READING AND MATH OUTCOMES FOR INCARCERATED YOUTH WITH
EMOTIONAL AND BEHAVIORAL DISORDERS

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Helping youths acquire educational skills is one of the most effective approaches to the prevention of delinquency and reduction of recidivism. Access to a high-quality education is particularly important for the growing number of youth committed to juvenile corrections, especially for those who have been diagnosed with a disability. Research has shown a tremendous gap about the academic outcomes of incarcerated juveniles with emotional disabilities. Thus, the focus of this study was to examine the academic outcomes in reading and math for youth with emotional/behavioral disorders (E/BD) released from Texas Youth Commission (TYC) programs between September 2003 and September 2004. The study examined if the rate of academic growth in reading and math as indicated by pre- and post-test scores on the Test of Adult Basic Education (TABE), are different for youth with E/B as compared to youth with other disabilities and youth without disabilities who were adjudicated in TYC programs.
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CHAPTER 1
INTRODUCTION

Background

Education is the “foundation for programming in most juvenile institutions” (Parent et al., 1994, p. 129) because it is fundamental to the rehabilitation of troubled youth. Helping youth acquire educational skills is one of the most effective approaches to the prevention of delinquency and reduction of recidivism. While poor academic performance does not directly cause delinquency, empirical studies consistently demonstrate a strong link between marginal academic skills and the likelihood of involvement in the juvenile justices system (Center on Crime, Communities, and Culture, 1997). Access to a high-quality education is particularly important for the growing number of youth committed to juvenile corrections, especially for those who have been diagnosed with a disability. For these students, there is a great need for access to a general education curriculum and support to earn their high school diploma (Gagnon & Mayer, 2004).

In 2000, a survey conducted by the Office of Juvenile Justice and Delinquency Prevention (OJJDP) acknowledged that there were more than 110,000 youth younger than 21 committed to and being educated in public and private juvenile correctional institutions (OJJDP Statistical Briefing Book, 2002; Sickmund, 2002). This number has remained consistent over the past decade (Foley, 2001; OJJDP Statistical Briefing Book, 1999). Estimates of the number of youth with disabilities who are incarcerated vary according to different sources. For example, Quinn, Rutherford, and Leone (2001) indicate the prevalence of youth with disabilities incarcerated to be approximately 32%.
Youth with emotional/behavioral disorders (E/BD) have even higher prevalence rates. In 1999, the U.S. Department of Education estimated that students with E/BD comprise over 42% of the population in correctional institutions. Snyder and Sickmund (1999) also indicated that 10% of incarcerated youth have mental retardation, almost 50% have a learning disability, and over 60% exhibit an emotional or behavioral disorder. In contrast, the U.S. Department of Education (2001) estimated the prevalence of students with disabilities among the general population to be about 9%, with students with E/BD accounting for only about 8% of those with disabilities. With this marked increase in the number of juvenile offenders being diagnosed with disabilities, the juvenile justice system must examine academic outcomes as a way to ensure that educational services are being implemented.

Recent educational reform, such as Individuals with Disabilities Education Act (IDEA) (1997) and the No Child Left Behind Act (NCLB) of 2001, delineate the mandates for ensuring that a high-quality education is provided to students with and without disabilities within juvenile correctional institutions (Gagnon & Mayer, 2004). In 1975, IDEA—formerly called P.L. 94-142, or the Education for all Handicapped Children Act of 1975, and its subsequent amendments—assured that all children with disabilities would receive a free and appropriate public education. This mandate includes youth with disabilities who have been placed in juvenile institutions. NCLB (2001) has placed an increased emphasis on student assessment as a means of ensuring student academic progress. This Act requires implementation and development of a statewide accountability system in order to ensure all local school districts and public elementary
and secondary schools make adequate yearly progress on annual state assessments in
the areas of reading and math (Educational Policy Research Reform Institute, 2002).

Research has shown a tremendous gap in empirically based knowledge about
youth with disabilities involved in the juvenile justice system (e.g., National Center on
Education, Disability, and Juvenile Justice, 2002; National Council on Disability, 2003;
Robinson & Rapport, 1999). This gap covers a wide spectrum of unanswered questions
involving policy issues. Policy concerns include conflicting philosophies about what is
known about effective prevention, intervention, and delinquency management strategies,
and efforts to ensure that the rights and needs of youth with disabilities are addressed
(National Council on Disability, 2003).

Purpose

The purpose of this study was to examine the academic outcomes in reading and
math for youth with E/BD released from Texas Youth Commission (TYC) programs
between September 2003 and September 2004. The study examined if the rate of
academic growth in reading and math as indicated by pre- and post-test scores on the
Test of Adult Basic Education (TABE), are different for youth with E/BD as compared to
youth with other disabilities and youth without disabilities who were adjudicated in TYC
programs.

Research Questions

The following research questions guided this study:

1. Do youth with E/BD have the same rate of growth in reading as youth with
   other disabilities and youth without disabilities?
2. Do youth with E/BD have the same rate of growth in math as youth with other disabilities and youth without disabilities?

3. Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

4. Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

5. Does the youths’ length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

6. Does the youths’ length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

Significance

Although research has been conducted which suggests that academic educational services have a positive effect on rehabilitative programming for incarcerated youth (OJJDP, 1994), most studies have been limited to students without disabilities. When education programs in juvenile corrections fail to adequately educate youth with disabilities, they increase the likelihood that these youth will continue to experience trouble in the community after release. Due to the relationship between educational outcomes and recidivism, it is important for those involved in the juvenile justice system to understand the correlation between the two variables.
This study contributes to the growing body of literature supporting academic educational services for youth with E/BD in the juvenile justice system (Bullis & Yovanoff, 2002; Burrell & Warboys, 2000; Center on Crime, Community, and Culture, 1997; Gagnon & Mayer, 2004; Leone, 1994; National Center on Education, Disability and Juvenile Justice, 2004; Quinn et al., 2001). The use of pre- and post-test score comparisons identifies trends in data outcomes that may be used in comparison with TYC’s youth population as a whole. This study extends TYC’s current research on academic outcomes to determine if the disability of E/BD effects the overall performance of youth on the TABE.

**Limitations**

Several limitations are apparent in this study. First, the study focused on the academic outcomes of youth with E/BD within TYC. Data from other disability populations (e.g., learning disabilities, mental retardation, other health impaired) were analyzed as a combined group, rather than individual groups. Inferences drawn from this study could be limited by the nature of the group’s classification of E/BD. Generalization of the results to students from different disability groups may be limited.

Second, the study examined youth confined to TYC only. With the increased use of graduated sanctions, it will be difficult to generalize these results to youth placed in alternative programs such as community-based services, residential treatment outside of TYC, and short-term confinement. In addition, generalizing to programs outside the state of Texas will be limited. Although federal legislation outlines services that need to be provided to youth in the juvenile justice system, each state has the opportunity to develop its own system to provide services.
Finally, the study focused on TABE scores only and does not reflect alternate forms of academic outcomes such as receiving a general educational development (GED) certificate or obtaining a high school diploma. Both of these educational outcomes were beyond the scope of this study.

Definitions of Terms

1. **Juvenile**: A youth at or below the oldest age for which a juvenile court has first authority or jurisdiction over an individual for violating the law (OJJDP, 2000).

2. **Emotional/behavioral disorder (E/BD)**: Refers to individuals who are identified under the Individuals with Disabilities Education Act (1997) and under the law, exhibit one or more of the following characteristics over a long period of time, and to a marked degree, which adversely affects educational performance: (a) an inability to learn that cannot be explained by intellectual, sensory, or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; (c) in appropriate types of behaviors or feelings under normal conditions; (d) a general pervasive mood of unhappiness or depression; or (e) a tendency to develop physical symptoms, pains, or fears associated with personal or school problems. The term does not include children who are socially maladjusted, unless it is determined that they are emotionally disturbed. (45 C.F.R. 121a.5[b][8][1978])

3. **Academic outcomes**: The positive outcomes of interactions between individuals and educational experiences, both individually and system-wide (National Center on Educational Outcomes, 1998).
4. **Tests of Adult Basic Education (TABE):** Norm-reference tests designed to measure achievement of basic skills commonly found in adult basic education curricula and taught in instructional programs (CTB McGraw-Hill, 2004).
CHAPTER 2
REVIEW OF LITERATURE

In examining the literature regarding the importance of academic outcomes on juvenile offenders with disabilities, searches were conducted through the Educational Resources Information Center (ERIC), Dissertation Abstracts International, National Criminal Justice Reference Service Abstracts (NCJRS), and a hand search of pertinent journal articles and related books at the University of North Texas and Texas Woman’s University. Using these tools, literature from 1960 to the present was reviewed. Key search terms included, but were not limited to: juvenile justice, education, academic outcomes, juvenile offenders, educational outcomes, juvenile offenders with disabilities, and juvenile offenders with emotional disabilities. Terms were used in a variety of combinations, to identify literature which examined similar issues.

