASI Math Computation and BASI Math Application.

Table 21

Coefficients: Math Grades After Three Weeks Linear Regression

							95% CI		Collinearity statistics	
	Model	Unstand.	*SE*	Stand.	*T*	*p*	Lower	Upper	Tolerance	VIF
1	(Intercept)	-7.366	1.994		-3.695	<.001	-11.344	-3.388		
	SDQ–PRO	0.259	0.111	0.255	2.344	0.022	0.038	0.479	0.923	1.083
	SSE	0.050	0.014	0.386	3.562	<.001	0.022	0.078	0.930	1.075
	B SS R	0.047	0.016	0.314	2.962	0.004	0.015	0.079	0.972	1.029

Note. Unstand. = unstandardized; *SE* = standard error; Stand. = standardized; CI = confidence interval; SDQ-PRO = Strengths & Difficulties Prosocial; SSE = social self-esteem; B SS R = BASI standardized score for verbal.

Other models showed higher regression, but several variables were either not statistically significant, confounded other variables, or reduced model specification. The best predictors for grades in math were standardized scores in verbal, social self-esteem, and prosocial skills. For the model, the results were statistically significant (<0.001) and each predictor variable showed adequate alpha levels as well. The model explained 22.5% of variation in students' grades in mathematics for first-time-detained juvenile delinquents (adjusted $R^2 = 0.225$).

Power analysis examined if effect size and sample size were adequate. Using Soper's (2019) calculator, the multiple regression analysis was found to be adequate ($R^2 = 0.258$, $f^2 = 0.348$, power = 0.8, 3 dependent variables, $p = .05$, sample size needed = 35). The effect size of Cohen's (2013) $f^2 = 0.348$ suggested a moderate to high effect and sufficient size.

G*Power 3 was used for post hoc testing of power (Faul, Erdfelder, Buchner, & Lang, 2009). Power was computed to be 0.9904, which was high (noncentrality parameter $\lambda = 25.9273$;

F-crit = 2.7395; numerator *df* = 3; denominator *df* = 68). The conclusion was power was high, and the results can be considered robust.

English multiple regression assumptions. The criterion variable was English grades after three weeks. A backward regression model was run to explore relationships, and a model was selected. Tables 22 and 23 provide a summary for the model. All assumptions were examined.

Multicollinearity was tested by checking the VIFs for independent, continuous variables. Since the values for VIF were under 4–10, the variables were not considered collinear. Tolerance was also found to be adequate. The condition index revealed no predictor variable had correlation greater than .90 (Hair et al., 2009). One concludes the independent variables did not predict each other.

Linearity of continuous variables was tested using partial plots. Scatterplots revealed if the residuals were normally distributed by visual inspection. Because there were three independent variables, three scatterplots were examined. Figure 5 showed SDQ–Pro, Figure 6 showed BASI SS verbal, and Figure 7 showed social self-esteem. There were no curvilinear patterns. Also, since there were no problems with normality or homoscedasticity, the model was considered linear. The conclusion was linearity was met.

Outliers were tested with casewise diagnostics. There were no outliers, and residuals (Figures 5–7) did not reveal any values had high influence or leverage. The conclusion was there were no outliers.

Homoscedasticity was tested by examining Figure 5 to Figure 7 to see if the data were evenly distributed. Scatterplots were used and were found to be normal to satisfy homoscedasticity, as most residuals were within -2 or +2 standard deviations. White's test can

help check for violation of homoscedasticity, as visual inspection can be difficult (Berenson, 2013). White's test was conducted to test for heteroscedasticity ($F[2,69] = 1.894$, $p = .158$), failing to reject the null hypothesis the data were homoscedastic.

For residuals, Strengths and Difficulties Questionnaire-Prosocial were compared to language arts grades at the three-week mark in Figure 5. The standard used was residuals within +/- 3.3 standard deviations, for samples under 1000, confirmed homoscedasticity (Tabachnick et al., 2007). From visual inspection, no problems with homoscedasticity existed, so the assumption for this predictor variable was assumed.

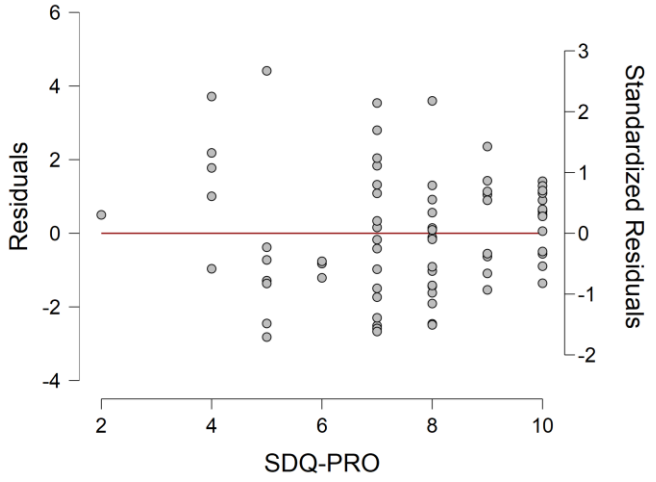

Figure 5: Language arts grades at three-week mark residuals versus Strengths & Difficulties Questionnaire–Prosocial (SDQ–PRO).

Like Figure 5, the BASI-S standardized scores for verbal were examined compared to language arts grades at the three-week mark in Figure 6. All residuals were within +/- 3.3 standard deviations, and no patterns which suggested problems were identified (Tabachnick et al., 2007). No problems with homoscedasticity were found.

