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Factors Associated With Incarceration of Adolescents With Learning Disabilities

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Walden University
2020

Abstract

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Adolescents With Learning Disabilities

by

Sabine Silien Charles

MPH, Kaplan University, 2015

MD, State University of Haiti, 2001

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

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Abstract

Incarceration of adolescents in the United States has grown substantially during the last 3 decades with nearly 53,000 adolescents held every day in correctional facilities. Many researchers have raised concerns about the greater percentage of adolescents with learning disabilities (LDs) in the juvenile system. In the state of Washington, one study in residential placements showed approximately 20% of youth incarcerated had a diagnosed LD. The purpose of this quantitative cross-sectional study was to use the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015 data set to examine possible factors associated with incarceration of youth with LDs. The study was guided by Bronfenbrenner's social ecological model. Using a binary logistic regression, the research questions tested potential relationships between a diagnosis of LD and several factors (sexual/physical abuse, family imprisonment, drug/alcohol abuse) among incarcerated adolescents aged 10 to 19 years. Confounding factors that may influence these associations were controlled. The sample included 637 incarcerated adolescents. Findings showed that specific LD diagnosis had a statistically significant association with sex abuse (OR: .518, 95% CI: .295, .910, p = .022) and physical abuse (*OR*: .581, 95% *CI*: .379, .890, *p* = .013) but no association with history of family imprisonment and substance abuse in this population. Positive social change resulting from this study may include a better understanding of the factors associated with incarceration of adolescents with LD and guidance for adequate collaborative public health interventions to help decrease this burden in the United States.

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Dedication

First and foremost, I dedicate this doctoral study to God for guiding me throughout my life and my endeavors. I dedicate this paper to my husband, Evans Silien: You have been my rock, my number-one fan, my dictionary, my paper reader, my spiritual support, and my technology guy, always reminding me I can do this and that you believe in me. Thank you for always supporting me in anything for more than 25 years together. I could not have done this without your unconditional encouragement.

To my daughters, Amy and Ange Silien, you understood that sometimes Mommy needed time to finish her work, time I should have spent with you girls. Thank you for sacrificing those times; you are the ones who keep me moving every day. I love you so much.

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To my family, my husband, my daughters, my parents, and my sister, thank you for your encouragement and absolute love. To my peers, thank you for challenging my knowledge and for sharing your own experiences, which have encouraged me to move forward. Each of you played an important role in this successful journey. Most of all, thank you, God, for blessing me with so many people to help me throughout this adventure. Thank you!

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Section 1: Foundation of the Study and Literature Review

Background

Incarceration of adolescents is a big concern in the United States (Shapiro, Malone, & Gavazzi, 2018). Many adolescents in the juvenile system are young people with learning disabilities (LDs; Rucklidge, McLean, & Bateup, 2015). Mallett and Kirven (2015) agreed that the majority of adolescents incarcerated have either a history of LDs, maltreatment victimization, and/or mental health/substance abuse difficulties. Other researchers have suggested an association between adolescent incarceration and a history of family imprisonment (Wakefield & Wildeman, 2018). Child maltreatment has also been studied as a possible explanation of delinquent behaviors among adolescents (Jonson-Reid, Kohl, & Drake, 2012). Certain demographic factors, such as age, race, gender, education, and socioeconomic status, have been considered as risk factors in adolescents' incarceration history (Blankenship, del Rio Gonzalez, Keene, Groves, & Rosenberg, 2018; Ewert, Sykes, & Pettit, 2014).

Prisoners with LDs are identified as an at-risk group for recidivism (Reingle Gonzalez, Cannell, Jetelina, & Froehlich-Grobe, 2016). Even though Reingle Gonzalez et al.'s (2016) study sample was adults, their results demonstrated that prisoners with LDs had a greater number of lifetime arrests and were more likely to have committed a violent offense than prisoners without a disability. Reingle Gonzalez et al. also indicated that these prisoners with disabilities have experienced greater disadvantages in terms of low income, foster care, and history of abuse than prisoners without disabilities. Other researchers have expressed the need to understand the factors that contribute to juvenile

delinquency and juvenile recidivism (Doherty, Cwick, Green, & Ensminger, 2016; Ryan, Abrams, & Huang, 2014; Wodahl, Boman, & Garland, 2015). Despite the array of studies available on incarceration and LDs, I found a gap in the literature regarding what relevant factors help explaining the incarceration of adolescents with LDs. Baloch and Jennings (2019) argued that there is a general scarcity of data on inmates.

Decreasing the prevalence of youth incarcerated in the United States requires not only looking into the most vulnerable groups but also understanding what triggers delinquent behaviors among those groups. Understanding factors associated with incarceration of adolescents with LDs could help authorities, parents, and schools prevent incarceration among those youths, help in the rehabilitation of incarcerated kids, and avert recidivism. By decreasing the number of incarcerated adolescents with LDs, the prevalence of mass incarceration will also decrease, as well as the economic burden associated with the problem. Koo (2016) agreed that the growth of the prison population shows that efforts have not been made to understand and support inmates with LDs. The findings of the current study, therefore, help comprehend factors associated with incarceration of adolescents with LDs, encourage other researchers to look deeper into the issue, and possibly guide decisions that could be appropriate to provide services for those at-risk juvenile offenders.

In this section the problem statement, the purpose of the study, research questions and hypotheses were defined, underpinned by a theoretical framework, the social-ecological model (SEM). A literature review based on studies about incarceration in general and incarceration of adolescents with LDs, as well as all the variables used in this

study was presented. In addition, the significance of conducting the study, the assumptions, scope and delimitations, and limitations of the study were provided.

Problem Statement

The prevalence of adolescents with LDs in the incarceration system is much greater than those in the general youth population (Cheely et al., 2012; Mallett, 2014a; Read, 2014). While 8% to 10% of U.S. children under age 18 have some type of LD (National Institute of Health [NIH], 2019), the percentage of incarcerated youth with LDs typically ranges from 30% to 60% (Evans, Clinkinbeard, & Simi, 2015; Rucklidge et al., 2015; U.S. Department of Education, 2017). Those numbers suggest that young individuals with LDs are more likely to engage in delinquent behavior than individuals without disabilities (Pryor-Kowalski, 2013; Shandra & Hogan, 2012). Juvenile delinquency is a serious public health issue in the United States (Barnett et al., 2015). In 2017, nationally, 809,700 juvenile arrests were processed by the Juvenile Justice Department, and in October 2016, 45,567 juvenile offenders were held in residential placement facilities (U.S. Department of justice, 2016). Incarceration has been associated with poorer individual health outcomes (Barnert, Perry, & Morris, 2016; Kinner & Young, 2018; Massoglia & Pridemore, 2015), mental health issues (Kinner & Young, 2018; Sugie & Turney, 2017; Winkelman, Frank, Binswanger, & Pinals, 2017), and poorer adult health outcomes (Barnert et al., 2016). Incarceration affects not only the health and well-being of the person incarcerated but also the family, neighbors, and the community (Brinkley-Rubenstein, 2013; Massoglia & Pridemore, 2015; Nowotny, Rogers, & Boardman, 2017; Schnittker, Uggen, Shannon, & McElrath, 2015; Turney,

2017; Wilderman, 2016). The societal cost of incarceration is also high, with an estimated cost of $50 billion to $80 billion spent on corrections annually in the United States (Ben, 2019; Roos et al., 2016).

These challenges make it important to understand the factors that may favor the incarceration of adolescents with LDs. While understanding those factors has been the premise of some studies (Hyun, Hahn, & McConnell, 2014; Mallett, 2014a), less research has been conducted to investigate the prevalence of factors on the incarceration of adolescents with LDs (Hyun et al., 2014; Rucklidge et al., 2015). By knowing what factors are more prevalent among adolescents incarcerated with LDs, more interventions can be developed to act on those determinants to prevent future incarceration of adolescents, facilitate their integration at school or within their environment, and at the same time relieve society of the social, mental, and economic burden associated with incarcerated youth (Schnittker, 2014). Some authors believed that to decrease the prevalence of people with LDs in the judicial system, those individuals' specific needs should be addressed (Beckford, 2016; McNamee & Staunton, 2017; Zimmer, 2018). Others acknowledged that the link between youth with LDs and incarceration needs further investigation to delineate the specific causes and subsequent solutions (Mallett, 2014a; Shandra & Hogan, 2012).

Certain researchers considered that adolescents who have been victims of childhood abuse, particularly sexual and physical abuse, are more likely to engage in delinquent behaviors that can lead to their incarceration (McCuish, Cale, & Corrado, 2017; Moore, Gaskin, & Indig, 2013). Other researchers have linked adolescents'

incarcerations to a family history of imprisonment (Martin, 2017; Wakefield &

Wildeman, 2018) or a history of drug/alcohol use (Mallett, 2015). Unless the real factors

related to the incarceration of adolescents with LDs are being assessed and studied,

potential solutions to resolve this public health issue could be difficult to find (Cheely et

al., 2012; Kincaid, 2017), and the burden of disrupted relationships, community

fragmentation, and hardship on service systems inflicted by incarceration could be

challenging to overcome (DeHart, Shapiro, & Clone, 2018). This study, therefore, fills a

gap in the research by focusing on factors associated with incarceration of adolescents

with LDs.

Purpose of the Study

The purpose of this secondary analysis of cross-sectional data was to determine

what factors are more frequent among incarcerated adolescents with LDs. A secondary

data set of incarcerated juvenile offenders in Washington state, which includes different

characteristics of incarcerated youth in that state, was examined to test differences and

find the most relevant determinants. The dependent variables were sexual abuse, physical

abuse, family imprisonment, alcohol abuse, and drug abuse. The independent variable in

this study was a specific LD diagnosis. Demographic determinants (age, gender, race,

education, and family income) were used as control variables.

Based on the expected findings, this study could be unique because it addresses

the gap for understanding if there is one factor or a group of factors more prevalent

among adolescents incarcerated with LDs. The study sought to determine if factors of

being sexually or physically abused, a history of family imprisonment, and drug/alcohol

abuse may be the causes of criminal activities among adolescents who experience LDs and also if demographic determinants, such as age, gender, race, education, and family income, may perpetuate disadvantages among those adolescents (Cheely et al., 2012; Reingle Gonzalez et al., 2016; Kincaid, 2017).

Research Questions and Hypotheses

RQ1: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been sexually abused, after controlling for age, gender, race, education level, and family income?

$H_0$1: There is no association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a1: There is an association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ2: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been physically abused, after controlling for age, gender, race, education level, and family income?

$H_0$2: There is no association between a diagnosis of a specific LD and having

been physically abused after controlling for age, gender, race, education level, and

family income among adolescents aged 10 to 19 years incarcerated in the state of

Washington.

H_a2: There is an association between a diagnosis of a specific LD and having

been physically abused after controlling for age, gender, race, education level, and

family income among adolescents aged 10 to 19 years incarcerated in the state of

Washington.