Literature concerning the academic outcomes of incarcerated juveniles with emotional disabilities is limited. This chapter details information regarding the history of the juvenile justice system, examines the current juvenile justice systems both nationally and in Texas, describes the characteristics of juvenile offenders including disability trends, and explores current research outlining academic outcomes for youth involved with the juvenile justice system, especially those with disabilities.

History of the Juvenile Justice System

Although juvenile violence rates have been reported higher in the United States than in other industrialized countries (U.S. Department of Health and Human Services, 2001, p.28) in the year 2001, for the seventh consecutive year, the rate of juvenile arrests have declined (Howell, 2003; Snyder, 2003). The juvenile justice system was
created in the late 1800s to reform U. S. policies regarding youthful offenders. Since that time, a number of reforms, aimed at both protecting the “due process of law” rights of youth, and creating an aversion toward jail among the young, have made the juvenile justice system more comparable to the adult system, a shift from its original intent.

Progressive Era Reforms

The Progressive Era, 1900 through 1918, in the United States was a time of extensive social reform. Prior to this time child offenders over the age of seven usually were imprisoned with adults. However, the actions of political and social reformers, as well as the research of psychologists in the 18th and 19th centuries, began a shift in society’s views on juvenile delinquents. In 1824, early reformers who were interested in rehabilitating rather than punishing children built the New York House of Refuge. This reformatory housed juveniles who would have been placed in adult jails. Beginning in 1899, individual states took note of the problem of youth incarceration and began establishing similar youth reform homes (Juvenile Justice FYI, 2004).

These early changes to the justice system were made under the conviction that society had a responsibility to recover the lives of its young offenders before they became absorbed in criminal activity. The justice system exercised its authority within a “parens patriae” (state as parent or guardian) role, with the state assuming the responsibility of parenting the child until positive changes occurred, or the child became an adult (Juvenile Justice FYI, 2004). Youth were no longer tried as adults. Their cases were heard in an informal court designed for juveniles. Extenuating evidence was taken into consideration along with the legal facts surrounding the crime. These informal courts became what is now called the juvenile court system.
By the 1960s juvenile courts had jurisdiction over nearly all cases involving persons under the age of 18, and transfers into the adult criminal system were made only through a waiver of the juvenile court’s authority. The civil proceedings, however, did not afford youth who were indeed facing a potential loss of liberty the due process of law rights explicited in the 5th and 14th Amendments (Juvenile Justice FYI, 2004).

In 1967, a decision by the Supreme Court affirmed the necessity of requiring juvenile courts to respect the due process of law rights of juveniles during their proceedings (Juvenile Justice FYI, 2004). The ruling was the result of an evaluation of Arizona’s decision to confine Gerald Francis Gault. Gault (age 15) had been placed in detention for making an obscene call to a neighbor while on probation. The Arizona juvenile court had decided to place him in the State Industrial School until he became an adult (age 21) or was “discharged by due process of law” (Juvenile Justice, FYI, 2004). An adult charged with the same crime would have received a maximum of a 50-dollar fine and two months in jail. Gault’s lawyers filed a writ of habeas corpus stating that juveniles were entitled to due process under the 14th amendment (Koroknay-Palicz, 2004). The Supreme Court agreed. The Supreme Court decision, delivered by Justice Abe Fortas, emphasized that youth has a right to receive fair treatment under the law and pointed out the following rights to minors (In Re Gault, 1967):

- The right to receive notice of charges
- The right to obtain legal counsel
- The right to “confrontation and cross-examination”
• The “privilege against self-incrimination”

• The right to receive a “transcript of the proceedings,” and

• The right to “appellate review”

This decision was critical for the application of today’s juvenile justice system. It was from this point forward that the due process rights and privileges afforded to adults must be extended to people under 18 years of age (Juvenile Justice FYI, 2004; Koroknay-Palicz, 2004). The impact of Gault has been widely felt in the juvenile justice system, including future legislation.

**Juvenile Justice and Delinquency Prevention Act**

In 1968, Congress passed the Juvenile Delinquency Prevention and Control Act to encourage states to develop plans and programs that would work on a community level to discourage juvenile delinquency. This Act was a precursor to the extensive Juvenile Justice and Delinquency Prevention Act (JJDPA) that was enacted in 1974 (Juvenile Justice FYI, 2004).

The JJDPA (1974) provided federal funding to improve states’ juvenile justice systems (Bradshaw, 1995). It was developed with the idea that children should not have contact with adults in jails and other institutional settings, and that status offenders should not be placed in secure detention (Building Blocks for Youth, 2003; JJDPA, 1974). JJDPA and its subsequent re-authorizations, mandate that states maintain four core protections. First, JJDPA required deinstitutionalization of status offenders (DSO). The DSO provision ensures that status offenders (e.g., skipping school, running away, breaking curfew), who have not committed a criminal offense, are not to be held in secure juvenile institutions for extended periods of time or in secure adult facilities for
any length of time (Zimring, 2000). Next, JJDPA authorized that juveniles may not be
detained in adult jails and lock-ups, except for limited times before or after a court
hearing (6 hours), in rural areas (24 hours plus weekends and holidays), or in unsafe
travel conditions (Zimring, 2000). This provision is designed to protect children from
psychological abuse, physical assault, and isolation. The third protection that JJDPA
provided was “sight and sound” separation. Under “sight and sound”, children cannot be
housed next to adult cells, share dining halls, recreation areas or any other common
spaces with adults, or be placed in any circumstances that could expose them to threats
or abuse from adult offenders (Building Blocks for Youth, 2003). The final protection that
JJDPA mandates is the disproportionate minority confinement (DMC). This requires
states to assess and address the disproportionate confinement of minority juveniles in
all secure institutions (Building Blocks for Youth, 2003; JJDPA, 1974). In addition to the
mandated protections of the JJDPA, the original law created The Office of Juvenile
Justice and Delinquency Prevention (OJJDP), The Runaway Youth Program, and The
Throughout the years additional reauthorizations of this Act have added provisions that
emphasize not only youth currently involved in the juvenile justice system but also those
youth at-risk of juvenile delinquency.

Current Legislative Trends

A steep rise in juvenile crime occurred between the late 1980s and mid-1990s
(Howell, 2003; Juvenile Justice FYI, 2004). In response to a fear that juvenile crime
would continue to rise, legislatures enacted measures designed to ‘get tough on crime.’
Legislation that is relevant to juvenile crime include the PROTECT Act (2003) and the
Runaway, Homeless, and Missing Children Protection Act (2003). In addition, some states enacted legislation that would allow them to try juveniles as adults for some violent crimes and weapon violations (Austin, Johnson, & Gregoriou, 2000). The anti-crime sentiment of the period caused changes to be implemented to the juvenile justice system that made it increasingly similar to the adult (criminal) justice system (Austin et al., 2000; Howell, 2003). Rehabilitation became a lesser priority to public safety in the aggressive campaign against crime of the 1990s. Today, a shift is being seen to introduce programs that contain provisions to strengthen delinquency prevention efforts in the areas of after-school programs, truancy, and mentoring (e. g., Positive Education Program [PEP], Big Brothers Big Sisters of America [BBBSA], Juvenile Mentoring Program [JUMP]). In addition, proposed legislation encourages states to implement mandatory graduated sanctions programs (Alliance for Children and Families, 2004; Howell, 2003). These measures lack the harshly punitive provisions found in previous legislation and focus more on rehabilitation and providing appropriate services to youth. Although the proposed legislation is still being debated, it is past legislation that has formed the complex system known as juvenile justice.

Juvenile Justice System

A child who breaks the law enters a complex world of procedures, places, and people called the juvenile justice system. This system consists of many different components and varies considerably across different ages, gender, and offenses (Snyder & Sickmund, 1999). In general, law enforcement agencies, schools, and families refer youth to intake units. There it is determined whether the youth should be counseled and released or whether further processing is required. At a subsequent
adjudication hearing the appropriate sanction and/or treatment will be determined for
the youth. The options typically include community service, counseling, probation,
residential placement, boot camps, wilderness programs, and secure confinement. If
sanctions are not determined appropriate, the youth is released (National Council on
Disability, 2003).