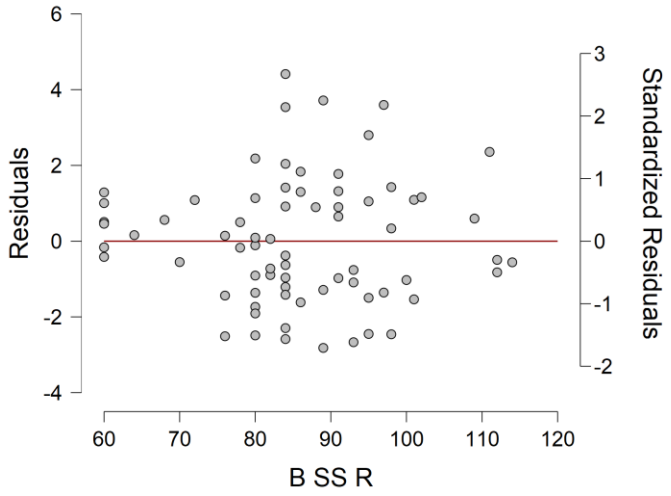

Figure 6: Language arts grades at three-week mark residuals versus Basic Achievement Skills Inventory standardized scores for verbal (BASI SS R).

After examining residuals in Figure 5 and 6, Figure 7 shows residuals for social self-esteem for language arts grades at the three-week mark. All residuals were within +/- 3.3 standard deviations (Tabachnick et al., 2007). All predictor variables, from Figures 5-7, revealed the assumption of homoscedasticity was met.

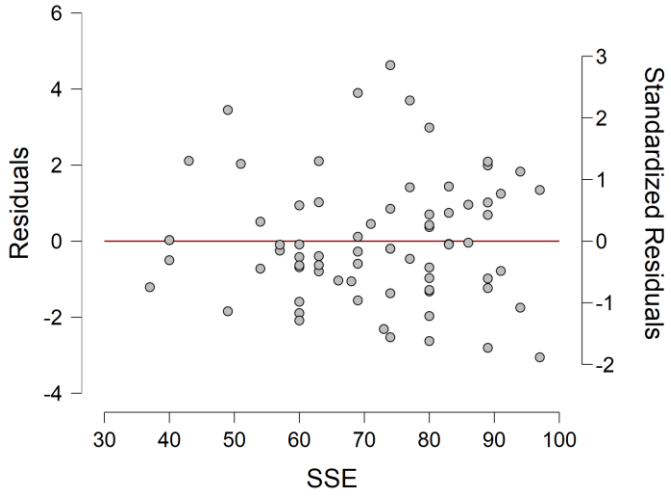

Figure 7: Language arts grades at three-week mark residuals versus social self-esteem (SSE).

After finding the scatterplots suggested homoscedasticity, normality was tested by examining the Q-Q plot (Figure 8). The residuals were close to the best-fit line, suggesting the predicted values and actual values were within a normal range. Since the study was cross-sectional as opposed to longitudinal, all values were gathered independently from each other. The assumption was met.

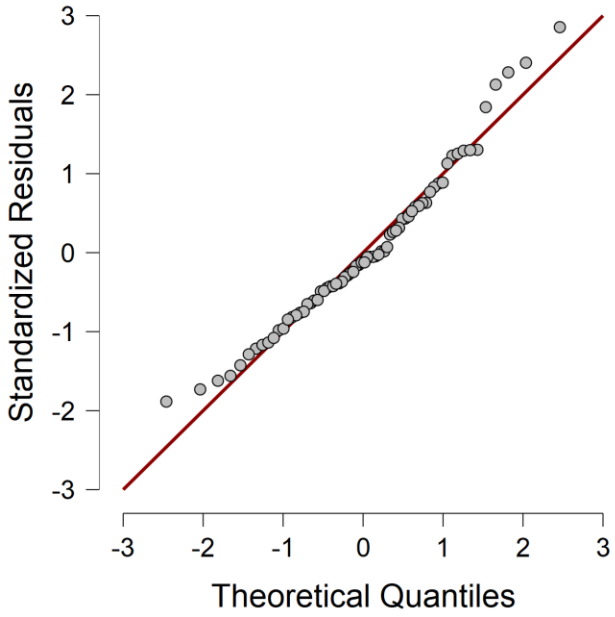

Figure 8: Language arts grades Q-Q plot standardized residuals.

Figures 5-8 were examined for homoscedasticity and normality. All assumptions were met. A further inference was because normality and homoscedasticity were met, linearity can be assumed for the model for language arts. Overall, the model showed good fit.

English multiple regression analysis. Similar to the math multiple regression model, all assumptions were met, and using a backward approach, a multiple regression model was constructed. ANOVA results, shown in Table 22, indicated the model was a significant predictor of English grades, $F(3,68) = 10.225$, $p = <.001$, meaning one can conclude the results were not by chance.

Table 22

ANOVA: Language Arts Grades After Three Weeks Linear Regression

	Model	Sum of squares	*df*	Mean square	*F*	*p*
1	Regression	87.402	3	29.134	10.225	<.001
	Residual	193.761	68	2.849		
	Total	281.163	71			

Multiple regression analysis was used to test if noncognitive and academic factors significantly predicted students' grades after three weeks in English. All assumptions were met. The results of the regression analysis indicated the three predictors explained 28.0% of the variance (R = .558, adjusted R^2 = .280, F[3,68] = 10.225, p = < .001).

When English grades after three weeks were predicted, he BASI verbal standardized score (β = 0.056, b = .360, p = < .001), social self-esteem (β = 0.041, b = .312, p = .004) and prosocial (β = 0.375, b = .359, p = .001) were found to be significant predictors. The partial correlations revealed each variable provided a unique value for the model: BASI verbal (r = 0.355, p = <.001), social self-esteem (r = 0.301, p = .004), and prosocial (r = 0.345, p = <.001). The overall model fit was adjusted R^2 = 0.280. Unstandardized coefficients can be used to build a predictive model. The final predictive model, developed from Table 23, was

LA Grade—3 wks = -8.046 + (0.056*BASI SS R) + (0.041*Soc. SE) + (0.375*Pro.).