RQ3: Among adolescents aged 10 to 19 years incarcerated in the state of

Washington, is there an association between a diagnosis of a specific LD and a history of

family imprisonment, after controlling for age, gender, race, education level, and family

income?

$H_0$3: There is no association between a diagnosis of a specific LD and a history of

family imprisonment after controlling for age, gender, race, education level, and

family income among adolescents aged 10 to 19 years incarcerated in the state of

Washington.

H_a3: There is an association between a diagnosis of a specific LD and a history of

family imprisonment after controlling for age, gender, race, education level, and

family income among adolescents aged 10 to 19 years incarcerated in the state of

Washington.

RQ4: Among adolescents aged 10 to 19 years incarcerated in the state of

Washington, is there an association between a diagnosis of a specific LD and a history of

alcohol and drug abuse, after controlling for age, gender, race, education level, and family income?

$H_0$4: There is no association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a4: There is an association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

Framework

The theoretical framework for this study was the social-ecological model (SEM). SEM can provide the basis for understanding the multiple factors that can lead to incarceration of adolescents with LDs because SEM outlines various levels of influence in an individual's life (DiClemente, Salazar, & Crosby, 2013; Glanz, Rimer, & Viswanath, 2015).

Bronfenbrenner's SEM suggests that the nature of the community in addition to individual demographic indicators, such as race, gender, education, and family social-class background, make a difference in people' s attitudes or behaviors when facing a situation or event (Nuss, Williams, Hayden, & Huard 2012; Rosa & Tudge, 2013). I used this theory in this study because it allows a deep understanding of how, at the individual level, certain adolescents may be more disadvantaged in life than others, leading to certain behaviors and to incarceration.

Additionally, there may be complex social determinants, such as community, interpersonal, societal, and personal interactions, that may impact the behaviors and understanding of adolescents with LDs (Banerjee & Firtell, 2017; Chatterji, Joo, & Lahiri, 2012). SEM allowed me to examine the joint influence of behavioral, developmental, and environmental factors on adolescents with LD exposures and responses to various situations and events. This framework is appropriate to comprehend the design of policies and interventions targeting multiple settings, which could influence the well-being of adolescents with LDs.

Nature of the Study

The study was quantitative research using a correlational approach. I used a cross-sectional method to gathering quantifiable information that can be used to statistically analyze the factors associated with the incarceration of adolescents aged 10 to 19 years with LDs. The maximum age of juvenile court jurisdiction is 18 in most states, and 10 is the most used minimum age for delinquency among states (National Juvenile Defender Center, n. d.), this age group was appropriate for the study because the adolescence period roughly ranges between ages 10 and 19 (Adolescent Health Committee, 2003). In this study, I sought to determine the degree to which the independent variable (a specific LD) can predict the likelihood of the dependent variables (sexual abuse, physical abuse, family imprisonment, and alcohol abuse and drug abuse) among incarcerated adolescents in the state of Washington, adjusting for age, gender, race, education, and family income (control variables). The design was ideal because I used secondary data to answer the research questions.

Literature Search Strategy

The literature used in this study included previous articles published in peer-reviewed journals related to incarceration in general and incarceration of young people. Most articles were published in the last 5 years, but some older articles containing important details about the study variables were also reviewed. The literature was located on ProQuest, Walden Library, Google Scholar, MedlinePlus, books relevant to the topic, and government websites like the Office of Juvenile Justice of Delinquency Prevention, the National Institute of Health, or the U.S. Department of Education. Other articles were located through references from the articles reviewed. The keywords used in this literature search were *incarceration, adolescents or teens or teenagers, learning disabilities, adolescents with learning disabilities, incarceration and adolescents, incarceration and learning disabilities, incarceration and education level, incarceration and sex or gender differences, incarceration and economic status, incarceration and sexual abuse, incarceration and physical abuse, adolescent incarceration and family imprisonment history, incarceration and alcohol abuse, and incarceration and drug abuse.*

The literature review was used to demonstrate that, while some authors have also tried to delineate the factors related to the incarceration of adolescents with LDs (Mallett, 2014b; Rucklidge et al., 2015), all have underlined the need for future investigation to comprehend those determinants. This review reinforced the need for this study, which could help determine what factor or combination of factors are more relevant to the incarceration of adolescents with LDs.

Literature Review Related to Key Concepts

In this section, I examine literature on incarceration, prevalence, disadvantages, and predictors. The independent variables are reviewed to demonstrate their link with incarceration. I also define LDs, prevalence, and risk factors and discuss the association of LDs with incarceration. The gap in the literature related to the incarceration of adolescents with LDs is described.

Incarceration

Incarceration is one of the main forms of punishment for crimes perpetrated in the United States. With a total prison population of 2.2 million in 2016, and 11 million admissions each year, the United States has the highest rates of incarceration in the world (Ojikutu, Srinivasan, Bogart, Subramanian, & Mayer, 2018; Weiss-Riley et al., 2018). The United States has more than one fifth of the world's total prison population (Clear & Frost, 2014; Jewkes, Crew, & Bennett, 2016; Travis, Western, & Redburn, 2014). Although incarceration may be seen as an effective way to give people closure and time to rethink their behavior, it has a negative impact on the health and well-being of imprisoned individuals (Maroto, 2015; Wildeman, Noonan, Golinelli, Carson, & Emanuel, 2016).

Many researchers have written about the negative effects of incarceration on individuals and society. Maroto (2015) examined the relationship between the length and the number of times incarcerated and the accumulation of wealth of a formerly incarcerated individual, with an emphasis on home ownership and net worth. Maroto pointed out how the stigma of having been incarcerated closed the door to some

employment opportunities, to voting, and even to buying a house. Maroto showed that individuals who had been incarcerated generally had lower average wealth than individuals who had never been in prison. Wilderman et al. (2016) also hypothesized that incarceration has a negative effect on people's well-being, particularly among a certain group. Through quantitative analysis, the authors found that the mortality rate among prisoners is higher than in the general population (Wilderman et al., 2016). Incarcerated African American men were found to have the highest mortality rate among prisoners, and their mortality rate was higher than that of African American men across all states who were not in prison (Wilderman et al., 2016). Blankenship et al. (2018) illustrated the negative impact of incarceration on measures of individuals' well-being. Blankenship et al. underlined that those measures are major social determinants of health, and when they are unbalanced, they can lead to inequality issues affecting individuals and communities, particularly racial disparities.

Juvenile court started in the late 19th century; before that, delinquent youth were held in adult prisons (Center on Juvenile and Criminal Justice, 2019). In the beginning, the mission of the juvenile court was to provide rehabilitation and protective supervision for youth, but in the mid-20th century, the disparities in treatment were becoming transparent (Center on Juvenile and Criminal Justice, 2019). In the late 20th century, juvenile incarceration expanded when the population brought their concerns about the rise of juvenile crimes, forcing many states to pass punitive laws, including mandatory sentences and automatic adult court transfer for certain crimes (Center on Juvenile and Criminal Justice, 2019). Today, although states are working hard to reduce the number of

youths incarcerated, the United States has a higher rate of incarcerated youth than any other country (McCarthy, Schiraldi, & Shark, 2016; Travis et al., 2014), and certain determinants seem to be more prevalent among incarcerated youth (Turney, 2014).

Race and Incarceration

The prevalence of incarceration is higher among African American communities than any other population (Blankenship et al., 2018; Cottrell, Herron, Rodriguez, & Smith, 2019). In 2014, 34% (2.3 million people) of the total correctional population were African American (National Association for the Advancement of Colored People, 2019), and African Americans are overrepresented in the incarcerated population in all groups whether men, women, or adolescents (Blankenship et al., 2018; National Association for the Advancement of Colored People, 2019). African American youths are more likely to be charged than Caucasian youths even for the same offense (Brinkley-Rubinstein, Craven, & McCormack, 2014; Stein et al., 2015).

Other researchers have confirmed the disproportionate representation of African American youths in the juvenile system. Brinkley-Rubinstein et al. (2014) suggested that African American youths are disproportionately incarcerated compared with Caucasian youths of the same age group. Brinkley-Rubinstein et al. pointed out that even though African Americans account for only 16% of the total number of adolescents in the country, they represent 70% of youth involved in school-related arrests and 40% of the total youth currently incarcerated. Tucker Sr. (2017) acknowledged that African American youths are disproportionately represented in the judicial system. Tucker Sr.'s study revealed that African Americans represent 26% of juvenile arrests, 44% of youth

who are detained, 46% of the youth who are judicially waived to criminal court, and 58% of the youth admitted to state prisons. Vogel and Porter (2016) also identified the disproportional representation of African Americans compared to Caucasians in the judicial system, but they recognized that age structure should be considered as well in a study across incarceration disparities.

Age and Incarceration

The relationship between age and incarceration has been the interest of certain researchers. Vogel and Porter (2016) conducted a study using the Bureau of Justice Statistics and the 2010 decennial census data, showing that people aged 30 to 41 years tend to have the highest rate of incarceration. The Federal Bureau of Prisons (2019) corroborated Vogel and Porter's findings. Vogel and Porter also demonstrated that, across all age groups, African Americans were disproportionately represented when compared to Caucasian or Hispanic groups, and the Hispanic group had a higher rate of imprisonment than the Caucasian group across all ages. Vogel and Porter's explanation for those disparities is the difference in the age structure of those populations. The authors pointed out that the age distribution of the U.S. population varies substantially across these three populations of interest, supposing that the relatively younger ages of the African American and Hispanic populations contribute to racial and ethnic disparities in incarceration (Vogel & Porter, 2016). Campbell and Vogel (2019) found similar results, claiming that the rapid divergence of African American and Caucasian age structures could be an explanation for the racial tensions existing around mass incarceration.

Among adolescents, most incarcerations occur in the 16–17 age group (Mallett, 2015; Office of Juvenile Justice of Delinquency Prevention, 2017). Mallett (2015) underlined that most youth incarcerations occur with African Americans, who account for 60% of the total incarcerated youth, followed by Hispanics at 33%. The age of incarceration varies from state to state. The minimum age for incarceration is 10 years for 12 states, 11 for one state (Nebraska), 12 for two states (Massachusetts and California), 8 is the minimum age in three states (Arizona, Nevada, Washington), age 7 is the minimum in four states (Connecticut, Maryland, New York, North Dakota), and North Carolina has 6 as the minimum age (National Juvenile Defender Center, n.d.). The remaining 27 states have no minimum age to prosecute a child. In most states, the maximum age of prosecution in the juvenile system is 18 (National Juvenile Defender Center, n.d.).