Because education is critical to rehabilitation for troubled youth, it is considered
the foundation for programming in most juvenile institutions (OJJDP, 1994, p. 129).
Problems implementing quality academic programs within juvenile corrections are
frequently associated both with characteristics of incarcerated youth, and with the
operation of the institutions themselves. Youth enter correctional settings with skill
deficits (Howell & Wolford, 2002; Larson & Turner, 2002), behavior problems (Howell &
Wolford, 2002; National Council on Disability, 2003; Quinn, Rutherford, Wolford, Leone,
& Nelson, in press), and substance abuse issues (Sickmund, 2002) that present
difficulties in educational programming. At the same time, juvenile correctional
institutions often have limited capacity to support appropriate educational interventions
for the youth confined to their care and custody (Foley, 2001; Special Education in
Correctional Facilities, 2000). Major systemic impediments include overcrowding
(Howell, 2003; Special Education in Correctional Facilities, 2000), insufficient fiscal
resources (National Council on Disability, 2003; Smith, Esposito, & Gregg, 2002),
ineffective governance structures (Bradshaw, 1995; Foley, 2001; Wolford, 2000),
isoaltion of correctional schools from education reform practices and from public
schools (Leone, 1994; Robinson & Rapport, 1999; White, 2002), inadequate transition
and aftercare services (Larson & Turner, 2002; Smith et al., 2002), and lack of
collaboration with treatment and security components within the juvenile institution 
(National Center on Education, Disability, and Juvenile Justice, 2004; National Council 
on Disability, 2003). Research has indicated that greater the improvement a youth 
achieves in educational skills, better the youth is equipped for a successful reentry into 
community life, whether that reentry includes additional formal education or immediate 
employment (National Council on Disability, 2003). It is important for correctional 
education programs to provide services that have been found to support youth success 
rather than programs that punish youth behavior.

*Texas Youth Commission*

The Juvenile Justice system in the State of Texas is one of the most progressive 
and modern juvenile justice systems in the nation. Texas Youth Commission was 
established in 1949 as the Texas Youth Development Council. It houses and 
rehabilitates the state’s most serious and chronic juvenile offenders. According to TYC, 
offenders housed by the agency committed their crimes when they are between the 
ages of 10 and 17. These youth can remain under TYC’s jurisdiction until they turn 21. 
The average length of confinement is 17 months (TYC, 2004a).

According to TYC (2004a), institution services are based on a rehabilitation 
program called Resocialization, a phase-progressive and competency-based program. 
It emphasizes (a) personal responsibility for behavior, (b) self-control, (c) academics, (d) 
vocational and social skills development, and (e) restitution to victims and the 
community. This program is designed to enhance personal accountability of delinquent 
youth by removing justification for continued delinquency and to provide skills that will 
enable youth to make prosocial choices in the future (TYC, 2003). All TYC correctional
institutions require youth to be engaged in a 16-hour day of activities including education, physical training, work, institution maintenance, homework, and meals. The idea is that busy kids have fewer opportunities to get into trouble.

**TYC Educational Programming**

TYC operates year-round educational programs for incarcerated youth, ages 10 through 21, within each of its institutional schools. The primary goal of the educational program is to provide each youth the opportunity to learn the maximum educational skills possible during the time the youth is a student in a TYC school. Principals and teachers are employees of TYC, with the exception of Sheffield Boot Camp, TYC halfway houses, and some contract facilities, which have memorandums of understanding with local school districts to provide formal education (TYC, 2003).

The schools are recognized as accredited campuses and held accountable through an appropriate educational accountability system. The accountability criteria have been especially structured to appropriately measure academic results for youth at TYC facilities (TYC, 2004a). The accountability system addresses improvement gains in reading and math and completion of a general educational development (GED) certificate or a diploma of graduation under the requirements of the Texas Education Agency and the State Board of Education. Youth have the opportunity to learn basic academic skills, explore career options, earn course credits toward high school graduation, prepare for and, if old enough, test for a GED. Youth who have graduated or completed a GED may also pursue college credits and/or special vocational certificates at most of the TYC institutions, depending on available resources and meeting program entry requirements (TYC, 2004a).
Additional supports that may be provided to youth in TYC institutions include a continuum of special education services as required under federal statute, instructional needs for students that are identified as limited English proficient, transition assistance for students who have completed their GED or high school requirements and are planning on attending post secondary programs, and workforce development programs that offer students opportunities for training in vocational and career preparation through Project Rio-Y, Campus Work Program, and Prison Industry Enhancement program. Placement in these programs is dependent upon the availability or resources and program requirements (TYC, 2003; 2004a).

Trends of Juvenile Offenders

According to the Federal Bureau of Investigation (FBI), in 2001, law enforcement agencies in the United States made an estimated 2.3 million arrests of persons under age 18, this finding is derived from data reported annually by local law enforcement agencies across the country to the FBI’s Uniform Crime Reporting Program. Other recent finding from the FBIs program include the following:

- Juveniles were involved in 10% of murder arrests, 14% of aggravated assault arrests, 31% of burglary arrests, 24% of robbery arrests, and 23% of weapons arrests in 2001.
- In the peak year of 1993, there were about 3,800 juvenile arrests for murder. Between 1993 and 2001, juvenile arrest for murder declined, with the number of arrests in 2001 (1,400) about one-third that in 1993.
• Arrests of juveniles accounted for 12% of all violent crimes cleared by arrest in 2001—specifically, 5% of murders, 12% of forcible rapes, 14% of robberies, and 12% of aggravated assaults.


• In 2001, the juvenile arrest rate for Property Crime Index offenses reached its lowest level since at least the 1960s.

Although these findings are encouraging, there is still reason to remain vigilant. For example, arrest of females for various offenses are increasing more than arrests for males, and the overall juvenile arrest rate for simple assault in 2001 remained near its all-time high (FBI, 2001).

_Trends of Texas Juvenile Offenders_

In Texas, recidivism has been on the decline. According to TYC (2004a), the number of juveniles arrested for a felony offense within one year of their release from juvenile corrections dropped from nearly 36.7% in 1999 to 33.4% in 2003. Similarly, arrests within three years of release had dropped from 31.2% in 1999 to less than 30.0% in 2003. Specialized treatment programs have also shown significant results in reducing recidivism over the last five years (TYC, 2003):

• Taking part in Giddings State School’s capital and serious violent offender treatment program reduced the likelihood of being reincarcerated for any offense by 55%, and for a felony offense, by 43%.

• Receiving specialized sex offender treatment reduced the likelihood of sex offenders being reincarcerated for a felony offense by 50%; rearrested for a violent offense by 46%; rearrested for a felony sex offense by 37%;
rearrested for a felony offense by 29%; and rearrested for any offense by 28%.

With this decline in violent juvenile offenses, it is important for states to examine the services they are providing to juvenile offenders. Many states have changed their juvenile justice programs to improve, not necessarily toughen, their responses to young offenders. They have (a) promoted better screening and assessment; (b) information-sharing among law enforcement and social service agencies, schools, and the juvenile justice system; and (c) comprehensive delinquency prevention and early intervention initiatives grounded in community involvement (National Council on Disability, 2003).

Disability Trends in Juvenile Corrections

Among the various populations found in juvenile institutions, including conduct disorders, the prevalence of offenders with disabilities is alarmingly high (Robinson & Rapport, 1999). Some evidence suggests that police officers, attorneys, judges, corrections staff, and probation officers are typically unaware of characteristics associated with youths’ disabilities (Osher et al., 2002; Special Education in Correctional Facilities, 2000). Youth may be more vulnerable to involvement in the juvenile or criminal justice system when poorly developed reasoning ability, inappropriate affect, and inattention are misinterpreted by professionals as hostility, lack of cooperation, and other inappropriate responses (National Council on Disability, 2003; Quinn et al., 2001).

Studies show that one in three youth who enter correctional institutions have previously received special education services (National Center on Education, Disability, and Juvenile Justice, 2002; White, 2002). A recent national survey conducted
by the Center for Effective Collaboration and practice at the American Institutes for Research, in collaboration with the National Center on Education, Disability and Juvenile Justice, reveals that 37% of children and youth in state juvenile correctional institutions were disabled (Quinn et al., in press). Other sources show disability prevalence rates to range from roughly 12% to 70%, with the average falling in the range of 30% to 50% (Brier, 1994; Bullock & McArthur, 1994; Burrell & Warboys, 2000; Leone, 1994; National Center on Education, Disability, and Juvenile Justice, 2002; Rutherford, Bullis, Anderson, & Griller-Clark, 2002; Walicki, Hole, Chavez-Navarro, & Drewnicky, 2002). The reasons for the discrepancies in disability prevalence estimates include (a) inconsistent definitions of disabilities; (b) inadequate special education screening and assessment procedures available in the public schools and in correctional institutions; (c) problems implementing special education programs in correctional settings as a result of inadequate staffing and funding for special education; and (d) failure to obtain and/or difficulty in obtaining prior school records to determine the presence of a special education label (Leone, 1994; Leone, Rutherford, & Nelson, 1991; Rutherford, Nelson, & Wolford, 1985).