With English grades at three weeks as the criterion variable, standardized test scores for verbal as measured by BASI (BASI SS R), social self-esteem (SSE), and Strengths and Difficulties Questionnaire–Prosocial (SDQ–PRO) were statistically significant as predictor variables. Prosocial and reading accounted for most of the standardized correlation. As with

math grades, grit, math academic self-concept, state self-esteem, and math ability were not shown to be statistically significant.

Table 23

Coefficients: Language Arts Grades After Three Weeks Linear Regression

							95% CI		Collinearity statistics	
	Model	Unstand.	*SE*	Stand.	*t*	*P*	Lower	Upper	Tolerance	VIF
1	(Intercept)	-8.046	1.973		-4.077	<.001	-11.985	-4.108		
	SDQ–PRO	0.375	0.109	0.359	3.427	0.001	0.157	0.593	0.923	1.083
	SSE	0.041	0.014	0.312	2.990	0.004	0.014	0.069	0.930	1.075
	B SS R	0.056	0.016	0.360	3.523	<.001	0.024	0.088	0.972	1.029

Note. Unstand. = unstandardized; *SE* = standard error; Stand. = standardized; CI = confidence interval; SDQ–PRO = Strengths and Difficulties Questionnaire–Prosocial; SSE = social self-esteem; B SS R = BASI standardized scores for verbal.

Other models were rejected either because the predictor variables were not statistically significant, even if the regression models showed better fit, or the predictor variables confounded other variables. As in math, the best predictors for grades in English were standardized scores in verbal, social self-esteem, and prosocial skills. Each independent variable had statistical significance, as well as the entire model. The model explained 28.0% of variation in students' grades in English for first-time-detained juvenile delinquents (adjusted $R^2 = 0.280$).

Soper's (2019) calculator was used to conduct power analysis. The model was found to have adequate power ($R^2 = 0.311$, $f^2 = 0.451$, power = 0.8, 3 dependent variables, $p = .05$, sample size needed = 28). The effect size of Cohen's (2013) $f^2 = 0.451$ suggested the findings have a high effect and sufficient size.

G*Power 3 was also used for post hoc testing of power (Faul et al., 2009). Power was computed to be 0.9986, which was high (noncentrality parameter $\lambda = 33.4172$; F-crit = 2.7395; numerator $df = 3$; denominator $df = 68$). The conclusion was power was high, and the results can be considered robust.

Reliability and Validity

The present study used instruments with adequate reliability and validity. Testing conditions were followed to standardize results. The R^2 and adjusted R^2 were close in value to each other in the mathematics and language arts multiple regression analyses, suggesting the models were valid and reliable (Hair et al., 2009). Results were deemed credible because of the instruments and fidelity with administration. The sample provided a population similar to the national population of juvenile delinquents. Assumptions for parametric tests were met. All data findings were checked for accuracy, and post hoc and power analysis suggested good fit.

Internal validity centers around finding a valid cause and effect relationship, with three categories to consider: statistical conclusion, relationship conclusion, and causal conclusion (Onwuegbuzie, 2000). The instruments used were considered reliable and credible for the purposes. The same variables predicted both regression models, and when connected with students' demographics (e.g., persistent failure, behavioral problems, poor academic achievement), the results related to previous findings for the student population. Furthermore, White's test, though useful for testing homoscedasticity, can be used for model specification (Berenson, 2013; Meuleman, Loosveldt, & Emonds, 2015). In the current models, White's test suggests both models were not misspecified.

A tenet of external validity is ecological validity, which is defined as the ability to generalize variables to other settings, variables, and contexts (Onwuegbuzie, 2000). The current

findings were consistent with other studies which found poor academic achievement and prevalence of mental illness in juvenile delinquents (Krezmien et al., 2008; Wood et al., 2008). Though the population was sampled by convenience, the sample size and power were adequate. Furthermore, the sample was from a large geographical area with an urban and rural population.

Chapter Summary

This chapter continued the study of which variables impacted students' grades for first-time-detained juvenile delinquents. Wilcoxon tests were first conducted to compare juvenile delinquents to nondelinquents, and mental health, self-esteem, and academic concerns were significantly different. Two models of correlation analysis and multiple regression were examined to determine predictors for students' academic performance. Correlation analyses showed the relationship of variables to math and English grades. The results for the multiple regression analyses showed three variables had a moderate to high effect on math and English grades: reading, social self-esteem, and prosocial skills.

In the next chapter, interpretations and conclusions are presented. Policy proscriptions and prescriptions are provided to improve the educational opportunities of juvenile delinquents. Recommendations and implications for leadership are presented. The findings add to the existing literature by describing the interplay of several variables heretofore not well articulated.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this research was to explore the relationship between noncognitive attributes and academic achievement on academic outcomes of first-time-incarcerated juvenile delinquents and to add to the knowledge base to improve policies for education in secure facilities. Collecting data gave the ability to test which factors influenced students' grades. In the study, the hypothesis was noncognitive attributes and academic achievement affect students' grades, but the influence of each factor was unknown.

The impetus for the research was the lack of insight into how juvenile delinquents cope with the demands of being incarcerated for the first time. There was a gap in the literature, with most studies focusing on long-term detainments of juvenile delinquents. Using the findings, the goals of the study were to understand the noncognitive attributes of juvenile delinquents and how to design and improve programs to reduce recidivism.