The issue of young people being incarcerated in the United States has captured the attention of many researchers. Mallett (2015) revealed that formerly incarcerated adolescents may develop emotional disturbances, which can have an impact on their health and their function at home, at school, and in the community. The author also pointed out that formerly incarcerated adolescents have less independence and social skills, which could prevent them from integrating into society as adults. Mallett showed that incarceration does not prevent future crimes; to the contrary, the longer youths are incarcerated, the higher their chance of recidivism. Upadhyayula, Ramaswamy, Chalise, Daniels, and Freudenberg (2017) illustrated the negative health and social effects of incarceration on young people. Upadhyayula et al. underlined that being incarcerated reduced the chance of getting a job by 50%, increased stigmatization among young

people with minority status, and impacted young people's chance of continuing

education. Upadhyayula et al. remarked that without education and employment, former

youth offenders often return to criminal activity. The need to understand incarceration

among young people to reduce or eliminate the adverse consequences incarceration has

on their lives was also a concern in Mallett's study. Mallett (2015) agreed that this

understanding will require the consideration of a combination of risk factors, such as

poverty, disorganized neighborhoods, and learning problems.

Incarceration and Economic Status

Poverty has been recognized as one of the risk factors for incarceration; many

researchers have claimed that people with low economic status tend to be more

incarcerated than others. Travis et al. (2014) underlined that most people who are arrested

and incarcerated are poorly educated, African American or Latino, and come from low-

income neighborhoods in inner cities. Western (2007) claimed that African American

young people with low socioeconomic status are more involved in the criminal justice

system. Western showed that incarceration increases economic inequality among groups,

reducing earning and employment potential of formerly incarcerated people, without

mentioning the stigma that imprisonment may carry. Gottlieb (2017) supported the idea

that incarceration contributes to economic inequality in the country. Lofstrom and

Raphael (2016) also wrote about the disproportionate experience of poor and minority

communities in the criminal justice system. Lofstrom and Raphael revealed that crime

seems to be geographically concentrated in poorer neighborhoods with proportionally

larger minority populations. Lofstrom and Raphael concluded that there was a need to

develop public policy not only to decrease incarceration in the United States but also to

reduce the inequality of criminal justice sanctioning.

Gender and Incarceration

Men are more likely than women to be incarcerated and receive harder

sentences—even for the same crime (Butcher, Park, & Morrison Piehl, 2017). Harrison

and Beck (2006) highlighted that incarceration is more likely among men with

socioeconomically disadvantaged backgrounds. Butcher et al. (2017) sought to

demonstrate the difference in treatment and sentencing among men and women in the

justice system. Butcher et al. showed that, on average, women are 14% to 20% less likely

to be incarcerated and receive 12% to 44% shorter sentences for the same offense.

Butcher et al. argued that there is no plausible explanation for the differences in

incarceration between men and women.

The disproportionate representation of incarcerated men, compared to women, is

also supported by other researchers. Mears, Cochran, and Bales (2012) pointed out that

women represent a much smaller percentage of the correctional system population than

men do, and men are more punitively sanctioned, even for the same severity of the

offense. Mears et al. highlighted that the disadvantages of incarceration overshadow what

legal authorities call the benefits of being imprisoned, emphasizing that incarceration

contributes to more rather than less or no offending. Wilderman (2016) stated that

incarceration causes harm not only for the individual incarcerated but also for the

individual's family and community. When it comes to the younger population, the

recidivism rate is even greater, compromising their health, future, and well-being. Pettus-

Davis, Renn, Lacasse, and Motley (2018) remarked that three quarters of people will be rearrested for a new crime within 5 years of release, after pointing out that 90% of the population in prison is male. Brinkley-Rubinstein et al. (2014) acknowledged that young African American men of low socioeconomic status are most likely to enter the criminal justice system.

Incarceration and Education Status

Many studies have shown that inmates have significantly lower rates of educational attainment (Ewert et al., 2014; Hjalmarsson, Holmlund, & Lindquist, 2015; Meiners & Winn, 2014; Turney, 2014). Ewert et al. (2014) revealed that students who drop-out high schools have a higher chance of being incarcerated, and still the rate is higher for young African American (60% of dropout are imprisoned at some point in their lives) compared to young Caucasians (only 30% of dropout). Ewert et al. described that on any given day in prison or jail in the country, over one in three young people incarcerated is an African American, men high school dropout. Pettit and Gutierrez (2018) stated that "no other group suffers the overwhelming likelihood of imprisonment experienced by young African American men in the United States who do not complete high school". While the authors underlined that Latino men tend to be more incarcerated than Caucasian people, Pettit and Gutierrez acknowledged that the African American race has suffered more in the criminal system and recognized the negative impacts that incarceration has brought in the African American people lives, their families, their communities, and the society. Hjalmarsson et al. (2015) supported that incarcerated people tend to be less educated than the rest of the population. In their literature findings,

Hjalmarsson et al. found out that 41% of people in prison did not complete high school, while in the general population, it was only 18%. Hjalmarsson et al. demonstrated that the likelihood of conviction can be decreased by 6.7% and incarceration by 15.5% for only one additional year of schooling. Ewert et al. (2014), Hjalmarsson et al. (2015), and Pettit and Gutierrez (2018) underlined the racial and education inequalities in incarceration and urged policymakers to consider the benefits of developing policies that would increase education, and maybe consider other forms of punishment instead of incarceration.

Other authors like Meiners and Winn (2014) sustained the idea of racial and education inequalities in incarceration. Meiners and Winn underlined how in the past 20 years, the country has spent six times more money on building prisons than on higher education; the authors put emphasis on the overrepresentation of undereducated youths of color in the juvenile system. Meiners and Winn also pointed out the negative effects of incarceration and argued that maybe the country should find a way to respond to harm without relying on prisons and punishment. Turner (2014) joined Meiners and Winn's idea by recognizing that incarceration creates more social inequities among the population.

Childhood Abuse

Childhood abuse can be defined as any harm, potential harm, or threat of harm to a child (Centers for Disease Control and Prevention [CDC], 2019a). Every year, approximately 40 million children worldwide are abused (Al Odhayani, Watson, & Watson, 2013), and in the United States, nearly 700,000 children are abused annually

(National Children's Alliance, 2014). There are different types of abuse (sexual, physical, emotional, and neglect), but I will focus only on sexual and physical abuse for this study. These subsequent paragraphs will review the definition and prevalence of the variables physical and sexual abuse and the impact of childhood abuse on incarceration.

Physical Abuse

Physical abuse is the intentional use of physical force that can result in physical harm to a person (CDC, 2019a). Physical abuse can result in simple injuries such as red marks, cuts, welts, bruises, to more serious ones like muscle sprains, or broken bones (National Child Traumatic Stress Network, n.d.). Physical abuse is very common against children in the country; in 2014, among the 311,000 children served by the Children's Advocacy Centers, 20% disclosed physical abuse which is approximately 60,897 children (National Children's Alliance, 2014), representing the number for only one organization. Nationally, 17.2% of children who suffered maltreatment have been reported to be a victim of physical abuse (National Children's Alliance, 2014). The impact of physical abuse on children are far-reaching, Norman et al. (2012) revealed that individuals who have been victim of physical abuse have a higher risk of developing depressive disorders than non-abused individuals, an increased risk of anxiety disorders, double the odds of childhood behavioral and conduct disorders, an increased risk of alcohol problem drinking, and drug use. Physical abuse also increases the risk of suicidal behavior among victims when compared with non-abused individuals (Norman et al., 2012). Afifi, Mota, Dasiewicz, MacMillan, and Sareen, (2012) argued that harsh physical punishment alone

increases odds of mood disorders, anxiety disorders, alcohol and drug abuse/dependence, and several personality disorders.

Sexual Abuse

Sexual abuse is pressuring or forcing a child/person to engage in sexual acts (CDC, 2019a). Before the age of 10 years old, one in eight girls and one in four boys will be a victim of sexual violence; between 11-17 years old one in three women and nearly one in four men will be a rape victim (CDC, 2019b). The consequences of sexual violence can be physical like bruising or genital injuries, and psychological such as depression, anxiety, and suicidal thoughts (CDC, 2019b). Sexual violence is also related to negative health behaviors like drinking, drug abuse, smoking, and risky sexual attitudes (CDC, 2019b), and physical health problems such as cardiovascular diseases, diabetes, cancer, unwanted pregnancy, and sexually transmitted diseases (Summer et al., 2015). Sexual abuse includes not only rape, but sexual assault, incest, and the commercial sexual exploitation of children (Murray, Nguyen, & Cohen, 2014). The risks factors of child abuse are low family support, high poverty, low parental education, absent or single parenting, parental substance abuse, domestic violence, mental health problems, children who are impulsive, emotionally needy, and who have learning or physical disabilities (Murray et al., 2014). Murray et al. also highlighted that the risk of sexual abuse increases with adolescence.

Childhood Abuse and Incarceration

Many researchers showed that adolescents who have experienced child maltreatment or have been sexually abused have a higher chance of being incarcerated

than those who were not (Grimshaw, 2008; Letourneau, Chapman, & Schoenwald, 2008; McCuish et al., 2017). Jonson-Reid et al. (2012) demonstrated that child maltreatment predicts negative outcomes in later childhood and early adult life. Using a sample of 5,994 low-income children, Jonson-Reid et al. found there was a strong relationship between the number of child abuse reports and violent delinquency. The authors also highlighted the effect that child maltreatment has not only on delinquent behavior but on the mental health of those maltreated children as they grew up. Wang et al. (2012) also indicated that child maltreatment is associated with mental health problems, adult personality disorders, and subsequent criminal behavior. Jonson-Reid et al. (2012) noted that if childhood adverse events are controlled and those children received adequate interventions, certain adult outcomes may desist, which demonstrate the necessity of early prevention programs to help children victims of child abuse.

In addition, Moore et al. (2013) described the prevalence of young offenders who have been subject to child maltreatment. Using the 2009 New South Wales Young People in Custody Health Survey, conducted in nine juvenile detention centers, Moore et al. collected a sample of 291 young people aged 13 to 21 years. Moore et al. showed that 60% of the sample reported any child abuse or neglect, and female offenders were more likely to report childhood maltreatment than young male offenders (40% vs 17%). The results of Moore et al. are corroborated by Baglivio and Epps (2016). Baglivio and Epps's study found out that juvenile offenders examined were four times more likely to have ACE or adverse childhood experiences (childhood abuse, neglect, family dysfunction) scores of 4 or above with 10 classified as exposed to all categories of ACE.

Baglivio and Epps underlined that the prevalence ranged from 12% to 82% for each

ACE. Baglivio and Epps (2016) and Moore et al. (2013) accentuated the need to assess

abuse among young incarcerated people in order to provide them with the appropriate

intervention during incarceration and after to prevent relapse. Jonson-Reid et al. (2012)

also proposed in their study, the development of programs that target abused children to

prevent future delinquent behaviors. Johnson et al. emphasized the significance of

etiology research, and to discriminate between children who have single and multiple

maltreatment events. Moore et al. (2013) also expressed the need for more longitudinal

research assessing multiple types of abuse and neglect among young offenders.