Robinson and Rapport (1999) report that 10% of incarcerated youth have mental retardation, 50% have a learning disability, and over 60% exhibit emotional/behavioral disorders (E/BD). These percentages are considerably higher than youth with disabilities who are found in public elementary and secondary schools (Quinn et al., 2001; Robinson & Rapport, 1999; Rutherford et al., 2002; White, 2002). Estimates of the prevalence of E/BD vary greatly in the general population, ranging from 0.5% to 20% or more of the school-age population (Kauffman, 2000). In 2000-2001 the Federal
Child Count data reported annually by states confirms that 8.2% of students age 6 to 21 years as having E/BD (Bradley, Henderson, & Monfore, 2004).

The number of youth committed to TYC with disabilities is very similar to national data trends. Currently, approximately 40% to 43% of the TYC total population has been diagnosed with a disability (Texas Youth Commission, 2004a). Of this large number of youth, approximately 97% enter TYC already diagnosed with a disability. Although learning disabilities are the most common form of disability found throughout TYC (TYC, 2004a), many youth are diagnosed with co-existing disabilities.

Co-existing Disabilities

A number of studies have shown that between one third and one half of all youth diagnosed with E/BD also have co-existing diagnosis of attention deficit hyperactivity disorder and/or learning disabilities (Shamsie, Hamilton, & Sykes, 1996). Consequently, they may qualify for special education services because their disorders interfere with their learning and behavior. Learning, attention, and behavioral disorders, particularly when a youth has a combination of disabilities (a common occurrence), can be extremely challenging for even those who specialize in treating youth with these disabilities, because social skill deficits make youth with disabilities more difficult to manage (Larson & Turner, 2002). Because of the connection between disability and delinquency, it is likely that a significant proportion of court-involved youth with disabilities can be expected to manifest social skill deficits and as a consequence be difficult to manage. Although reports have shown varied prevalence rates, it is clear that youth with learning disabilities, mental retardation, and E/BD account for the majority of youth in correctional institutions (Brier, 1994; Bullock & McArthur, 1994; Burrell &
Warboys, 2000; Leone, 1994; National Center on Education, Disability, and Juvenile Justice, 2002; Robinson & Rapport, 1999; White, 2002).

**Special Education Legislation and Programming**

Currently, there are four pieces of federal legislation that protect youth with disabilities in correctional institutions. Section 504 of the Rehabilitation Act (1973) brought attention to the needs of individuals with disabilities. It addresses the civil rights of individuals and mandates that people with disabilities receive the same degree of opportunities to succeed as their peers without disabilities (Minor, Williams, & Minor, 1997). Section 504 provides for a broader definition of a “child with a disability” which covers many youth who are not eligible under other legislation. If a juvenile has an impairment that substantially limits a major life activity, a history of such an impairment, or regarded as having such an impairment, they could be covered for services under Section 504 (Brooks et al., 2001). In addition, Section 504 provides for the filing of administrative complaints with the Office of Civil Rights, U.S. Department of Education (Burrell, & Warboys, 2000; White, 2002).

While the JJDPA provides physical protection to youth placed in juvenile institutions, their continued educational needs has yet to be addressed. Studies of incarcerated youth reveal that as many as 70% suffer from education-related disabilities and are eligible for special education and related services (e.g., Burrell, & Warboys, 2000; White, 2002). In 1975, Congress enacted a comprehensive special education law, the Education for All Handicapped Children Act. Since then, Congress has amended and renamed the law. In 1990, the law was renamed as the Individuals with Disabilities Education Act (IDEA). In accordance with IDEA, states are required to provide a free
appropriate education for all qualified students with disabilities between the age of 3 and 21. Placement of a youth in a juvenile justice institution does not remove educational rights under the IDEA (Brooks et al., 2001; Osher et al., 2002; Robinson, & Rapport, 1999; White, 2002). To ensure that states fulfill this mandate, states must demonstrate that they have policies and procedures in effect that meet the specific requirements of the law before funding will be provided (National Center on Education, Disability, and Juvenile Justice, 2002; White, 2002). Although IDEA mandates educational services for adjudicated youth, the provisions of IDEA were developed with school settings in mind, which can make implementing IDEA in correctional institutions particularly challenging (National Center on Education, Disability, and Juvenile Justice, 2002).

Another piece of legislation that provides protection for youth with disabilities is the Americans with Disabilities Act (ADA) (1990). Title II of ADA requires that public entities, including juvenile institutions and prisons, provide accommodations in programs and services for individuals with disabilities (Osher et al., 2002; Quinn et al., 2001). Although ADA has a broader purview, it does ensure fair treatment for youth with disabilities (Burrell & Warboys, 2000).

No Child Left Behind (NCLB), 2001 is another landmark in education reform designed to improve student achievement and change the culture of America’s schools, including schools in juvenile correctional institutions. NCLB outlines four principles that affect all children in public schools: (a) accountability for results; (b) an emphasis on doing what works based on scientific research; (c) expanded parental options; and (d) expanded local control and flexibility. Some of the major NCLB requirements with implications for juvenile corrections are (a) renewed emphasis on transition services
and a return to school; (b) provision for highly qualified teachers; (c) increased high
school graduation rates; (d) increased rates of employment upon release or graduation;
and (e) increased emphasis in the improvement of educational achievement (No Child
Left Behind, 2001).

Based on the amount of legislation pertaining to the education of youth with
disabilities in correctional institutions, implementing and maintaining appropriate special
education programs in juvenile justice settings is very demanding (Quinn et al., 2001;
White, 2002). It is up to society to continue responding to youth in corrections through
the use of appropriate educational interventions.

Academic Outcomes

Historically, punishment, rather than intervention has been the response to
children with serious behavior problems (Leone et al., 2003; National Council on
Disability, 2003). The view of today’s society on the etiology and treatment of
troublesome behavior has fluctuated, resulting in an odd and ineffective dual emphasis
on punishing and treating youth in the educational, child welfare, and juvenile justice
systems. Policies that lead to practices in which troubling behavior is met with harsh
and punitive consequences are not only costly and ineffective, but they also exacerbate
the problems they are designed to ameliorate (Leone et al., 2003; National Mental
Health Association, 2004). Only recently, has the juvenile justice system begun to
emphasis educational programs that address the special needs and mental health of
juvenile offenders in correctional institutions. A large variety of research has shown that
increasing a youth’s academic skills will have a positive effect on recidivism (Howell,
Academics are a major part of TYC’s resocialization program. Upon admission to TYC each youth receives an educational evaluation which includes achievement testing, vocational aptitude and interest inventory, and if appropriate psychological and language evaluations (TYC, 2004b). In addition, each student completes standardized testing in reading and math to determine the instructional needs of the student. On average, TYC youth have been found to be four to five years below expected grade level for their ages. In 2003, the average age at commitments was 16 years 2 months (10th grade) with the average reading and math grade levels to be in the 5th grade level (TYC, 2004a). In addressing academic growth TYC requires each youth to have 1.0 month gain academically in reading and math per month of instruction.

Conclusion

Helping youth acquire educational skills is one of the most effective approaches to the prevention of delinquency and reduction of recidivism (Osher et al., 2002; White, 2002). The federal government is currently focusing both juvenile and educational legislation on academic accountability and positive outcomes for youth in correctional institutions. Academic outcome information is important in order to (a) document the impact of the educational and treatment services offered and completed during incarceration, (b) establish current performance levels, and (c) foster successful transition to and connection with educational placements and social services offered in community settings (Rutherford et al., 2002). Therefore, it is important that we monitor the academic outcomes of youth with disabilities in juvenile correctional institutions.
CHAPTER 3
METHODOLOGY AND PROCEDURES

Helping youths acquire educational skills is one of the most effective approaches to the prevention of delinquency and reduction of recidivism. Access to a high-quality education is particularly important for the growing number of youth committed to juvenile corrections, especially for those who have been diagnosed with a disability. Intervention programs that emphasize academic skills, and that employ focused, operationally defined treatments matched to the needs and learning styles of the youth have been found to reduce recidivism (Brier, 1994). Therefore, the focus of this study was to compare academic outcome progress for youth diagnosed with emotional/behavioral disorders (E/BD).

In this chapter a detailed description of the methodology and procedures used in the present study are delineated. Integrated into this section is the purpose for the study, research questions, a description of the study subjects, an overview of the instrument used, and a description of the procedures and analysis of data.

Purpose

The purpose of this study was to examine the academic outcomes in reading and math for youth with E/BD released from Texas Youth Commission (TYC) programs between September 2003 and September 2004. The study examines the rate of academic growth in reading and math as indicated by pre- and post-test scores on the Test of Adult Basic Education (TABE), are different for youth with E/BD as compared to youth with other disabilities and youth without disabilities who were adjudicated in TYC programs.
Research Questions

The following research questions guided this study:

1. Do youth with E/BD have the same rate of growth in reading as youth with other disabilities and youth without disabilities?

2. Do youth with E/BD have the same rate of growth in math as youth with other disabilities and youth without disabilities?

3. Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

4. Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

5. Does the youths’ length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

6. Does the youths’ length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

Description of Subjects

This study used data accrued by TYC on youth who were released from Texas juvenile institutions between September 2003 and September 2004. Data represent male and female youth between the ages of 11 and 21 from all geographic areas within
the state of Texas. Data used represented a sample of 1,857 youth. All youth identified as having disabilities were formally evaluated and identified by TYC and/or another Texas education facility. TYC accepts pre-commitment diagnoses of disability from any public school system in the state. Formal evaluations are completed on a “as needed” basis by examining the youth’s reevaluation needs or if TYC does not receive all the required assessments from the youths home school (TYC, 2004b). In addition, formal evaluations at TYC are in-line with state requirements for eligibility (TYC, 2004b).

Description of Instrument

The TABE is the nation’s most widely used test for adult basic education. The TABE are norm-referenced tests designed to measure achievement of basic skills commonly found in adult basic education curricula and taught in instructional programs. The content areas measured are reading, mathematics, language, and spelling. Assessment levels extend downward to include beginning reading skills, and upward to include objectives in all content areas that are measured in the General Educational Development (GED) tests and taught at the high school level and beyond. There are five overlapping levels of TABE 7 and 8: Literacy (Grade level: 0 - 1.9); Easy (Grade level: 1.6 - 3.9); Medium (Grade level: 3.6 – 6.9); Difficult (Grade level: 6.6 – 8.9); and Advanced (Grade level: 8.6 – 14.9).

According to the Publisher, CTB/McGraw Hill (2004), the reading subtest measures basic reading in real-life and academic contexts. It assesses basic reading skills and the ability to construct meaning from a variety of selections. The content highlights numerous overlapping objectives, ranging from word-meaning to critical thinking skills. In addition, vocabulary is measured as part of the reading process.
Numerous facets of the reading process are measured using documents and forms that are familiar in our everyday lives, as well as excerpts from published fiction and nonfiction that reflect our cultural diversity. There are also items that specifically test the examinee’s ability to find and use information in reference and consumer sources.

The mathematics computation and applied mathematics subtests measure mathematical skills and concepts useful for adult life and work. The mathematics computation test provides an appropriate representation of the core computational skills necessary to any successful mathematics program. The test measures the examinee's understanding of the operations of addition, subtraction, multiplication, and division of whole numbers, decimals, and fractions. Also included are integers, algebraic expressions, exponents, and percents. The applied mathematics test assesses general mathematical literacy such as the ability to apply a wide range of basic mathematical skills, methods, and concepts to tasks (e.g., budgeting, planning, designing, predicting results, interpreting data). It also covers more routine tasks (e.g., comparison shopping, tax computation, household measurements, cooking, estimating quantities, and making computations that involve time, distance, weight).

To address validity of the TABE the developers used a multiple process in development of the instruments (e.g., editors and researchers carefully reviewed all items for accuracy and appropriateness; new items were tried out at testing sites throughout the country and then an item analysis, using item response theory, was completed on the results; bias was address through developer guidelines and a review from the educational community; and national norming was completed as a final step in
validating the assessment tool). Test reliability was addressed through the use of the Kuder-Richardson Formula 20 (KR20) to assess internal consistency.

The development of the TABE was directly influenced by recommendations from a report by the Secretary’s Commission on Achieving Necessary Skills. It is the only basic skills test for which all items have been normed on adults. The TABE represents a range of content difficulty typically found in educational programs at various grade levels. The tests support the same philosophies found in the best adult education programs—they highlight numerous integrated objectives, feature items that focus on adult life skills, and provide correlations to predict success on the GED tests.

Procedures

The researcher contacted the TYC concerning the proposed research project on September 17, 2004 and received approval to complete the study. Once this proposal was approved by the doctoral dissertation committee, the researcher requested specific data in writing from TYC. This information was received via e-mail on an Excel spreadsheet. Data requested included (a) TABE pre- and post-test scores in reading and math, (b) age of youth at intake and release, and (c) length of incarceration for each youth. Once data were received, the researcher entered the information into SPSS by dividing it into three groups: (a) youth diagnosed with E/BD; (b) youth diagnosed with a disability, excluding E/BD; and (c) youth without a disability. Statistical analyses were then completed. The results are presented in Chapter 4.
Analysis of Data

This study used a causal-comparative design to identify relationships between the groups of individuals and dependent variables of rate of academic growth on TABE reading and math, age of youth, and length of incarceration. Statistical analyses involved an analysis of variance (ANOVA) to determine the academic growth for each youth in reading and math based on the dependent variables. Test means for both reading and math were established for each youth in the three groups (youth with E/BD, youth with disabilities excluding E/BD, and youth without disabilities). Then, the individual means were used to determine if the youths’ age and length of incarceration effect the overall academic growth. Group means were analyzed to establish if differences existed between the three groups.
CHAPTER 4

ANALYSIS OF DATA AND DISCUSSION

Chapter 4 presents the data collected and the findings based on those data. The data and results for each research question are discussed. SPSS statistical analysis software was used for all statistical analyses and alpha was set at 0.05.

The purpose of this study was to examine the academic outcomes in reading and math for youth with emotional/behavioral disorders (E/BD) released from Texas Youth Commission (TYC) programs between September 2003 and September 2004. The study examined if the rate of academic growth in reading and math as indicated by pre- and post-test scores on the Test of Adult Basic Education (TABE), are different for youth with E/BD as compared to youth with other disabilities and youth without disabilities who are adjudicated in TYC programs.

Group Statistics

This study used data accrued by TYC on youth who have been released from Texas juvenile institutions from September 2003 through September 2004. Data represent a sample of 1,857 male and female youth between the ages of 11 and 21 years. Youth were from all geographic areas within the state of Texas. Youth identified as having disabilities had been formally evaluated and identified by TYC and/or another Texas education facility. Disability data from TYC noted eligibility as either learning disabled (LD), E/BD, LD primary, E/BD primary or other disability. All youth identified as having E/BD only were assigned Group 1. All youth identified as LD or other disability was assigned Group 2. All youth who did not have a designated eligibility were assigned Group 3. For youth who had multiple eligibilities, placement was determined by their
identified primary eligibility. For example, if LD and E/BD primary were indicated, the youth were assigned Group 1. If LD primary and E/BD primary were indicated the youth were assigned to Group 2. The combined sample of 1,857 was segmented into three subgroup categories: Group 1: youth diagnosed as E/BD ($n = 312$); Group 2: youth diagnosed with a disability excluding E/BD ($n = 535$); and Group 3: youth without disabilities ($n = 1010$).

**Analysis of Research**

Two types of data analyses were conducted to determine if there were differences in rate of academic growth for youth with E/BD, other disabilities, or non-disabled. First, a one-way analyses of variance (ANOVA) was used to compare means of the three groups. Next, a post hoc test, Tukey Honestly Significant Difference (HSD), was used to better understand why the ANOVA yielded specific results.

Before beginning analysis, the data were adjusted to show each individual’s overall academic growth in reading and math. To do this, the difference between pre- and post-test scores was determined then converted into months based on a nine-month academic year. For example, looking at math scores, a youth who scored a 2.4 (second grade, fourth month) on the pre-test and a 6.6 (sixth grade, sixth month) on the post-test has an overall academic growth of 4.2 (four years, two months). Once the overall academic growth was determined (4.2), it was then converted into months for analysis. Using a nine-month academic year, a youth who had an overall growth of 4.2 (four years, two months) would show to have a 38-month growth rate ($4 \times 9 = 36 + 2$).

Below, a summary of findings from the study answer the six research questions:
Research Question #1

Do youth with E/BD have the same rate of growth in reading as youth with other disabilities and youth without disabilities?

In order to gain a better understanding of the overall group dynamics in reading, descriptive statistics were conducted to summarize pre- and post-test reading scores for each group. Table 1 presents the means and standard deviations for each of the three groups for reading on both the pretest and post-test TABE.

Table 1

**Group Means and Standard Deviations in Reading**

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th></th>
<th>Posttest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>E/BD ($n = 312$)</td>
<td>5.279</td>
<td>2.5535</td>
<td>7.836</td>
<td>2.8064</td>
</tr>
<tr>
<td>Other Disabilities ($n = 535$)</td>
<td>4.479</td>
<td>2.3327</td>
<td>6.974</td>
<td>2.7853</td>
</tr>
<tr>
<td>Non-disabled ($n = 1010$)</td>
<td>6.403</td>
<td>2.4670</td>
<td>8.710</td>
<td>2.6817</td>
</tr>
</tbody>
</table>

To address research question 1, mean scores for each group were calculated using the total months of academic growth. To investigate if differences existed among the three groups in reading growth, a one-way ANOVA was conducted to determine if reading growth differed significantly among the groups. Table 2 represents the findings of the analysis when comparing overall academic growth rates for the E/BD group, other disabilities group, and the non-disabled group.
Table 2

Analysis of Variance for Reading Growth

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>1560.701</td>
<td>2</td>
<td>780.350</td>
<td>.120</td>
<td>.002</td>
</tr>
<tr>
<td>Within</td>
<td>681341.85</td>
<td>1854</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>682902.55</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results from research question one reveal that there was not a statistically significant difference in the reading growth of the three groups $F = (2, 1856) 780.350$, $p = .120$. This finding indicates that youth with E/BD released from TYC have the same rate of academic growth in reading as youth with other disabilities and youth without disabilities.