As presented in Chapter 4, the present study in multiple regression analysis found prosociality, social self-esteem, and reading ability positively predicted math grades and language arts grades for first-time-incarcerated juvenile delinquents. Other noncognitive factors, such as grit and academic self-concept, did not significantly predict students' grades in either math or language arts. How students dealt with learning from others and labeling by authorities and schools were the focus of the statistical analysis.

In Chapter 5, the findings are presented, as well as interpretations and conclusions drawn from the study's findings. Limitations and reliability and validity are discussed, and there are recommendations for implementation and further research. Lastly, there is a presentation of implications for leadership from the study's main conclusions.

Research Findings

In the current study, the following questions and hypotheses were researched:

Research Question 1: What is the degree of correlation between noncognitive attributes and academic achievement on grades in English for students first detained in juvenile detention facilities?

Research Question 2: What is the degree of correlation between noncognitive attributes and academic achievement on grades in mathematics for students first detained in juvenile detention facilities?

$H1_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H1_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and English grades.

$H2_0$: There is no statistically significant correlation between noncognitive attributes and academic achievement and math grades.

$H2_A$: There is a statistically significant correlation between noncognitive attributes and academic achievement and math grades.

There were 72 students included in the study, with most students of high school age (M = 15.347, SD = 1.688), split between White and African American (54% African American, 46% White, and 2.7% Hispanic), and mostly male (81% male and 19% female). Descriptive statistics revealed students, compared by grade level (M = 9.333; SD = 1.703), were more than one standard deviation behind in reading (BASI verbal GE M = 6.065; SD = 2.446) and math (BASI math GE M = 5.525; SD = 2.404), yet the youths had higher than normal self-esteem (SSES, Z = 2.831, p = 0.005, ES = .334). Feelings about work in school, such as grit and academic self-

concept, in the face of continuous failure, weak academic skills, and not being on track to graduate, did not match actual performance and were not statistically significant between delinquent and nondelinquent students. Students, including the ones not in special education, had a myriad of social, emotional, and academic problems which translated into maladjustment in school.

Juvenile delinquents were first compared to nondelinquents to define the sample compared to the population of nondelinquents. The Wilcoxon tests were conducted to determine if grit and math and English academic self-concept differed from national normative data. Grit and English academic self-concept did not have a statistically significant difference, but math academic self-concept was significant from the general population. Correlation analysis for math grades and English grades were used to build a model for multiple regression.

The results of the research questions for correlation with students' grades found similar predictor variables. Reading skills, social self-esteem, and prosocial skills predicted math and English grades. In the results for the first question for language arts grades, the proposed model was statistically significant using ANOVA (F[3,68] = 10.225, p = <.001), the adjusted R^2 = 0.280 (p = <.001), and a high effect size (f^2 = 0.451). For the second research question for mathematics grades, the proposed model was statistically significant using ANOVA (F[3,68] = 7.879, p = <.001), adjusted R^2 = 0.225 (p = <.001), and a moderate to high effect size (f^2 = 0.348). Power was adequate for both studies. In the present study, reading comprehension mattered as much as being socially mature and demonstrating prosocial skills. Essentially, student success depended on being able to listen, read, and comprehend, and the youths refrained from behavioral problems and attempted to be pleasing to others.

Interpretation

Better data collection and systems tailored to individual needs were found lacking in juvenile detention (Lane, 2018). The data set comprised a many different variables and transcribing many entries took a great deal of time. Few complications were encountered once the data arrived from the archival database. Analyzing results with the literature review and conceptual framework, some themes emerged.

Some questioned if grit was a construct, as one large-scale study suggested grit was conscientiousness, and improving grit had low effect versus a focus on perseverance (Credé et al., 2017). In the present study, low-achieving students showed grit similar to high-achieving students (Z = -0.134, p = .893), and correlation and regression did not show significance. While some factors correlated to grit, one would hypothesize because of the low academic achievement, lack of success in school, and pervasive behavioral problems, students would show either low grit or negative correlation. Unlike the Duckworth and Quinn (2009) studies which correlated grit with high achievement, in the present study, students in juvenile detention had similar grit to high-achieving students but pervasive failure. Possible causes were in the face of persistent failure, students distorted causes of failure and appraised ability disassociated from results to protect the self.

Many found academic self-concept predicted academic achievement, with a low to moderate effect size (Ghazvini, 2011; Stankov & Lee, 2014; Susperreguy et al., 2018). Noncognitive factors, such as psychosocial and behavior, influenced grades as much as prior grades and standardized achievement (Casillas et al., 2012). Yet, in the current study, academic self-concept did not correlate with academic achievement as found in previous studies (math ASC correlation to math grades, r = 0.204, p = .085; English ASC correlation to English grades,

r = -0.104, p = .384). Juvenile delinquents had comparable academic self-concept as students in the general population, and grades were not impacted by this factor. Like grit, there was a disassociation between effort and results.

For low-achieving students with behavioral issues, self-appraisal did not match normal expectations. Academic self-concept was seemingly normal, instead of negatively correlated with grades. Grit showed correlation with other variables, but students who were mostly dropouts (or with little chance of graduating) and far behind similarly situated peers, rated grit like high-achieving students. Students, regardless of results, rated themselves as resilient and good at math and reading. An explanation might be the other result would mean students were powerless to change, internalizing and accepting failure.

Prosocial, social self-esteem, and reading ability were shown to be connected by language and expressive communication. Low intelligence and psychopathic behavior negatively impacted decision making and cooperation, and juvenile delinquents demonstrated low empathy by practicing self-serving cognitive distortions (Baetz et al., 2019; Barriga, Sullivan-Cosetti, & Gibbs, 2009; Stams et al., 2006). Juvenile delinquents' results showed high rates of adverse trauma experiences, and the youths in residential programs suffered hyperarousal and emotional numbing, which contributed to power struggles and defiant behavior (Steinberg & Lassiter, 2018). Students able to play the game, where the youths listen, read adequately, and understand social situations, excelled. In addition, students with empathy and people-pleasing behavior, the hallmarks of prosocial behavior, found ways to be successful in juvenile detention centers in the face of poor math skills and other psychosocial problems.