On the other hand, McCuish et al. (2017) analyzed if histories of abuse among

family members are related to youth abuse experiences and sexual offending in

adolescence. McCuish et al. used a sample of 482 incarcerated male adolescents, some

were sex offenders (67) and some non-sex offenders (415) to test the relationship. While

reviewing the literature, McCuish et al. found that childhood sexual abuse is the most

important developmental factor associated with adolescent sexual offending, but not

necessarily means that every child who had been sexually abused will become an

adolescent sexual offending. McCuish et al. also showed that physical abuse experiences

were highly related to the development of antisocial behavior and aggression, aggressive

and nonaggressive sexual fantasies, and subsequent sexual coercion. Essabar, Khalqallah,

and Dakhama (2015) also described the negative impacts of childhood sexual abuse on

the physical and mental health of children, which may range from anxiety, regression in

school performance, social and behavior problems to suicide attempt. Essabar et al.

showed that most cases (48%) of sexual abuse happen between ages 6 and 10 years, and

before the age of 16 years, boys were more likely to abuse (68%), but after 16 years old,

most of the abuse (82%) was found in the female group. In addition, McCuish et al.

found out that children who have witnessed intrafamilial violence were likely to commit

sexual offenses as adolescents which can lead to their incarceration. McCuish et al.

demonstrated that compared with adolescents' non-sex offenders, the families of

adolescents' sex offenders were more likely to have a high prevalence of abuse, sexual

abuse experiences. Essabar et al. pointed out that child abuse not only affects the victim

but also the whole society. McCuish et al. highlighted the need for prevention efforts

targeting youth who are at risk of any type of violence and designated the need for more

studies to assess other populations or settings because the study was based on a unique

sample. Essabar et al. (2015) wrote not only about the need for developing policies but

also multidisciplinary interventions to prevent and manage cases of child sexual abuse.

Essabar et al. recommended the development of improved studies to provide data on the

accurate magnitude of child sexual abuse and on its distribution, and most of all on the

factors that point children to vulnerability. Both studies (McCuish et al. and Essabar et

al.) are very important because of the empirical evidence provided regarding the extent of

the association between childhood abuse and incarceration of adolescents. Although

McCuish et al. and Essabar et al. justified an association between childhood abuse and

incarceration of adolescents, they did not provide any information about whether or not

there might be a difference between incarcerated groups of adolescents, for example,

does past abuse have a greater impact on adolescents with LDs. Therefore, further

analyses are essential to address this limitation, this current study is intended to review child abuse prevalence within incarcerated adolescents with LDs and compare this prevalence with incarcerated adolescents without LDs. The results of this current study could help elucidate if childhood abuse is a relevant factor in the incarceration of adolescents with LDs.

Incarceration and Family Imprisonment History

A history of incarceration within the family has been noted by many researchers to have a negative effect on the health and well-being of children and adolescents, whether, on their mental health or social behavior, their performance or attitudes at school, their economic life, and many of those children seem to engage in criminal activity (Lee, Fang & Luo, 2013; Martin, 2017; Wakefield & Wildeman, 2018). Lee et al. (2013) described the relationship between parental incarceration and the physical and mental health outcomes of young adults. Lee et al. reported that 52% of state and 63% of federal inmates were found to be parents, meaning that 1.7 million children in the country have an incarcerated parent. Using data from the Wave IV National Longitudinal Study of Adolescent Health, Lee et al. analysis showed that African American and Hispanic individuals had the highest prevalence of parental incarceration, and children with an incarcerated parent were more likely to have certain conditions like heart disease, asthma, obesity, depression, anxiety or posttraumatic stress disorder, in addition to the disadvantages, disruptions, and instability that those children are facing every day. However, the most common consequence of parental incarceration for Martin (2017), is

antisocial behaviors of children/youth which can lead to the development of criminal

activities and lead to their incarceration.

The long-term public health implications of parental incarceration on the children

for Lee et al. (2013), is the fact that those children could mirror the experiences of their

parents and end up incarcerated at a younger age, because parental absence may increase

odds of low parental monitoring and supervision, which in turn may increase the

likelihood of risky and negative behaviors among those children. Martin (2017) pointed

out that children with an incarcerated parent are six times more likely to be incarcerated

themselves, and the bigger rates were found among African Americans and Hispanics as

Lee et al. (2013) also pointed out in their study. Martin highlighted that parental

incarceration affects educational attainment, the economic well-being of those children,

and their mental health which can lead to criminal activities. Martin emphasized the

importance of a social ecological system to provide the necessary support to children

with incarcerated parents.

For other researchers like Wakefield and Wildeman (2018), the prevalence of

parental incarceration has increased in the United States over the years and had led to

many negative impacts within American families. The authors showed that

approximately 7% of all minor children had experienced the incarceration of a residential

parent at some point during childhood, and parental incarceration is found among the

most vulnerable families. Wakefield and Wildeman pointed out that in addition to the

multiple consequences associated with an absent parent (family instability,

unemployment, socioeconomic disadvantage, substance use, and mental health

problems), parental incarceration increases disadvantages among families. Earlier in 2014, Wilderman has described how paternal and maternal incarceration influences the risks of severe disadvantages on children, from economic hardship to the risk of child homelessness, and especially within the African American group. Wakefield and Wildeman showed that parental incarceration increases aggressive behaviors by 18–33% among affected children and youth which can lead to the incarceration of those children and youth. Wilderman (2014) pointed out that the risk of child homelessness is even greater for children who experienced paternal incarceration and underlined that all the disadvantages caused by parental incarceration increase the disproportionate likelihood of those children of encountering the penal system. Wakefield and Wildeman underlined the importance of developing policies that can decrease imprisonment and provide support to the most vulnerable families. The studies of Lee et al. (2013), Wakefield and Wildeman (2018), and Wilderman (2014) were valuable to help lay the foundation of the impact of family imprisonment on the future of children's incarceration. However, based on their results, the development of more quality research is needed to assess the association between family imprisonment and children's well-being and behaviors resulting in their incarceration and increasing the issue of mass incarceration in the United States. Assessing the issue of children being incarcerated as a result of past family imprisonment should also be studied not only in the general population as Lee et al. (2013), Wakefield and Wildeman (2018), and Wilderman (2014) did but also incarcerated groups should be compared to examine if the impact of family imprisonment is more prevalent within a particular group or not which this study is intended to do.

Drug/Alcohol Abuse and Incarceration

Substance abuse plays a role in crimes and criminal justice; in 2014, an estimated of 68 percent of local jail inmates reported having symptoms related to drug dependence, abuse, or both the year prior to their incarceration (National Criminal Justice Association, 2018). Alcohol abuse among young people is a public health concern, the 2016 National Survey on Drug Use and Health reported that 19% of youth aged 12 to 20 years drink alcohol (CDC, 2018). Alcohol abuse among young people lead not only to legal problems but also affects their health, their adaptation at school and within their community, and can lead to their death (CDC, 2018). According to Volk (2014), 17% of youth entering the juvenile justice system have substance abuse disorders, and when counting those in detention, the number rises to 39 %.

Other researchers have investigated the relationship between alcohol and illicit drug use and the criminal justice system. Vaughn, Salas-Wright, Cordova, Nelson, and Jaegers (2018), using the National Survey on Drug Use and Health (2002-2013), showed that substance abuse is highly used among adolescents in the country with 49.9% of all adolescents have used an illicit drug by the 12th grade, and 70.1% have tried alcohol at some point. Vaughn et al. pointed out that, although African American seems to be highly represented in official crime statistics, African Americans engage less frequently in the use of most illicit drugs and binge drinking than Caucasians and Hispanics. On the other hand, Hartshorn, Whitbeck, and Prentice (2015) indicated that drug or alcohol dependency is very high among American Indian inmates with a report of 100% inmates in a Great Plains prison reported having a dependency. Hartshorn et al. underlined that

early alcohol and drug use are highly linked to delinquent behaviors among American Indian adolescents, and one-half of adolescents who were arrested met criteria for conduct behavior (53.2%). Hartshorn et al. showed that substance use disorders are strongly associated with conduct disorder; an adolescent with a delinquent behavior was three times more likely to be arrested than an adolescent without a delinquent behavior after controlling for substance abuse disorders. Hartshorn et al. concluded that adolescents with problem behaviors are also most at risk for persistent problems with alcohol and drugs and involvement with the criminal justice system into adulthood. Hartshorn et al. proposed early interventions that can manage those substance used disorders even before these young people get in contact with criminal justice. But, Hartshorn et al. also considered that their study may be hard to generalize because it was based on a single Indigenous culture. They recommended that other researchers investigate the correlation between substance use disorders and incarceration of adolescents, which can help justify the need for the current study.

A number of researchers agreed that the link between crime and alcohol and another drug use is well established. For example, Johnson, Pagano, Lee, and Post (2018) indicated that the use of alcohol and other drug is four times higher among criminal offenders than among the general population. Clair et al. (2011) demonstrated that alcohol use was highly reported among adolescents' men incarcerated (90%), and adolescents involved in the juvenile justice were twice as likely to have used alcohol as compared to adolescents who were not arrested. According to Johnson et al. (2018), substance use is usually associated with violent crimes, with alcohol use implicated in

family violence and illicit drug in crimes among youth. Substance abuse creates social

isolation and at the same time, social isolation leads to substance use, relapses, and

criminal activities (Johnson et al., 2018). Clair et al. showed that alcohol consumption

among adolescents is influenced by peer influence, and motivation to change the negative

behavior depends on the quantity of alcohol consumed per day by the youth. Clair et al.

highlighted that alcohol use can lead to incarceration of young people and that

incarceration may impact on adolescent's current motivation to change alcohol use.

However, Clair et al. concluded that the results of their study may not be generalizable

because of the sample size used (114 adolescents) and its focus on incarcerated men.

Clair et al. recognized the need for other research with a more heterogeneous sample.

Johnson et al. (2018) emphasized the need for interventions that can reduce social

isolation, interrupt alcohol and other drug use activities or relapse, and criminal activities.

Johnson et al. also asked for future research to explore the multifaceted conditions that

contribute to social estrangement and lead adolescents to commit crimes when

intoxicated. This current study could reinforce Johnson et al. limitations by analyzing the

prevalence of alcohol/drug use among incarcerated adolescents not only among both

sexes but also by looking into a vulnerable group such as adolescents with LDs.

Learning Disabilities

LDs, also called learning differences or learning disorders, refer to a

heterogeneous group of disorders manifested by significant difficulties in the acquisition

and use of listening, speaking, reading, writing, reasoning, or mathematical abilities

(National Joint Committee on Learning Disabilities, 2016). In the United States, 8 to 10%

of children under 18 years of age have some type of LD (NIH, 2019), the percentage of

incarcerated youth with LDs typically ranges from 30 to 60% (Evans, Clinkinbeard, &

Simi, 2015; Rucklidge et al., 2015; U.S. Department of Education, 2017). In terms of

demographic characteristics, 66% of students with LDs are male across different racial

and ethnic groups (National Center for Learning Disabilities, 2014), but Black and

Hispanic students are overrepresented in many states. For students receiving special

education disability, Mallett (2014a) found that Hispanics are 17% more likely than

Caucasians to be represented, African Americans are 43% more likely, and American

Indians are 80% more likely. Students with LDs are also found more in a household with

low socioeconomic status, and they are more often in foster care or homeless than other

children living in the general population (National Center for Learning Disabilities,

2014).