Research Question #2

Do youth with E/BD have the same rate of growth in math as youth with other disabilities and youth without disabilities?

To establish an understanding of each group’s composition in relation to math growth, descriptive statistics of the pre- and post-test math scores were preformed. Table 3 reflects the group means and standard deviations for math based on the results from the three groups.
Table 3

*Group Means and Standard Deviations in Math*

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>E/BD (n = 312)</td>
<td>5.176</td>
<td>2.1310</td>
</tr>
<tr>
<td>Other Disabilities (n = 535)</td>
<td>4.578</td>
<td>1.8785</td>
</tr>
<tr>
<td>Non-disabled (n = 1010)</td>
<td>6.501</td>
<td>2.3326</td>
</tr>
</tbody>
</table>

To investigate if differences existed between the three groups in relation to math growth, a one-way ANOVA was conducted to determine if math growth differed significantly among the groups. Results of this analysis are found in Table 4.

Table 4

*Analysis of Variance for Math Growth*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>854.064</td>
<td>2</td>
<td>427.032</td>
<td>.199</td>
<td>.001</td>
</tr>
<tr>
<td>Within</td>
<td>489263.13</td>
<td>1854</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490117.19</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data in Table 4 indicates that there were no significant differences between the three groups in relation to overall math growth $F = (2, 1986) 427.032, p = .199$. Based on the data, youth with E/BD show consistent rates of academic growth in both reading and math as compared to youth with other disabilities and youth without disabilities.

For research questions 3 and 4, the data were first divided into the three groups (i.e., youth diagnosed with E/BD; youth diagnosed with a disability excluding E/BD; and...
youth without disabilities). Then, each group was again divided into four subgroups based on the youth’s age. The four age groups represent different academic levels. The 11-13 years old group represents the middle school level of sixth through eighth grade. The high school level (9th and 10th grades) encompasses youth 14-15 years old. The 16-17 years olds represent the senior high level (11th and 12th grades). The final group (18-21 years old) identifies youth who are considered adults but are still eligible for services under Individuals with Disabilities Education Act (IDEA).

Research Question #3

Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

To address age, the analysis is two-fold. First, to evaluate whether age (11-13 years, 14-15 years, 16-17, and 18-21 years) is associated with youths’ rate of academic growth in reading, a one-way ANOVA was calculated. This analysis took into account the youth’s age only, not disability eligibility. Table 5 displays the results of this analysis for reading gain scores.

Table 5

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>16985.221</td>
<td>3</td>
<td>15.755</td>
<td>.000*</td>
<td>.024</td>
</tr>
<tr>
<td>Within</td>
<td>665917.33</td>
<td>1853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>682902.55</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes statistical significance at the .05 level.
A one-way ANOVA indicated that a significant difference existed between the means of the groups $F = (2, 1856) 15.755, p = .000$ when addressing reading gain and youths’ age. Effect size ($\eta^2$) was determined to be large ($\eta^2 = .024$) (Cohen, 1988). Using the Tukey criterion, a statistically significant difference was found. Table 6 shows the results of Post hoc analysis.

Table 6

*Reading Mean Difference Between Age*

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-13 (A)</td>
<td>—</td>
<td>9.311*</td>
<td>12.707*</td>
<td>14.019*</td>
</tr>
<tr>
<td>14-15 (B)</td>
<td>9.311*</td>
<td>—</td>
<td>3.396*</td>
<td>4.708</td>
</tr>
<tr>
<td>16-17 (C)</td>
<td>12.707*</td>
<td>3.396*</td>
<td>—</td>
<td>1.312</td>
</tr>
<tr>
<td>18-21 (D)</td>
<td>14.019*</td>
<td>4.708</td>
<td>1.312</td>
<td>—</td>
</tr>
</tbody>
</table>

*Denotes statistical significance at the .05 level.

Tukey results for reading indicate statistically significant differences between the 11-13 year group and all other groups at the .05 alpha level. In addition statistically significant differences were identified between the 14-15 year group and the 16-17 year group. This indicates that in reading the younger the youth’s age, the larger rate of academic growth will be gained when not addressing disability criteria.

The second step in analysis to determine if age affects the youths reading gain is to address the youths’ age and disability eligibility in relation to reading gain. For this analysis the original three groups (i.e., youth diagnosed with E/BD; youth diagnosed with a disability excluding E/BD; and youth without a disability) were used. Within each of the original groups the youth were again divided based on the four identified age
classes creating new groups. For example, the 11 to 13 age group contained three
groups (a) youth identified with E/BD, (b) another disability excluding E/BD, and (c)
those without disabilities. Again an ANOVA was performed on each of the new groups
to determine if age and disability affect overall reading gain. Tables 7 through 10
present the results of this analysis.

Table 7

*Reading Gain Scores for 11-13 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>853.869</td>
<td>2</td>
<td>426.935</td>
<td>.476</td>
<td>.015</td>
</tr>
<tr>
<td>Within</td>
<td>53087.089</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>53940.958</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8

*Reading Gain Scores for 14-15 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>197.792</td>
<td>2</td>
<td>98.896</td>
<td>.759</td>
<td>.001</td>
</tr>
<tr>
<td>Within</td>
<td>254130.40</td>
<td>710</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>254328.19</td>
<td>712</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

*Reading Gain Scores for 16-17 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>$n^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>839.071</td>
<td>2</td>
<td>419.536</td>
<td>.293</td>
<td>.002</td>
</tr>
<tr>
<td>Within</td>
<td>336371.15</td>
<td>986</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>337210.22</td>
<td>988</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10

*Reading Gain Scores for 18-21 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>$n^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>188.523</td>
<td>2</td>
<td>94.261</td>
<td>.771</td>
<td>.009</td>
</tr>
<tr>
<td>Within</td>
<td>20160.054</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20348.576</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison between the various age groups yielded non-significant effects for all tested variables. Effect size was determined to be small for all groups except the 11-13 year-old group which had a large effect size ($n^2 = .15$) (Cohen, 1988). The results indicate that youth with E/BD have a consistent rate of academic growth on the TABE as compared to youth with other disabilities and youth without disabilities and that the youths’ age does not affect this growth rate.
Research Question #4

Does the youths’ age (11-13 years, 14-15 years, 16-17 years, and 18-21 years) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

As in research question 3, analysis for math growth has been addressed in the same manor. First, math gain was assessed in association with the youths’ age excluding disability eligibility. Table 11 presents the results of this investigation.

Table 11

Math Gain Scores Between Age

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>(\eta^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>7704.516</td>
<td>3</td>
<td>9.865</td>
<td>.000*</td>
<td>.016</td>
</tr>
<tr>
<td>Within</td>
<td>482412.67</td>
<td>1853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490117.19</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

Analysis revealed a statistically significant difference between the three groups when addressing math growth \(F = (3, 1856) 9.865, p = .000\). Effect size was calculated to be large \((\eta^2 = .016)\) according to Cohen (1988). Follow-up Tukey tests were performed to identify differences. Table 12 displays this breakdown.
Table 12

*Math Mean Difference Between Age*

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-13 (A)</td>
<td>—</td>
<td>7.393*</td>
<td>8.717*</td>
<td>11.749*</td>
</tr>
<tr>
<td>14-15 (B)</td>
<td>7.393*</td>
<td>—</td>
<td>1.324</td>
<td>4.357</td>
</tr>
<tr>
<td>16-17 (C)</td>
<td>8.717*</td>
<td>1.324</td>
<td>—</td>
<td>3.033</td>
</tr>
<tr>
<td>18-20 (D)</td>
<td>11.749*</td>
<td>4.357</td>
<td>3.033</td>
<td>—</td>
</tr>
</tbody>
</table>

*Denotes statistical significance at the .05 level.

Post hoc tests revealed that in relation to math growth only the youngest age group (11-13) showed a statistical difference compared to the other groups at the $p < .05$ level. The other three groups did not differ from one another significantly. These results indicate that youth between the ages of 11-13 have a higher rate of academic growth in math than youth over the age of 14.

Next, a one-way analysis of variance was used to assess if age and disability affected math gain. The criteria used for grouping the youth was the same as in research question 3. Results of this analysis are presented in Tables 13-16.