The present research supports current findings communication problems and antisocial behavior were prevalent and detrimental to academic achievement, but there was an important

divergence. Possibly 90% of students in juvenile detention have impaired receptive vocabulary skills, and being agreeable and conscientious were found at odds with antisocial behavior (Jones, Miller, & Lynam, 2011; Lansing et al., 2013). Juvenile who persisted across the lifespan had a history of aggressive behavior and drug and alcohol abuse (Assink et al., 2015). Well into midlife, juvenile delinquents had 41% odds of being unemployed and 141% increased odds of having a mental illness (Drury, DeLisi, & Elbert, 2019).

Long theorized was reading was a factor causing juvenile delinquency, but the findings of this study problematize those conclusions. Communication and language disorders have been found to start in childhood and were much higher in adult prisons, and such disorders related to psychological, emotional, and behavioral problems (LaVigne & Van Rybroek, 2011; Søndenaa, Wangsholm, & Roos, 2016). For example, psychopathy related to poor reading outcomes (Vaughn et al., 2011). The Texas Tiered Instructional Model offered four evidence-based steps to teach reading in juvenile detention (Williams et al., 2011). The missing fifth step in the Texas model and others was an inability to read was more than lack of instruction. Students had severe social and emotional problems, exacerbated by communication disorders which largely goes undiagnosed and untreated (Moncrieff, Miller, & Hill, 2018). Results of the current study suggested juvenile delinquents have severe reading problems, but other factors, such as prosociality and social self-esteem, should be considered.

First-time-incarcerated juvenile delinquents appraised grit and academic self-concept as robust and similar to successful students, and self-esteem was higher than nondelinquents. Instead of self-handicapping behavior, poor social self-esteem and lack of prosocial skills probably leave juvenile delinquents unaware and unappreciative of one’s actions and consequences. Juvenile delinquents did not have self-perceptions of being poor readers and in

trouble frequently, and the students possessed average to high self-esteem and did not attribute failings to one's own actions.

Juvenile delinquents and educators faced a similar conundrum from labeling theory: Both groups tried to live up to the expectation delinquents were a class with poor behavior and low ethics, and staff members saw students the way colleagues, law enforcement, and parents reacted to labeling juvenile delinquents. Labeling theory worked to increase students' self-identification as delinquent, decrease prosociality, and increase association with peers; for educators, labeling led to decreased expectations and reduced satisfaction to try to live to the new expectations (Hoption, Christie, & Barling, 2015; Restivo & Lanier, 2015). Formal and informal effects of labeling occurred among and between juveniles and staff members, and staff members also changed by the culture from fellow colleagues. Maintaining positive social self-image, interconnectedness and empathy through prosocial behaviors, and the ability to read and cope adequately with schoolwork could circumvent labeling.

The findings offered a mediation about the root causes of juvenile delinquents, calling for further analysis. Numerous studies documented poor reading skills of juvenile delinquents, which led some to suggest failing to teach students to read led to juvenile delinquency (Baker & Ireland, 2007; Malmgren & Leone, 2000; Warnick & Caldarella, 2015; Wheldall & Watkins, 2004). Christle and Yell (2008) called for preventing reading problems as a way to prevent or reduce juvenile delinquency. Instead of presupposing poor or little reading instruction causes delinquency, problems with communication coexist with learning reading over the course of elementary school. Combined, students likely did not get along socially with others, struggled with empathy and teacher pleasing behavior, and experienced difficulty in reading (and in social and prosocial interactions) connected with an inability to communicate effectively. The

conclusion juvenile delinquents experienced persistently poor schools and teachers seemed less likely than the interaction of social self-esteem, prosocial skills, and verbal abilities were all mediated by communicative abilities.

Limitations

Despite the findings, caution should be exercised in interpreting the results. External validity should be considered by numerous factors. First, the sample size was comparatively small, and the sample was drawn from one juvenile detention center in a small urban area. Secondly, correlation analysis did not reveal grit or academic self-concept directly impacted students' grades, and there would need to be further investigation on how students developed normal grit and academic self-concept which did not match achievement. Thirdly, the instruments used were screeners, brief, and could be better developed with follow-up investigations. Lastly, regression analysis only correlated grades for a small period; longer periods of incarceration change students, and examining variables before, during, and after would offer more insight. Using larger random samples and mixed-methods research could strengthen findings and add credibility.

Internal validity might be threatened when participants guess or try to answer the way researchers want (Price & Murnan, 2004). Juveniles might not have been truthful or unable to understand what was being asked. There was not a control group for the research, so one cannot draw comparisons with similarly situated juveniles. There was the possibility this juvenile detention center had characteristics and findings not applicable to larger, more diverse populations. Furthermore, grading policies can be subjective, and the variable would need explored in other school programs.

Results were used to generate conclusions, but juvenile delinquency research remains problematic. A meta-analysis of academic interventions revealed most were neither theory driven nor empirically validated (Sander et al., 2012). The two major strands of research in juvenile interventions, positive behavioral supports and reading instruction, appear disjointed and disconnected, and the research might miss the possible connection which drives both needs: communication problems.

Future research needs to examine how measures of prosocial behavior change before and after detention, as newly admitted students might have lower reported prosocial traits because of feelings of social isolation. Another problem was lack of prosocial behavior was theorized to be a factor which increased the likelihood of delinquency, but juvenile delinquents are not a monolithic entity with all the same traits. Juvenile delinquents had low and high prosocial behavior, and how prosocial problems caused delinquency and maintained problem behavior remains poorly understood. There might be other noncognitive factors which were not identified.