The causes of LDs are still a mystery for researchers, but many risk factors have

been identified as possible causes for the diseases (NIH, 2018). For example, children

who have a parent with an LD are more likely to develop an LD themselves (NIH, 2018;

Plomin, Haworth, & Davis, 2010); the presence of certain genes seem to be related to the

development of LDs (Benitez-Burraco et al., 2013; Trezzi et al., 2017). The use of

alcohol and drugs by pregnant women has also been reported as a risk factor for LDs

(Morrow et al., 2006; NIH, 2018). Other important risk factors are low birth weight,

preterm birth, neonatal complications, language delay and epilepsy (Johnson, 2017). The

deficit of certain cognitive factors such as number sense, visuospatial working memory,

phonological awareness, rapid automatized naming, and verbal short-term memory may

also play a role in the occurrence of LDs (Slot, van Viersen, de Bree, & Kroesbergen, 2016; Zambrano-Sánchez, del Consuelo Martínez-Wbaldo, & Poblano, 2010).

Children with LDs have differences in their brain affecting the way they process information (NIH, 2014). Although those differences are present since birth, the diagnosis of LD will not be done until a child is in school (NIH, 2014), some people are even diagnosed later during post-secondary education or as adults in the workforce. There are different types of LDs which can be referred to as specific LDs like dyscalculia, dysgraphia, dyslexia, nonverbal LDs, and visual perceptual/visual motor deficit (Learning Disabilities Association of America, 2019; Mallett, 2013). A child may suffer from one or multiple specific LDs (NIH, 2014). There is no treatment for LDs, but people with LDs can achieve success in school, at work, in relationships, and in the community with appropriate interventions. Children with LDs may suffer low self-esteem, frustration, and behaviors and other social problems (NIH, 2014).

Learning Disabilities and Incarceration

Many studies have indicated that LD disorders are highly present among incarcerated adolescents (Beckford, 2016; Mallett, 2014a; Mallett, 2014b; Mallet & Kirven, 2015; Rucklidge et al., 2013), and among sexual offenders (Craig & Hutchinson, 2005). According to Beckford (2016), adolescents incarcerated are overrepresented by the African American or Latino populations and particularly those with LDs. Examining the case of a 16-year-old boy, Beckford showed how unmet needs of adolescents with LDs, trauma, or other learning difficulties, or living in underserved communities can result in neuropsychological impairment and may lead those children into the criminal

and juvenile justice systems. Beckford drew attention to the high rate of suspension from

school (roughly 3.5 million students) and references of students to police for arrest (a

quarter of a million) every year, leading to a cycle of incarceration, and unfortunately

among particular groups such as kids with LDs. Mallett (2014a) also underlined that

adolescents with LDs are disproportionally represented in the school-to-prison pipeline.

Mallett presented three reasons why adolescents with LDs are over-represented in the

juvenile system, which are school failure, susceptibility, and differential treatment.

Mallett's study showed that (a) minority students with LDs are more likely to be

represented, (b) youthful offenders with LDs are more likely to be suspended from school

because of their intellectual deficit making them less able to control their behavior and

impulses, (c) youthful offenders with LDs come at a younger age in the juvenile system

and have committed more offenses than other offenders without LDs, and (d) they were

retained more frequently and reincarcerated more often than their nondisabled peers.

Additionally, Rucklidge et al. (2013) confirmed a strong relationship between LDs and

incarceration. Rucklidge et al. underlined that aggression, antisocial behavior,

impulsivity, and delinquency are often found in children or adolescents who have

learning disorders and may lead to their incarceration, and those adolescents are more at

risk of unfavorable outcomes after release particularly recidivism. Rucklidge et al.

pointed out how incarceration within adolescents with LDs creates a concern not only for

the child, but the family, teachers, and the community, coupled with the huge monetary

cost that society faces because of juvenile delinquency. Mallett (2014b) and Mallett and

Kirven (2015) also described the issue of adolescents with LDs in the juvenile system,

underlying that those adolescents were two to three times more likely to be engaged in offending behaviors than their classmates without LDs, more at risks of recidivism, and more at risk of being arrested while at school.

The need to develop policies and guidelines designed to address misbehaviors among children with LDs or to decrease the higher rates of involvement of those children with the criminal and juvenile justice systems is captioned by many authors. Beckford's (2016) study offered an overview of demographics and health factors that can explain the disadvantages of certain children and urged decision-makers to find a way to give those vulnerable children the full support and resources they deserve without resorting to incarceration. Mallett (2014a) underlined that other research should be conducted to delineate the real causes of the overrepresentation of adolescents with LDs in the juvenile system and possible solutions. Mallett pointed out that intervention to resolve this public health issue should a multidisciplinary approach where parents, juvenile courts, schools, and the community should play their part. Mallett (2014b) reiterated the urge of collaborative efforts to understand the needs of those children and giving the most appropriate services. Rucklidge et al. (2013) highlighted the necessity for early identification of children with LDs, and to better understand and intervene with the factors that place them at risk of delinquent behaviors. Mallett and Kirven (2015) pointed out that interventions should consider individual factors that may favor delinquent behaviors among those adolescents, but also cultural and social factors. Mallett and Kirven agreed that to comprehend detention and incarceration of youthful offenders, researchers should consider individualized child and adolescent factors including school

difficulties, mental health problems, family concerns, and poverty, aligning with the purpose of this present study. The limitations noted in Rucklidge et al. (2013) also highlighted the need for this present study; Rucklidge et al. agreed that the participants were only young incarcerated men, and the study was conducted in New Zealand, meaning that rates of LDs may be different across other cultures and other young offender groups.

Other researchers described how children with LDs are at higher risk of child maltreatment or abuse. Helton, Gochez-Kerr, and Gruber (2018) found out that the odds of a sexual abuse allegation were 2.5 times greater for children with LDs than children without LDs regardless of confounders. Jones et al. (2012) argued that children with any type of disabilities are more likely to be victims of violence than are their peers who are not disabled. McEachern (2012) supported that children with disabilities are at greater risks of sexual abuse and remarked that the prevalence and incidence of such abuse are difficult to gauge because most of the time, the abuse is not reporter either by fear or emotional incapacity to report.

Sexual offenders with LDs have also been the subject of some research. For example, Craig and Hutchinson (2005) examined the differences between sexual offenders with LDs and their non learning-disabled counterparts. Craig and Hutchinson found that individuals with LDs who committed sexual abuse and who have been incarcerated are higher than individuals with LDs in the general population. Cohen and Harvey (2016) also indicated that there is a higher rate of detection of sexual offending in the LD population than in other groups. Craig and Hutchinson reported that when

comparing the physical and sexual abuse histories of sexual and nonsexual offenders with LDs, sexual offenders with LDs were more likely to have experienced sexual or physical abuse; sexual offenders with LDs were also more at risk of recidivism and reoffending during the first year following discharge. Lindsay et al. (2009) supported that childhood sexual abuse and physical abuse on individuals with LDs have been associated with offenses in adulthood. Craig and Hutchinson indicated the need to understand those offenders' characteristics and provide them the effective interventions based on a community-based approach. Kelly (2014) reiterated the importance of adapted programs for sex offenders with LDs to reduce participants' risk of future offending and highlighted that interventions should focus on the locus of control, impulsivity, and empathy of individuals. Both Craig and Hutchinson (2005), and Kelly (2014) provided thorough information regarding the subject of sexual offenders with LDs and their past as being sexually abused. However, the results were based on adult samples and development of interventions for those adults' offenders, therefore, difficult to interpret as studies that sought a correlation between adolescents with LDs, incarceration, and childhood sexual abuse. The present study will try to overcome those limitations by testing childhood abuse within incarcerated adolescents, examine if in a group like incarcerated adolescents with LDs, a history of childhood abuse is more prevalent than among incarcerated adolescents without LDs, which could help demonstrate if children with LDs who are victims of childhood abuse are more susceptible or not to be incarcerated than other incarcerated groups.

Conceptual Framework

Bronfenbrenner's Social-Ecological Model

The SEM was useful in understanding the factors associated with incarceration of adolescents with LDs. Bronfenbrenner (1994) stated that to understand human development, it is important to consider the entire ecological system in which growth occurs. The relationship between individuals and environmental factors was first conceptualized by Lewin in 1935. Lewin (1935) pointed out that all aspects of a child's behavior, whether instinctive or voluntary are codetermined by the existing environments. Later, in 1970, Bronfenbrenner introduced the ecological model. Since then the model has encompassed a myriad of theories and research trying to provide a better comprehension of human behavior and functioning (Bronfenbrenner, 1994). In Bronfenbrenner's general ecological model, two propositions defined the concept. First, Bronfenbrenner proposed that since an early stage and throughout the course of life, human development depends on a series of progressive, reciprocal interactions between the biopsychological human organism and the persons, objects, symbols of its environment (Bronfenbrenner, 1994). Bronfenbrenner underlined that to be effective, this interaction should be on a regular basis and over an extended period, which is known as a proximal process. Second, those proximal processes depend on the characteristics of the developing person, the environment in which the process takes place, and the nature of the developmental targeted outcomes (Bronfenbrenner, 1994).

Bronfenbrenner identified four important system levels in an individual life: (a) the microsystem, referring to the immediate environment such as family, neighborhood,

friends, schools, which is the most influential system, and has a reciprocal relation

(Bronfenbrenner, 1994), meaning the microsystems influence each other. For example, a

child/adolescent with a family member imprisoned, may have less parental supervision,

leading to delinquent behaviors which can lead to incarceration; or a child victim of

childhood abuse by family members, neighbors or at school may develop violent

delinquency (Jonson-Reid et al., 2012) which can lead to incarceration; (b) the

mesosystem, referring to an interaction between two microsystems like family affecting

an adolescent friends' group (Bronfenbrenner, 1994); (c) the exosystem, is not directly

related to the adolescent can still affect his life such as a parent's workplace, political

situations, or government policies. Family imprisonment history can also be considered

as an exosystem because it can affect the life of the children and may be a factor of those

children being incarcerated. Absent parents put children at risk of delinquent behavior

such as alcohol/drug abuse, violent behaviors, but also of sexual abuse (Murray et al.,

2014), increasing the likelihood of being incarcerated as they become adolescents; and

(d) the macrosystem referring to the larger cultural context like values, norms, customs

(DiClemente et al., 2013). When it comes to incarceration, the macrosystem affects most

African American because they live in marginalized inner-city communities.