Table 13

*Math Gain Scores for 11-13 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>$F$</th>
<th>$p$</th>
<th>$n^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>23.318</td>
<td>2</td>
<td>.029</td>
<td>.972</td>
<td>.001</td>
</tr>
<tr>
<td>Within</td>
<td>37498.515</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>37521.833</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 14

*Math Gain Scores for 14-15 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>320.286</td>
<td>2</td>
<td>.647</td>
<td>.524</td>
<td>.002</td>
</tr>
<tr>
<td>Within</td>
<td>175829.60</td>
<td>710</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>176149.89</td>
<td>712</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15

*Math Gain Scores for 16-17 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>1921.255</td>
<td>2</td>
<td>3.710</td>
<td>.025*</td>
<td>.007</td>
</tr>
<tr>
<td>Within</td>
<td>255333.11</td>
<td>986</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>257254.37</td>
<td>988</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes statistical significance at the .05 level.

Table 16

*Math Gain Scores for 18-21 Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>1320.268</td>
<td>2</td>
<td>3.641</td>
<td>.033*</td>
<td>.115</td>
</tr>
<tr>
<td>Within</td>
<td>10152.376</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11472.644</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Denotes statistical significance at the .05 level.

These results suggest that age groups 11-13 years and 14-15 years did not achieve significance according to the ANOVA. The 16-17 year \( F = (2, 988) \) 3.710, \( p \)
= .025) and 18-21 year ($F = (2, 58) 3.641, p = .033$) groups did show a statistically significant difference when examining disability eligibility and age. Additional analysis using the Tukey was conducted on both age groups. Tables 17 and 18 display the results of this investigation.

Table 17

*Math Mean Difference 16-17 Age*

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/BD Group (A)</td>
<td>—</td>
<td>.322</td>
<td>3.007</td>
</tr>
<tr>
<td>Other Disability Group (B)</td>
<td>.322</td>
<td>—</td>
<td>2.685</td>
</tr>
<tr>
<td>Non-disabled Group (C)</td>
<td>3.007</td>
<td>2.685</td>
<td>—</td>
</tr>
</tbody>
</table>

Although ANOVA results showed a significant difference between groups in the 16-17 age bracket, follow-up post hoc tests revealed that none of the groups achieved significance at the $p < .05$ level. The closest groups were the other disability group and the non-disabled group ($p = .056$). Tukey post hoc analyses revealed that youth aged
18-21 who have disabilities other than E/BD and youth without disabilities demonstrate a statistically significant difference in math growth.

In summary, although significant differences were found in reading and math when examining age groups alone, when grouped by age and disability overall significant differences were not found. Therefore, this study shows that age does not affect academic growth in either reading or math.

To address research questions 5 and 6, on determining if length of incarceration affects academic growth, the original three groups (i.e., youth diagnosed with E/BD; youth diagnosed with a disability excluding E/BD; and youth without a disability) were used. The data were then grouped into subgroups relating to the length of incarceration either 0-11 months, 12-35 months, or 36-86 months. Length of incarceration in months was provided by TYC.

**Research Question #5**

Does the youths’ length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in reading for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

To begin the analysis on the affect of length of incarceration on reading, the total sample \(n = 1,857\) was divided into three length of incarceration (i.e., 0-11 months, 12-35 months, and 36-86 months) exclusive of disability eligibility. An ANOVA was conducted to determine whether there were statistically significant differences between the lengths of incarceration and reading growth. Table 19 reflects the result of this analysis.
Table 19

Reading Gain Scores Between Lengths of Incarceration

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>71632.474</td>
<td>2</td>
<td>108.618</td>
<td>.000*</td>
<td>.105</td>
</tr>
<tr>
<td>Within</td>
<td>610360.29</td>
<td>1853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>681992.76</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

The one-way ANOVA indicated that a significant difference existed between the means of the groups \( F = (2, 1856) 108.618, p = .000 \). Effect size was determined to be large (\( \eta^2 = .105 \)) according to Cohen (1988). Using the Tukey method, mean differences were identified. Table 20 shows the results of post hoc tests.

Table 20

Reading Mean Difference Between Lengths of Incarceration

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11 Months (A)</td>
<td>—</td>
<td>4.470*</td>
<td>21.294*</td>
</tr>
<tr>
<td>12-35 Months (B)</td>
<td>4.470*</td>
<td>—</td>
<td>16.824*</td>
</tr>
<tr>
<td>36-86 Months (C)</td>
<td>21.294*</td>
<td>16.824*</td>
<td>—</td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

Tukey post hoc tests revealed statistically significant differences between length of incarceration and reading growth when disability eligibility is excluded.

The next analysis related to the length of incarceration and the three original groupings (i.e., youth with E/BD, youth with a disability excluding E/BD, and youth without a disability). Within each of the original groups, the youth were again divided
based on the three identified lengths of incarceration (0-11 months; 12-35 months; and 36-86 months), creating new groups. For example, the 0 to 11 month length of incarceration group contained youth identified with E/BD, another disability excluding E/BD, and those without disabilities. For analysis, an ANOVA was conducted on each of the new groups to determine whether there were statistically significant differences between if length of incarceration and disability in reading growth. Tables 21 through 23 present the results of this analysis.

Table 21

*Reading Gain Scores for 0-11 Month Length of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>10.909</td>
<td>2</td>
<td>0.021</td>
<td>0.979</td>
<td>0.000</td>
</tr>
<tr>
<td>Within</td>
<td>254897.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>254908.61</td>
<td>978</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 22

*Reading Gain Scores for 12-35 Month Length of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>324.921</td>
<td>2</td>
<td>0.433</td>
<td>0.648</td>
<td>0.001</td>
</tr>
<tr>
<td>Within</td>
<td>257841.75</td>
<td>688</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>258166.67</td>
<td>690</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 23

*Reading Gain Scores for 36-86 Month Length of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>1727.113</td>
<td>2</td>
<td>1.647</td>
<td>.195</td>
<td>.018</td>
</tr>
<tr>
<td>Within</td>
<td>96450.566</td>
<td>184</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>98177.679</td>
<td>186</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although the ANOVA conducted to determine whether length of incarceration affects reading growth showed there were statistically significant differences, once disability eligibility was included the affect was statistically non-significant. This indicates youth with E/BD, youth with other disabilities, and youth without disabilities have similar rates of reading growth and that length of incarceration does not affect this growth rate.

**Research Question #6**

Does the youths' length of incarceration (0-11 months, 12-35 months, and 36-86 months) affect the rate of academic growth in math for youth with E/BD as compared to youth with other disabilities and youth without disabilities?

Like research question 5, research question 6 began by conducting an analysis of variance examining math growth in relation to the youths' length of incarceration and not disability eligibility. A breakdown of this data is found in Table 24.
Table 24

*Math Gain Scores Between Lengths of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>34253.902</td>
<td>2</td>
<td>69.546</td>
<td>.000*</td>
<td>.070</td>
</tr>
<tr>
<td>Within</td>
<td>455843.42</td>
<td>1853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490097.32</td>
<td>1856</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

The ANOVA conducted determined that there was a statistically significant difference between length of incarceration and math growth \( (F = (2, 1856) 69.546, p = .000) \), with an effect size that was determined to be large \( (\eta^2 = .070) \) (Cohen, 1988). This indicates that math growth is not affected by they youths’ length of incarceration. Post hoc analyses revealed that all three lengths of incarceration affected math growth in youth. Results for this post hoc analysis can be found in Table 25.

Table 25

*Math Mean Difference Between Lengths of Incarceration*

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11 Months (A)</td>
<td>—</td>
<td>3.359*</td>
<td>14.748*</td>
</tr>
<tr>
<td>12-35 Months (B)</td>
<td>3.359*</td>
<td>—</td>
<td>11.389*</td>
</tr>
<tr>
<td>36-86 Months (C)</td>
<td>14.748*</td>
<td>11.389*</td>
<td>—</td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

The second portion of this analysis involved investigating the correlation between length of incarceration and disability eligibility. Using the same criteria described in the second part of research question 5, math gain scores were analyzed for length of
incarceration group using the original three groups (i.e., youth with E/BD, youth with a disability excluding E/BD, and youth without a disability). Tables 26 through 28 show the results of analysis.

Table 26

*Math Gain Scores for 0-11 Month Length of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>602.242</td>
<td>2</td>
<td>1.423</td>
<td>.241</td>
<td>.003</td>
</tr>
<tr>
<td>Within</td>
<td>206063.94</td>
<td>974</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>206666.18</td>
<td>976</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 27

*Math Gain Scores for 12-35 Month Length of Incarceration*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>2941.130</td>
<td>2</td>
<td>6.299</td>
<td>.002</td>
<td>.018</td>
</tr>
<tr>
<td>Within</td>
<td>161550.41</td>
<td>692</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>164491.55</td>
<td>694</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 28

Math Gain Scores for 36-86 Month Length of Incarceration

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>n²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>241.709</td>
<td>2</td>
<td>.260</td>
<td>.771</td>
<td>.003</td>
</tr>
<tr>
<td>Within</td>
<td>96450.566</td>
<td>182</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>84687.946</td>
<td>184</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANOVA results showed statistically significant differences between 12-35 month group and math growth ($F = (2, 694) 6.299$, $p = .002$). This shows that length of incarceration does affect math growth in youth incarcerated between 12 and 36 months. Length of incarceration groups 0-11 months and 36-86 months were statistically non-significant (i.e., $p = .241$; $p = .771$, respectfully). Additional analysis using the Tukey was conducted on the 12-35 month length of incarceration group. Table 29 displays the results of this investigation.