Recommendations

Juvenile delinquents have a lengthy history of failure. Demographic results in the study were comparable to previous research findings conducted nationally, finding juvenile delinquents had the following characteristics: (a) well behind similarly situated peers, (b) present with high rates of mental illness, and (c) self-perceptions of acceptable academic progress which do not align with school grades, behavior, and graduation. The recommendations start by briefly outlining prior work to improve outcomes for juvenile delinquents and end with recommendations of how current findings and theory should be used to improve educational programs for juvenile delinquents.

There was a gap between what programs promised and what was delivered. Previous research found successful interventions in juvenile detention centers shared common characteristics, and moderately successful intervention programs only reduced recidivism by 12%. Most successful programs had a clear theory and focus on outcomes. Intensive interventions with monitoring by researchers were more successful than field programs, and positive behavioral supports were more successful than punitive measures (Sander et al., 2012). Family interventions and school-based interventions have not shown much effectiveness in changing juveniles (Baetz et al., 2019; Baldwin, Christian, Berkeljon, & Shadish, 2012). The findings from the current study should be a starting point to fill in the gap in the literature. A salient factor was theoretical programs with clear outcomes for behavioral change were the most viable.

The major shift in policy should come from jettisoning a business-as-usual approach to building a therapeutic model based on social learning and labeling theory. Steinberg and Lassiter (2018) found all staff members throughout the organization need involved and committed to changing how staff members deal with juveniles. Juveniles in the study arrived in detention feeling secure in one's own academic and social endeavors, yet the youths were using a referent group not successful in school. Most juvenile detention schools operate under state laws requiring standard instruction in all subjects, and the school day should be of sufficient length.

The new model need not teach all subjects. Students overaged, undercredited with poor reading skills, drug abuse problems, and an inability to form proper social connections are ill-served by taking standard courses such as world history, biology, and mathematics. Complex learning systems depend on adaptive leadership, and leaders need to rely on new information streams and rapidly evolving needs which do not fit into current modes of thinking (Baltaci &

Balci, 2017). Instead, juvenile detention centers should embrace the alternative model and develop cross-disciplinary subjects focused on improved communication in reading, prosociality, and social interaction. Connecting to therapists to break the social learning bonds of fellow delinquents, with express outcomes in developing verbal ability, social skills, and prosocial behavior, the pattern of juvenile delinquency could be broken.

Unfortunately, schools in juvenile detention centers might have smaller classes and counseling after school, but most operate closer to traditional schools than focusing on the diverse needs of incarcerated juvenile delinquents. Adaptive leadership transforms organizations by building the capacity for subordinates to collaborate and support the leader, but adaptive leadership meets the challenge by addressing the needs of the individual (Arthur-Mensah & Zimmerman, 2017; Jefferies, 2017). Future research should look at making prosociality and social skills as key performance indicators for juvenile delinquents, and each student should have an individual case study to develop a personal plan.

Juvenile detention centers often do not have reading teachers and research-validated reading programs. Instead of presenting in front of a class, like a traditional school, new teaching methodologies should be explored, such as coaching, tutorial models, and self-guided learning. The strongest recommendation is juvenile detention centers should stop replicating what does not work—the model used in traditional schools. A dysfluency should be developed to build a different model of teaching, learning, and the entire school experience.

Without development of social skills and prosocial ability, a strict focus on academic achievement had shown little chance of success. Positive prosociality correlated with reduced aggression and delinquent behavior (Padilla-Walker et al., 2017). What juveniles need is an integrated treatment plan to improve independent academic functioning and improve social self-

esteem and prosocial behavior. Juvenile detention centers should pair teachers and mental health workers together in the design, delivery, and monitoring of psychoeducational programs individualized to the needs of each juvenile delinquent.

Widely known was the impact of social and behavioral programs in traditional school, but there should be a greater intensity in juvenile detention centers. Teaching and promoting prosocial behavior have been shown to reduce aggressive conduct and improve academic achievement (Caprara et al., 2014; Gerbino et al., 2018). Social and emotional programs, with self-regulated strategy development, reduced academic problems and behavioral incidents (Sklad, Diekstra, Ritter, Ben, & Gravesteijn, 2012; Zuffianò et al., 2013). Pull out and counseling sessions probably do not provide enough intensity in juvenile detention centers. Schools need to have teams of caregivers, with teachers, parents, and mental health professionals designing educational programs geared towards the unique needs of each juveniles. The present research results suggested communication problems remediation should be at the center of many juvenile's learning problems.

Prior research findings, plus the current study, suggested schools should shift focus from solely academic to one which also includes social and emotional factors of prosociality and social regulation from first contact to postrelease. Preparing students to reenter society starts with understanding the complex interplay of academic skills, prosocial deficits, and social self-esteem issues to develop and implement programs which produce successful outcomes. Future research should operationalize current findings to maximize student growth.

Implications for Leadership

Juvenile delinquents who failed in juvenile detention centers have more than gaps in academic skills. Longitudinal studies suggested language and communication disorders untreated

persisted into adulthood and related to antisocial behavior, and youths who received interventions in delayed language disorders had fewer criminal problems in adulthood (LaVigne & Van Rybroek, 2011; Winstanley, Webb, & Conti-Ramsden, 2018). Most juvenile delinquents had one or more significant emotional, learning, or traumatic problem (Mallett, 2014). Reading ability, social skills, and prosocial research need connected with communication studies, and adaptive leadership should be used as the vehicle to adopt and adapt findings at the local level.