Incarceration is found more among young African American men with low

socioeconomic and education status (Travis et al., 2014, Pettit & Gutierrez, 2015). Hong,

Algood, Chiu, and Lee (2011) agreed that the lives of most African American are defined

by poverty, racial segregation, and low socioeconomic conditions. Later, the role of

genetics was added to the concept of ecological model suggesting there is a percentage of

variance that can be attributed to additive genetic variation. Bronfenbrenner's model has, therefore, became an instrumental framework used in many areas of social science and practice, allowing researchers discovering how behaviors and attitudes of individuals are influenced by many social factors and even at different levels of development (DiClemente et al., 2013; Glanz et al., 2015).

Many authors have demonstrated that adolescents' behaviors and attitudes depend on various determinants. Raymond-Flesch, Auerswald, McGlone, Comfort, and Minnis (2017) pointed out that youth's resilience and health outcomes arise not only from individual traits but also from the influences of families and communities. King, Merten, Wong, and Pomeranz (2018) in their study about adolescents smoking cessation and the role of the social-ecological framework agreed that individual behavior is influenced by multiple levels that also shape the surrounding environment, and in order to be able to help individuals to change unhealthy behaviors, it is necessary to identify and understand the factors within each level. Driessens (2015) described how the social environment shapes adolescent problem behavior. Driessens pointed out that parental separation, friendships issues, parental mental illness are associated with disruptive behavioral problems. In sum, Driessens agreed that adolescents develop their own interests within the social interactions that they have every day whether in their household, their school, or community; from there, adolescents acquire the experiences, encouragement, and reinforcement they need to develop a sense of self-esteem and feelings of independence and control. So, whether an adolescent will engage in positive or negative behavior greatly depends on the quality of social interactions encountered (Driessens, 2015).

Use of the Social-Ecological Model for Applied Research

The SEM has been used in some studies as strategic planning to shape interventions for juvenile-justice involved adolescents. Javdani and Allen (2016) presented an ecological intervention for girls with disruptive behaviors that place them at high risk of juvenile justice system involvement. Using Bronfenbrenner's theoretical framework, the intervention was designed to act on those girls' proximal social environments to change the conditions of their lives with the aim of decreasing risk and increasing protective factors (Javdani and Allen, 2016). According to Javdani and Allen, the program incorporated specific community-based advocacy tenets and intervention components which are very effective in reducing depression, aggressive behaviors, and future offending, and note that the intervention was conducted within their natural community contexts such as schools, home, neighborhoods, and in formal system if they were part of like juvenile system or child welfare. Zeldin (2004) also remarked that community-based interventions and youth engagement may be a response to youth violence. Jadvani (2013) pointed out that the ecological model may help understand disruptive behaviors among young people and may also serve as a key element in planning adapted gender interventions. Jadvani and Allen argued that adolescents' involvement in the juvenile system needs a better understanding of their disruptive behaviors and better innovative interventions that can prevent their incarceration.

Child maltreatment and abuse assessment and interventions have also been linked to the SEM. Douglas (2015) described how children are most affected by people who are close to them. The purpose of Douglas's study was to demonstrate how childhood

maltreatment may result in fatality. Douglas's analysis showed that a presence of multiple stressors (caregiver alcohol problem, drug problem, or emotional problem, family violence, inadequate housing, and financial problems) within a child environment create most at-risk situations for children, acknowledging how interaction with a child environment may increase the risk of potential danger such as sexual or physical abuse and even death. Douglas revealed how the social environment impacts individual life whether positively or negatively. On the other hand, van Dijken, Stams, and de Winter (2016) examined the potential of community-based programs to prevent child maltreatment. Van Djiken et al. concluded that the continuous issue of child maltreatment at the population level, despite some successful prevention programs that target individual families calls for the incorporation of contextual or collective factors in the prevention strategies like neighborhood factors to decrease the high prevalence rates of child maltreatment.

The SEM, therefore, in this study was well-suited to interpret the factors associated with incarceration of adolescents with LDs. The model was used to explain the interrelatedness of certain determinants on delinquent behaviors among adolescents with LDs. Golden and Earp (2012) argued that the SEM is useful as a tool to help understand health behavior as determined by a set of interconnected individual and contextual factors. The model is also an excellent framework for authorities or any professional who want to work on the development of interventions that may hinder incarceration among adolescents with LDs or prevent future ones. Oriol et al. (2017) highlighted that to end violence among adolescents' students, it should be strong collaboration among different

services and agents at the community level, and it is important to take an ecological preventive action within families, schools, and the community together.

Definition of Terms

Incarceration: Confinement in jails or prisons (Murray, Farrington, & Sekol, 2012).

Adolescent: Any individual is the stage of development between puberty and adulthood or in the 10-19 years age group (WHO, 2019).

Youth: Any individual in the 15-24 years age group (WHO, 2019).

Young People: Any individual in the 10-24 years age group (WHO, 2019).

Juvenile: Any individual who is legally able to commit a criminal offense owing to being over the minimum age of criminal responsibility, but who is under the age of criminal majority, when a person is legally considered an adult (Young, Greer, & Church, 2017).

Learning Disabilities: Heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities (National Joint Committee on Learning Disabilities, 2016).

Sexual Abuse: Pressuring or forcing a child/person to engage in sexual acts (CDC, 2019a).

Physical Abuse: Intentional use of physical force that can result in physical harm to a person (CDC, 2019a).

Family Imprisonment: Any kind of custodial confinement of a parent or a family member by the criminal justice system (Murray et al., 2012).

Alcohol abuse: Any kind of excessive drinking that makes an individual sick, interferes with taking care of your home or family, causes job troubles/school problems, or getting more than once or having any legal problems because of drinking. Continue to drink even though it causes trouble with your family or friends (National Institute of Alcohol Abuse and Alcoholism, 2016).

Drug Abuse: Any use of illegal drugs or prescription or over-the-counter drugs for purposes other than those for which they are meant to be used, or in large amounts (National Cancer Institute, n.d.).

Age: The length of time in completed years that a person has lived (United States Census Bureau, n.d.).

Gender: Socially constructed characteristics of women and men – such as norms, roles, and relationships of and between groups of women and men (WHO, 2019).

Race: A category denoting skin color (Ford & Airhihenbuwa, 2010).

Education: *T*he array of knowledge, skills, and capacities (intellectual, socioemotional, physical, productive, and interactive) acquired by a learner through formal and experiential learning (Hahn & Truman, 2015).

Socioeconomic Status: A measure of one's combined economic and social status and tends to be positively associated with better health (Baker, 2014).

Assumptions

One key assumption for this study is that the data set chosen was accurate and enough to answer the research questions. I assumed that not only the data was valid and reliable, that those incarcerated adolescents studied in the data set fully understood the

surveys' questions and provide honest answers, but also that the results found from that sample can be a reference to the general population. Lastly, I assumed and expected that the results from this present study will provoke future research to look deeper into the issue of incarceration of adolescents with LDs.

Scope and Delimitations

The scope of this study was limited to the examination of the factors associated with incarceration of adolescents with LDs in the state of Washington. The factors that I focused on were physical and sexual abuse, family imprisonment, and alcohol/drug abuse. Although, those factors have been indicated by other researchers as important predictors of incarceration, I did not find any single research that studies them together within adolescents with LDs incarcerated. This examination was performed using the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington State, 2008-2015 (ICPSR 36226) data set. This was a quasi-experimental, observational study using administrative data to assess whether time in juvenile placement was associated with the acquisition of social-emotional skills and subsequent felony recidivism (Walker, 2016). The study was conducted in Washington state, and youth were admitted into the study in two cohorts, a main study cohort and a replication study cohort (Walker, 2016).

In the data set, the age of the adolescents was ranged from 10 to 19 years, which was also the group age used in the present study. The present study was delimited to only a group of incarcerated adolescents meaning that juveniles offenders who were not

detained were not be considered, which made the results not generalizable to all adolescents with LDs or not who have ever been incarcerated.

Limitations, Challenges, and/or Barriers

The sample for this study did not represent the juvenile population of the United States because the study had a geographical focus. The data was selected from the Washington juvenile system, the population from other states who was not sampled may possess different characteristics from the community in this study especially because each state has their own laws when it comes to juvenile justice. This study was a quantitative study, there was no possibility to gather in-depth information or to control how the data was generated or recorded, and no knowledge or control over the instrument used to analyze the data. Additionally, the data set was from a quasi-experimental, observational study, which only seeks to identify a comparison group or time period that is as similar as possible to the treatment group or time period in terms of baseline characteristics (Center for Innovation in Research and Teaching, n.d.). In a quasi-experimental study, there is a possibility of bias because respondents are typically not blind to the event of interest and may provide non comparable information (Buka, Rosenthal, & Lacy, 2018). Lastly, the interest was only on adolescents incarcerated, not adolescents in the general population which may have provided maybe a different perspective. Considering those limitations, there is a need for more profound research on the subject matter in the future.

Significance

The results of this study may provide a much-needed insight into the factors associated with incarceration of youth with LDs. This research may increase awareness and knowledge of people involved in the life of adolescents with LDs, provide an extensive view of the problem for parents, teachers, health professionals, juvenile courts, and policymakers. Greater knowledge of factors associated with incarceration of adolescents with LDs could assist into the development of interventions and policies that are adapted to the actual situation of those adolescents, intervene directly into those factors in other to prevent delinquent behaviors and further incarceration within this group. This study may also provide a unique contribution to addressing the issue of incarcerated youth in the country. The implications for social change from this study included a better knowledge of the factors related to the incarceration of adolescents with LDs, a valuable information for all actors playing a role in those youth lives, and most of all could help in reducing the social, mental, and economic burden related to with incarceration in the country, without counting the issue of disparities that is associated with incarceration.

Summary

In this section, I presented the issue of incarceration within adolescents in the United States in the background and the problem statement, demonstrated the high prevalence of adolescents with LDs in prison, and the negative impacts that incarceration has on society in general. I gave an overview of the past studies on the topic, described the different approaches other researchers have used to understand factors of

incarceration within adolescents, the limitations of their studies, and how all of them

pointed out the necessity of more research in order to find a possible solution to the issue

of high-rate of adolescents incarcerated. The review helped me identified that the

variables I intended to use in my study have not been studied before in a single work,

which guided me toward what needed additional attention and provided support to my

study. In this section, I also explained the purpose of this study, its significance, and how

the findings of this study could benefit the society. I also justified the application of the

SEM as a suitable theoretical framework for the study and discussed the secondary data

source used. Finally, I described the variables used, the research questions and hypothesis

that identified the variables and the kind of association tested. In the next section, I

discuss the research design and methodology, and the rationale for their use in this study.