Table 29

Math Mean Difference for 12-35 Month Length of Incarceration

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11 Months (A)</td>
<td>—</td>
<td>2.483</td>
<td>5.255*</td>
</tr>
<tr>
<td>12-35 Months (B)</td>
<td>2.483</td>
<td>—</td>
<td>2.772</td>
</tr>
<tr>
<td>36-86 Months (C)</td>
<td>5.255*</td>
<td>2.772</td>
<td>—</td>
</tr>
</tbody>
</table>

* Denotes significance at the .05 level.

Although ANOVA results showed a significant difference between the 12-35 month group, follow-up post hoc tests revealed that only the E/BD group compared to
the non-disabled group achieved significance at the $p < .05$ level. The other two groups did not differ from one another significantly.

Similar to the results for the affects of age on academic gain, length of incarceration also affects academic gain if examining time frames only. When disability eligibility is added minimal differences occurred.

Summary of Results

The purpose of this study was to examine the academic outcomes in reading and math for youth with E/BD as compared to youth with other disabilities and youth without disabilities adjudicated in TYC programs. The combined sample of 1,857 was segmented into three subgroup categories (e.g., youth diagnosed as E/BD ($n = 312$); youth diagnosed with a disability excluding E/BD ($n = 535$); and youth without disabilities ($n = 1010$)). Analysis focused on three areas: (a) overall growth in reading and math, (b) effects of youths’ age on reading and math growth, and (c) effects of the youths’ length of incarceration on reading and math growth. Analysis was conducted using an ANOVA and a HSD post hoc test. Overall, results of this study indicate that youth identified as E/BD have the same rate of academic growth in reading and math as youth with other disabilities and youth without disabilities. In addition, neither the youths’ age nor length of incarceration significantly affect reading and math growth as indicated by per- and post-test scores on the TABE.
CHAPTER 5
SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

One of the most effective approaches to the prevention of delinquency and reduction of recidivism is the acquisition of educational skills (Osher et al., 2002; White, 2002). New legislation is focusing on accountability and positive outcomes for youth incarcerated in correctional institutions (Juvenile Justice FYI, 2004). With the increasing number of youth diagnosed with emotional/behavioral disorders (E/BD) found in correctional institutions, it is important that research focus on educational outcomes for these youth.

The purpose of this study was to examine the rate of academic growth in reading and math for youth with E/BD as compared to youth with other disabilities and youth without disabilities adjudicated in Texas Youth Commission (TYC). Data represented 1,857 male and female youth between the ages of 11 and 21 from all geographic areas within the state of Texas. The data were divided into three groups (i.e., youth diagnosed with E/BD; youth diagnosed with a disability, excluding E/BD; and youth without a disability). Test means for both reading and math were established for the three groups, then, group means were used to determine if the youths’ age and length of incarceration affect the overall academic growth of the group. In general, this study indicated that youth released from TYC identified as E/BD have the same rate of academic growth in reading and math as youth with other disabilities and youth without disabilities. In addition, the youths’ age or length of incarceration does not affect their reading and math growth.
Implications

Based on the findings of this study, the following implications can be drawn. It is important for juvenile correctional institutions to provide high-quality academic programs. In 2003, the National Council on Disability emphasized that greater the educational achievement of a youth, the more likely the youth will find success upon reentry to the community. The present study supports the National Council on Disability's report by indicating that youth with E/BD in TYC are achieving at the same rate as youth with other disabilities and youth without disabilities. Therefore, the focus on educational programming to support academics should be continued and enhanced. Complementary programming for youth with E/BD could focus more on social and emotional programming to reduce recidivism.

Research has suggested that educational programming has a positive effect on rehabilitative outcomes for incarcerated youth (Office of Juvenile Justice and Delinquency Prevention, 1994). It is important for juvenile correctional institutions to understand this correlation between academics and recidivism. This study extends TYC’s current research on academic outcomes. It provides support for current programming and further documents success of its program.

Recommendations

Future research may attempt to address the limitations of this study and build on its findings. Research by Howell and Wolford (2002) and colleagues (Howell, 2003; National Council on Disability, 2003; Osher et al., 2002) has shown that increasing a youth’s academic skills will have a positive effect on recidivism. This study has shown that youth with E/BD incarcerated in TYC have similar academic outcomes as youth
with other disabilities and youth without disabilities. An extension of this study could focus on recidivism rates of the youth compared to their levels of academic achievement.

Recent educational reform, No Child Left Behind (NCLB) (2001), has ensured that youth with disabilities in correctional facilities receive a high-quality education. This Act makes certain that states implement and develop a statewide accountability system to ensure adequate yearly progress on annual assessments. In Texas, state assessments are completed using the TAKS test. All youth, including those in TYC are required to complete this test. Future research could examine TAKS scores for TYC youth and compare those to data compiled from this study to determine the youths’ academic level.

Current research reveals that approximately 37% of youth in juvenile correctional institutions were disabled (Quinn et al., in press), of which approximately 60% exhibit E/BD. This estimate is much larger than the prevalence of E/BD in the general population, which ranges from 0.5% to 20% of school-aged youth (Bradley, Henderson, & Monfore, 2004). Academic outcome information is important for both youth with E/BD in correctional institutions and in the general population. Therefore, the focus of future research could compare academic outcomes of youth with E/BD in TYC with youth with E/BD in public school settings.

Although reports have varied related to prevalence rates, it is clear that youth with emotional disturbances account for a large portion of youth in correctional institutions. Unfortunately, different professionals assess and diagnose emotional or behavioral disorders in different ways. Examples of various emotional and behavioral
diagnoses include anxiety, conduct disorders, oppositional defiant disorders, and schizophrenia. With the wide array of diagnoses for youth with E/BD, an extension of this study could look at academic outcomes of youth identified as E/BD by breaking down the various categories within the classification of E/BD.

Education is fundamental to the rehabilitation of troubled youths. Helping youths acquire educational skills is one of the most effective approaches to the prevention of delinquency and reduction of recidivism. Access to a high-quality educational is important for youth committed to juvenile corrections, especially for those who have been diagnosed with a disability.
APPENDIX A

LETTER OF APPROVAL FROM THE INSTITUTIONAL REVIEW BOARD
November 11, 2004

Dorotha Monfore  
Department of Technology and Cognition  
University of North Texas  

RE: Human Subjects Application No. 04-370  

Dear Ms. Monfore,  

Your proposal titled “Reading and Math Outcomes for Incarcerated Youth with Emotional and Behavioral Disorders” has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101. **Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.**  

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.  

Please contact Shelia Bourns, Compliance Administrator, ext. 3940 or Boyd Herndon, Assistant Director for Compliance, ext. 3941, if you wish to make such changes or need additional information.  

Sincerely,  

Scott Simpkins, Ph.D.  
Chair  
Institutional Review Board  

SS: sb
APPENDIX B

LETTER OF APPROVAL FROM TEXAS YOUTH COMMISSION
RESEARCH CONFIDENTIALITY AGREEMENT

This agreement is made by and between the Texas Youth Commission (TYC) and Dorothea Monfore, hereinafter called Research Consultant.

Research Consultant has undertaken research related to the work of TYC. This research project is briefly described below. TYC finds that such research is of benefit to TYC and will be in furtherance of the duty assigned to TYC in Section 61.031, Human Resources Code, "to carry on a continuing study of the problem of juvenile delinquency in this state...". Research Consultant will be considered a professional consultant of TYC for the purposes of carrying on the described research and for compliance with Section 58.005, Texas Family Code.

Research Consultant agrees that no publication shall contain the name or other identifying information or photograph of any child who is a ward of TYC.

Research Consultant agrees to provide TYC with a copy of the completed study, containing recommendations which could help TYC.

Research Consultant agrees that any patentable product, process, or idea that results from the performance of the research agreement, and for which TYC has expended appropriated funds, shall become the property of the Texas Youth Commission.

Description of research project: Academic Outcomes of Juvenile Offenders

This agreement is entered into this 17th day of September, 2004.

RESEARCH CONSULTANT

By

TEXAS YOUTH COMMISSION

Research Director

(Title)

(Title)
REFERENCES


College Park: University of Maryland, Educational Policy Research Reform Institute, The Institute for the Study of Exceptional Children.


In Re Gault. 387 U.S. 1 (1967)