Juvenile delinquents with long histories of failure believed the youths were as gritty as successful students, and academic self-concept remained positive. Lack of mature social interaction and prosocial behavior, such as empathy and teacher-pleasing behavior, might not be a result of poor academic outcomes. Juveniles with behavior issues, in one study using logistic regression, were more likely to be involved in the criminal justice system at an earlier age and with substance abuse issues and co-occurring disorders (Lau, Rosenman, Wiehe, Tu, & Aalsma, 2018). Leaders need to embrace a managed disequilibrium, and there will be a fight between maintaining the status quo versus redefining the vision and mission of education (Chace, 2019). The present findings agree with the conclusion juveniles criminally involved have psychological problems which affect schooling in juvenile detention. Rather, reading and other skills cannot be considered in isolation. A root cause for all three needs researched, with the possibility expressive language problems are central.

Leaders in the education in juvenile detention should be freed from many state mandates, as complex cases and needs should dictate programming, not a one-size-fits-all program. Rather than seeing problems as technical, adaptive leaders work on continuous improvement by collaboration and improved dissemination of information (Baltaci & Balci, 2017). A framework for analyzing and tackling problems can be taught, and leaders can support and enable faculty

members to use adaptive leadership skills by changing goals, beliefs, and habits in everyday practices (Boylan, 2018; Heifetz et al., 2009). Juvenile delinquents, as a group, have difficulty appraising one's self, but how self-appraisals manifest in each juvenile varies to the degree where each facility should continuously update and shift programming to meet the needs of a highly transient population.

Within the confines of existing research, there should be a shift in theory and a new framework individualized to each juvenile. Preventive measures and improved resiliency do not teach communication skills connected with reading, social self-esteem, and prosocial skills. Many settings have been found to teach academic buoyancy and resiliency to juveniles to cope with anxiety and failure (A. J. Martin, 2013). Though the characteristics of psychopathy and antisocial personality disorders were related to recidivism, there was not one instrument or finding which predicts poor outcomes (Pechorro, Seto, Ray, Alberto, & Simões, 2019). Students in juvenile detention need more intensive services than a second-tier intervention or 20 minutes extra per day for response to intervention. New instruments and programs which move beyond observed behavior are necessary to cause long-term change. Redefining schools around programs which explicitly focus on reading ability, improved prosociality, and positive social self-esteem hold promise to improve outcomes of juvenile delinquents.

Chapter Summary

The results of this quantitative, correlation study suggested reading ability, prosociality, and social self-esteem positively impacted academic outcomes for first-time-detained juvenile delinquents. Findings from special education can be extrapolated to juvenile detention: Depressed academic achievement and behavioral problems have shown a connection, and prevention through positive supports has shown promise in juvenile correctional facilities

(Algozzine, Wang, & Violette, 2011; Jolivette, 2016). Juvenile detention centers need to redefine what education means for newly incarcerated students. Schooling for students has to move beyond pure academic concerns, as developing positive peer relationships and inculcating prosocial skills show great promise. Leaders will have to challenge the current approaches which maintain the status quo and move schooling for juvenile delinquents to be redefined differently than the classic models of schooling. Without change, the current trajectory of failure and recidivism will continue.

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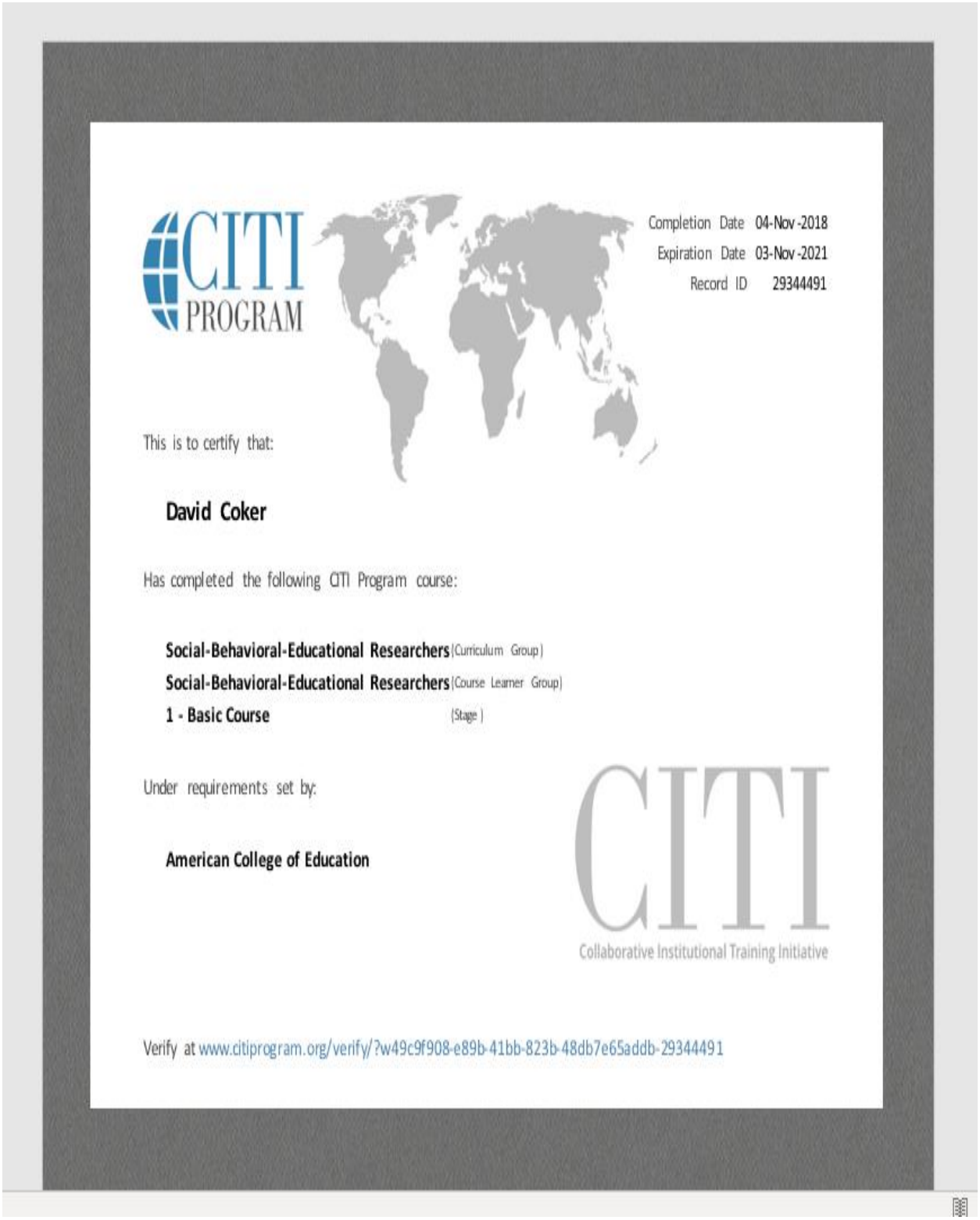
Appendix A: CITI Training