Section 2: Research Design and Data Collection

The purpose of this study was to examine factors associated with incarceration of adolescents who have been diagnosed with an LD. In this section, I identify the research design and procedures, the methodology adopted for data collection and analysis, and the rationale for choosing the design and methodology. I describe the targeted population and the sample chosen for the study. I provide detailed information about the variables used (independent, dependents, and confounding) and explain how the research design links to the research questions. To conclude, I address the ethical considerations and summarize the section.

Research Design and Rationale

This study was a secondary analysis of quantitative data using a correctional approach to examine the association between the dependent variables—sexual/physical abuse, family imprisonment, alcohol/drug abuse—and the independent variable, specific LD, among incarcerated adolescents in the state of Washington. According to Creswell (2014), a quantitative approach tests objective theory by examining relationships among variables, which are measured on instruments that allow numbered data to be analyzed using statistical procedures. Therefore, a quantitative approach was well-suited to answer the research questions as it aligns with the focus of this study. In quantitative research, it is important to identify dependent and independent variables but also identify any confounding factors. Soriano (2013) pointed out that confounding variables are factors or population characteristics that can mislead in the interpretation of the results. Age, gender, race, education, and economic status were analyzed as confounding variables in

this study. I collected the data through a cross-sectional survey design. In a cross-sectional study, the outcome and the exposures are measured at the same time in the study participant; it is observational, and participants are selected based on an inclusion and exclusion criteria set for the study (Setia, 2016). A cross-sectional design was appropriate because the goal of this study was not to determine a cause-and-effect relationship between the variables but only to describe if there is a possible association between them (Creswell, 2014).

In the data set (therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015), administrative data and face-to-face interviews were used to collect the information (Walker, 2016). Using an existing data set for this study allowed me to save time and money in collecting the data. Queirós, Faria, and Almeida (2017) argued that using a quantitative approach has many advantages, such as short time frame, reliability, reach a wide number of participants, and facilitate numerical data for groups. The research design was appropriate for this study and the results for this analysis may encourage other researchers to look deeper into the factors associated with incarceration of adolescents with LDs and research for possible solutions that can alleviate the burden of incarcerated youth in the United States.

Methodology

Population

In the data set, the overall sample was incarcerated adolescents in the Juvenile Justice Rehabilitation Administration in the state of Washington, aged 10 to 19 years. Two cohort studies were conducted with a total case of N = 1,034. The first cohort (main

study cohort) consisted of youths admitted from December 5, 2008, through May 29,

2013, and released from February 12, 2009, through August 1, 2013 (n = 637); the

second cohort (replication study cohort) were youths admitted between April 2013 and

February 2015 and who had been released by May 2015 (n = 397; Walker, 2016).

According to the Inter-university Consortium for Political and Social Research (ICPSR)

of the National Archive of Criminal Justice Data, the question about a diagnosis of

specific LDs was not included in the second cohort. Therefore, for this study, only data

from the first cohort were used. Most of the youth in the database were male, with an

average age of 16 years. Caucasian (38%), African American (27%), and Hispanic (16%)

were the most represented ethnicities. Approximately 98% of youth identified English as

their primary language (Walker, 2016).

Sampling and Sampling Procedures

A convenience sampling method was used to obtain the information in the data

set. In convenience sampling, researchers select respondents who are available to

participate (Soriano, 2013). In the present study, I used a purposive sampling, which is a

nonrandom technique. Total population sampling is a type of purposive sampling where

the entire population that meets the criteria is included in the research being conducted

(Etikan, Musa, & Alkassim, 2016). Therefore, the sample was the entire population

studied in the first cohort (637). The criteria of inclusion were all incarcerated youth in

the Juvenile Justice Rehabilitation Administration in the state of Washington, aged 10 to

19 years, regardless of sex, race, religion, and socioeconomic status, who have been part

of the first cohort study of the therapeutic change, length of stay, and recidivism in

incarcerated juvenile offenders in Washington state, 2008–2015. The criterion of exclusion was all incarcerated youth who have participated in the second cohort.

Power and sample size estimations are needed to determine how many subjects are needed to answer the research questions (Jones, Carley, & Harrison, 2003). To calculate the sample size, I used G*Power 3.1.7, along with conventional values for alpha, power, and effect size. G*Power Version 3 allows high-precision power and sample size analyses (Cunningham & McCrum-Gardner, 2007). A standard of 80% power was used for statistical analyses, along with a significance of .05, a large effect size (odds ratio of 2.33), and a two-tailed test. Based on these criteria, the minimum sample size needed for the statistical analysis was 313.

Instrumentation

In this study, I conducted a quantitative analysis using secondary data from the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015, to determine if association exists between specific LDs and sexual/physical abuse, family imprisonment, alcohol/drug abuse among incarcerated adolescents in the state of Washington. The outcome of interest was to determine if there are relevant factors that can explain the incarceration of adolescents with LDs. In the data set, in addition to the administrative database used, the paper and pencil version of the residential positive achievement change tool (R–PACT) was used as the instrument to collect information about criminal and social risk/protective factors in 12 categories: (a) criminal history, (b) school, (c) use of free time, (d) employment, (e) relationships, (f) family, (g) living arrangements, (h) alcohol and drugs, (i) mental health, (j)

attitudes/beliefs, (k) aggression, and (l) social skills (Walker, 2016). According to Hay

and Widdowson (2013), the R–PACT is a valid and reliable tool that can be used to make

assessments about which youths are most likely to reoffend, to assess youth changes

during the residential stay and to guide performance plans. Because I used secondary data

in this study, no new instrument was developed to answer the research questions.

Operationalization of Constructs

In Table 1, the variables used in this study are described. As mentioned above, the

independent variables are sexual abuse, physical abuse, family imprisonment, alcohol,

and drug abuse; these are nominal. The dependent variable incarceration of adolescents

with LDs/without LDs is also nominal with two levels. The confounding variables, age,

sex, race, education, and socioeconomic status, are either nominal or ratio.

Table 1

Measurement Level and Operational Definition of Variables

Variables	Levels of measurements	Label	Levels
Age (confounder)	Continuous (ratio)	Youth age at time of study	17–18 16 15 13–14 under 13
Sex (confounder)	Nominal	Youth gender	Male Female
Race (confounder)	Nominal	Reported ethnicity	African American Caucasian Hispanic Mixed Other races
Education (confounder)	Continuous (interval)	Youth grade assessment/ Recent GPA	3.5+ 3.0–3.49 2.0–2.99 1.0–1.99 <1.0
Economic status (confounder)	Continuous (interval)	Annual income	$50,000+ $49,999–35,000 $34,999–-$15,000 under $15,000
Sexual abuse (dependent)	Nominal	History of sexual abuse	Yes No
Physical abuse (dependent)	Nominal	Victim of violence/physical abuse	Yes No
Family imprisonment (dependent)	Nominal	History of family imprisonment	Yes No
Drug abuse (dependent)	Nominal	Drug history	Yes No
Alcohol abuse (dependent)	Nominal	Alcohol history	Yes No
Diagnosis of specific learning disability (independent)	Nominal	Specific learning disability	Yes No

Research Questions and Hypotheses

RQ1: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been sexually abused, after controlling for age, gender, race, education level, and family income?

$H_0$1: There is no association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a1: There is an association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ2: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been physically abused, after controlling for age, gender, race, education level, and family income?

$H_0$2: There is no association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a2: There is an association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ3: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of family imprisonment, after controlling for age, gender, race, education level, and family income?

H_03: There is no association between a diagnosis of a specific LD and a history of family imprisonment after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a3: There is an association between a diagnosis of a specific LD and a history of family imprisonment after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ4: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of alcohol and drug abuse, after controlling for age, gender, race, education level, and family income?

$H_0$4: There is no association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a4: There is an association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

Data Collection Procedures

The primary step in obtaining the data set (therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015) was to get approval from Walden University's Institutional Review Board (IRB). No analysis was performed prior to approval from IRB. Once the data set was received, I secured it in a password-protected computer. Any identifying information of the participants was removed from the data set by the National Archive of Criminal Justice Data before releasing it for the analysis, to ensure confidentiality.

Data Cleaning Procedures

For this analysis, I used the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015, which was listed in a list for secondary data sets maintained and distributed by the National Archive of Criminal Justice Data. It is a restricted data set that required approval to access. All statistical analyses were performed using SPSS v.24 for Windows.

Data Analysis Plan

For statistical analysis, to test each of the research questions descriptive statistics and inferential statistics were conducted using a binary logistic regression. As mentioned in Section 1, any factor that could cofound the relationship between a diagnosis of LDs among incarcerated adolescents in the state of Washington and sexual abuse, physical abuse, family imprisonment, alcohol/drug abuse were included in the analysis. The potential confounding factors that were included in the logistic regression analysis are age, gender, race, education level, and family income. McDonald (2014) argued that omitting the analysis of the confounding variables can lead to erroneous conclusions about the relationship between the independent and dependent variables.

The descriptive statistics were used to report the frequency of distribution, count, and percentage of distribution to describe the categorical variables. For the continuous variables (age, education, and economic status), the reporting included frequencies and measures of central tendencies such as the mean, mode, median, standard deviation, and range. The descriptive statistics allowed identifying any patterns that might be associated with the variables.

Because all the dependent variables in this study were dichotomous or binary in nature, a binary logistic regression was appropriate for the analysis. Logistic regression allows expressing an association between one or more independent variables that determine an outcome; the outcome is measured with a dichotomous variable (Triola & Triola, 2006). Therefore, the binary logistic regression helped to predict the relationship between the independent variable (diagnosis of LD) and the dependent variables (history

of sexual abuse/physical abuse, family history of imprisonment, history of drug and alcohol abuse) among adolescents incarcerated in the state of Washington.

For example, RQ1 asked, among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income? A diagnosis of LD was assumed as a risk indicator for having been sexually abused among adolescents incarcerated in the state of Washington after accounting for age, gender, race, education level, and family income. The binary logistic regression was used to make comparisons between direct relationship for diagnosis of LD and having been sexually abused among the targeted group. In logistic regression, the coefficients in a logistic regression model can be exponentiated as log odds ratios (Wagner III, 2017), odds ratios with a confidence interval of 95% were reported to show if there is a significant association or not. The logarithm of ratio know as logit helped to determine the probability of the presence or absence of the study characteristics (for example history of sexual abused coded as 1 or Yes) without a history of sexual abuse (coded as 0 or No), and is defined as In (p/1- p) where p represented the probability of event (Triola & Triola, 2006, p. 480). A value of $p = 0$ indicated that the incarcerated adolescent had never been sexually abused and $p = 1$ indicated that an incarcerated adolescent has a history of sexual abuse.

The results were interpreted using the *p*-value; considering a significance level of .05, I rejected the null hypothesis if the *p*-value is $\leq$ .05 and failed to reject the null hypothesis if the *p*-value is > 0.05. According to Wagner III (2017), the *p*-value refers to

the probability that the result is due to chance; a smaller number (p = .05 or less)
indicates statistical significance. According to (Stoltzfus, 2011), if the results of the
adjusted odds ratio show a score above 1.0 and the confidence interval is entirely above
1.0, then the conclusion was that the exposure to the predictor increases the odds of the
outcome. But, if the adjusted odds ratio is below 1.0 and the confidence interval was
entirely below 1.0, the results were interpreted as exposure to the predictor decreases the
odds of the outcome.