CITI PROGRAM

Completion Date 04-Nov-2018
Expiration Date 03-Nov-2021
Record ID 29344491

This is to certify that:

David Coker

Has completed the following CITI Program course:

Social-Behavioral-Educational Researchers (Curriculum Group)
Social-Behavioral-Educational Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

American College of Education

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w49c9f908-e89b-41bb-823b-48db7e65addb-29344491

Appendix B: Institutional Review Board Approval

October 1, 2019

To: David Coker
Brian Bridgeforth, Dissertation Committee Chair

From: Becky Gerambia
Becky Gerambia
Assistant Chair, Institutional Review Board
Office of Institutional Analytics

Re: IRB Approval

"A Multiple Regression Analysis of First-Time Incarcerated Delinquents and Factors Impacting Academic Achievement"

The American College of Education IRB has reviewed your application, proposal, and any related materials. We have determined that your research provides sufficient protection of human subjects.

Your research is therefore approved to proceed. The expiration date for this IRB approval is one year from the date of review completion, October 1, 2020. If you would like to continue your research beyond this point, including data collection and/or analysis of private data, you must submit a renewal request to the IRB.

Our best to you as you continue your studies.

Appendix C: Agency Approval

10/02/2019

Judy J. Hartshorn, Director
Vermilion County Juvenile Detention Center
150 E. Sager
Danville, IL 61832

RE: Permission to Conduct Research Study

Dear Mrs. Hartshorn:

I am writing to request permission to conduct a research study at Vermilion County Juvenile Detention Center. I am currently enrolled in the Doctorate of Education in Leadership at American College of Education (ACE), and I am in the process of writing my dissertation. The study is titled *Multiple Regression Analysis of Noncognitive Factors Affecting Academic Achievement of Juvenile Delinquents*.

I hope that the school administration will allow me to receive archival records with personal identifiers removed for students enrolled 2016-2017. The following information will be needed: age, sex, race, special education status, grade level, BASI-S scores, SDQ scores, SSES scores, SISE scores, TOSCRF-2 scores, Grit-S Scores, Math ASC, and Language Arts ASC. Also, grades for students at the three-week mark in Language Arts and Mathematics are requested. Only students who are first-time detained juvenile delinquents, completed all assessments, and had grades at the three-week level are needed. There will be no direct contact with any students, and all records are strictly archival for students who have long since left your school.

Your approval to conduct this study will be greatly appreciated. You may contact me at my email address: cokerd@danville118.org. If you agree, kindly sign below and return the signed form in the enclosed self-addressed envelope. Alternatively, you may submit a signed letter or email granting permission.

Sincerely,

David Coker

David Coker
Doctoral Student

Approved by:

Judy J. Hartshorn	Judy J. Hartshorn	10/2/2020
Print your name and title here	Signature	Date

Appendix D: Data Entry

Demographic Codes:

A: Age; Range 10-18

S: Sex; M: Male; F: Female

R: Race; 3: African American; 4: Hispanic; 5: White

SPED: Special Education; LD: Learning Disabilities; OHI: Other Health Impairment; SED: Seriously Emotionally Disturbed; Blank: Not Special Education; ???: Unknown

Variable Codes:

SDQ: Strengths & Difficulties Schedule; SDQ-E: SDQ-Emotional; SDQ-C: SDQ-Conduct; SDQ-H: SDQ-Hyperactivity; SDQ-Pe: SDQ-Peers; SDQ-PRO: SDQ-Prosocial

SSES: State Self-esteem Scale; PSE: Performance Self-esteem; SSE: Social Self-esteem; ASE: Appearance Self-esteem

SISE: Single-item Self-esteem

GRIT: Grit

ASC-M: Academic Self-concept Math

ASC-E: Academic Self-concept English

TOSCRF-2: Test of Silent Contextual Reading Fluency-2

BASI: Basic Achievement Skills Inventory-Survey; B SS R: BASI Verbal Standardized Scores; B GE R: BASI Grade Equivalency in Verbal; B AE R: BASI Age Equivalency in Verbal; B SS M: BASI Math Standardized Scores; B GE M: BASI Grade Equivalency in Math; B AE M: BASI Age Equivalency in Math; B-MC: BASI Math Computation; B-M App: BASI Math Application; B-Voc: BASI Vocabulary; B-LM: BASI Language Mechanics; B-RC: BASI Reading Comprehension

SS: Standardized Score; AE: Age Equivalency; GE: Grade Equivalency;

LA-3Wks: Language Arts grades at 3-weeks

MA-3Wks: Mathematics grades at 3-weeks