The example is valid for each of the dependent variables. For RQ2, among
adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an
association between a diagnosis of a specific LD and having been physically abused after
controlling for age, gender, race, education level, and family income? The independent
variable was a diagnosis of specific LD. The dependent variable was having been
physically abused and the control variables will be age, gender, race, education level, and
family income. Descriptive statistics were used to identify outliers and distribution and
binary logistic regression analysis to test the relationship between the variables. A *p*-value < 0.05 indicated to reject the null hypothesis.

Threats to Validity

Internal Validity

The observed results in a study should be able to represent the truth in the
population under study and, thus, are not due to methodological errors, to confirm
internal validity of the research (Patino & Ferreira, 2018). In this study, internal validity
was about to justify whether there was an association between sexual/physical abuse,

family imprisonment, alcohol/drug abuse (the dependent variables) and a diagnosis of

LDs (the independent variable) among adolescents incarcerated in the state of

Washington. Because the study used an existing data set, some threats to internal validity

were choosing the wrong data set, statistical regression, and instrumentation. I assumed

that the data set was adequate to address the research questions and that the primary

method of data collection was appropriately suited to the present study. Statistical

regression was also a threat if measurement errors occurred and obtained scores did not

reflect true results. Another issue was the instrumentation used in the data set; the R–

PACT is a self-reported assessment, some forms of self-report biases threatened the

validity of the study. Johnson (2014) argued that one disadvantage of utilizing secondary

data is that secondary researchers often have to settle for the original measurement tool.

Confounding variables also impacted the outcome of the study, but by examining the

demographic variables (age, sex, race, education, and economic status), this threat was

reduced.

External Validity

External validity refers to the inference of the causal relationships that can be

generalized to different measures, persons, settings, and times (Khorsan & Crawford,

2014). One threat to external validity of this study was that the data set used was only for

one geographic area of the country which made generalization of the results difficult as

mentioned in Section 1. Huebschmann, Leavitt, and Glasgow (2019) argued that research

is too seldom tested with representative participants, often participants are less diverse

than in the real world, in terms of cultural, demographic, or health literacy differences. If

the response rate in the present study was low, the results could be biased. Khorsan and

Crawford (2014) pointed out that threats to external validity, especially in the selection,

may lead to bias in the study's results. Therefore, it is not recommended that readers of

this study generalize the results, but on the contrary, the results should promote further

research in other parts across the country.

Ethical Procedures

The use of the data set was restricted, and all intended users must complete a

Restricted Data Use Agreement, specify the reasons for the request, and obtain IRB

approval or notice of exemption for their research (University of Michigan, 2019).

Therefore, I submitted a request via the Walden University IRB in order to be able to use

the data set. The permission was granted, and the study was conducted based on the

ethical standards indicated by IRB (#11-05-19-0742216). IRB confirmed that the study

meets ethical standards for research. I also respected any ethical principles that the

National Archive of Criminal Justice Data required and ensured that the information

received was stored in a password protected computer for confidentiality. In addition, the

information received will be destroyed 5 years after completing the study.

Summary

Section 2 presented the methodology for collecting the secondary data set, the

therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in

Washington state, 2008–2015 (ICPSR 36226). In this section, the research design, the

population and sampling procedures, data collection procedures and data analysis plan

were described, as well as possible threats to the internal and external validity of the study, and ethical concerns. In Section 3, I present the results and findings of the study.

Section 3: Presentation of the Results and Findings

The purpose of this quantitative study, using the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015 data set, was to examine if an association exists between the dependent variables—sexual/physical abuse, family imprisonment, and alcohol/drug abuse—and a diagnosis of specific LD among incarcerated adolescents aged 10 to 19 years in the state of Washington. Specific LD was the independent variable. I also controlled for confounding factors (age, gender, race, education, and economic status) that may influence these associations.

The following research questions and hypothesis guided this study:

RQ1: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been sexually abused, after controlling for age, gender, race, education level, and family income?

$H_0 1$: There is no association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

$H_a 1$: There is an association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ2: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been physically abused, after controlling for age, gender, race, education level, and family income?

$H_0$2: There is no association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a2: There is an association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ3: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of family imprisonment, after controlling for age, gender, race, education level, and family income?

$H_0$3: There is no association between a diagnosis of a specific LD and a history of family imprisonment after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a3: There is an association between a diagnosis of a specific LD and a history of family imprisonment after controlling for age, gender, race, education level, and

family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

RQ4: Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of alcohol and drug abuse, after controlling for age, gender, race, education level, and family income?

$H_0$4: There is no association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

H_a4: There is an association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

In Section 3, I describe the data collection process using the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015, data set, with a brief description of the time frame for data collection, the response rates, and discrepancies in the secondary data set. This section also contains the baseline descriptive, demographic characteristics and representativeness of the sample. The results of the descriptive and statistical analysis (binary logistic regression) are included, followed by a summary of the results.

Data Collection of Secondary Data Set

The ICPSR was established in 1962 and provides access to a wide variety of social science data for research. The therapeutic change, length of stay, and recidivism in

incarcerated juvenile offenders in Washington state, 2008–2015 data set used in this

study for secondary analysis is part of the National Archive of Criminal Justice Data Fast

Track Release and is managed and distributed by the ICPSR, coded as ICPSR 36226.

Access to this data is restricted; a data use agreement, an application completed on the

website by a researcher holding a Ph.D., and IRB approval are required before the data

set can be released. Working closely with my chair and the ICPSR data services program

manager, after obtaining IRB approval (#11-05-19-0742216), I was able to complete all

the steps and have the data files released. The process took a total of 3 weeks and the data

set was secured on a password-protected computer for use and analysis.

Time Frame and Response Rates

The data set was made from two cohort studies. The first cohort was youth

admitted to the Juvenile Justice Rehabilitation Administration in the state of Washington

from December 5, 2008, through May 29, 2013. The second cohort was youths admitted

between April 2013 and February 2015 (Walker, 2016). Although both files were

released, for the purpose of this study only the first cohort data set was used as specified

in Section 2. The total population in the first cohort study was n = 637. To preserve

confidentiality, there are no direct or geographic identifiers in the data set, and some

indirect identifiers have also been removed, collapsed, or recoded by the site partner. The

assessment tool used in the study (R–PACT) is normally administered to all Juvenile

Justice Rehabilitation Administration residential youth within 45 days of admission and

30 days prior to release (Walker, 2016). The tool is used based on an interview format

completed by trained staff.

Discrepancies in the Secondary Data set

Some discrepancies were found in the variables. For example, when the data were received, there was no race variable but rather a unique variable for each race: African American, Caucasian, Hispanic, mixed, and other races. Therefore, before conducting any analysis, using SPSS, I created a variable named *races* by computing the variables African American, Caucasian, Hispanic, mixed, and other races. The new variable *races* was coded as 0 for Caucasian, 1 for African American, 2 for Hispanic, 3 for other races, and 4 for mixed. Another issue was for the variable *physical/sex abuse history*; only the participants who reported *no* were recoded according to the variable description. With the help of the site partner, I contacted the primary investigator to clarify the coding of the variables. It appears that there was some confusion when the variables were labeled. The primary investigator confirmed that a label of 1.00 indicated *yes* and .00 indicated *no*.

The variable *economic status* labeled as *annual income* in the data set was indicated as an ordinal variable in Section 2, but when I received the data set, the variable was already recoded as a nominal variable. Once I was able to clarify the confusion in the data set, I moved the variables intended to be used in this study to an SPSS file to make analysis easier. I used SPSS Version 24 to perform descriptive and inferential analysis.

Demographic Characteristics of the Sample

From the 637 adolescents in the sample, most were male (84.3%) with a dominance of Caucasians (38.6%), followed by African American (27.2%) and Hispanic (16.5%). A diagnosis of LD, the dependent variable, was categorized under "SpecialEducation_Diagnosis 12.1.00: youth is a special education student or has formal

diagnosis of need" and coded as 1.00 for specific LDs. I changed the name of the variable

to *diagnosis of learning disability* in the SPSS file to make it easier for readers to

interpret the results. The descriptive statistics for this variable show that 117 incarcerated

adolescents (18.4%) had a specific LD. In terms of economic status, the majority of

adolescents were in the $34,999–$15,000 category (37.2%), followed by under $15,000

(23.9%). Incarcerated adolescents in the sample reported more sex abuse history (77.4%)

than violence abuse history (47.3%). For the *family imprisonment* variable, 68.4% of

incarcerated adolescents reported that they had a family member imprisoned at some

point in their lives. For *drug and alcohol use history*, 29.8% said they had a history of

drug use and 38.8% reported past alcohol use.

Within the sample, the average age of adolescents incarcerated was 16 (*SD* =

1.357) within an age range from 11 to 19 years. The *education* variable was calculated in

terms of recent GPA because, in the data set, there was no variable indicated as a grade

level for the adolescents. The average GPA was 3.68 (*SD* = .90) in a GPA range from

1.00 to 5.00. The categorical variables are presented in Table 2, and the continuous

variables are presented in Table 3.

Table 2

Univariate Characteristics of the Sample (N = 637)

Variables	N	Percentage (%)
Sex		
Female	100	15.7
Male	537	84.3
Race		
African American	173	27.2
Caucasian	246	38.6
Hispanic	105	16.5
Other races	45	7.1
Mixed	68	10.7
Annual Income		
$50,000+	85	13.3
$49,999–35,000	118	18.5
$34,999–15,000	237	37.2
under $15,000	152	23.9
Unknown	45	7.1
Any family imprisonment		
None	201	31.6
Any family member imprisonment	436	68.4
History of sexual abuse/rape		
Not a victim	144	22.6
A victim	493	77.4
Victim of violence/physical abuse		
Not a victim	336	52.7
A victim	301	47.3
Drug history		
No past use	447	70.2
Past use	190	29.8
Alcohol history		
No past use	390	61.2
Past use	247	38.8
Specific LD diagnosis		
No specific LD	520	81.6
Specific LD	117	18.4
Total	637	100.0

Table 3

Demographic Information for Continuous Variables

	N	Minimum	Maximum	Mean	*SD*
youths age	637	11.00	19.00	15.8713	1.35716
TREND	637	1.00	5.00	3.6832	.90173
(Recent GPA 1.00)					
Valid N (listwise)	637				

Representativeness of the Sample

The therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015 data set was used in this study for secondary analysis. The sample I used was the entire population in the first cohort study, which is representative of the population in the first study. Because the primary study was conducted only in Washington state, the sample for the actual study may not be representative of the entire incarcerated adolescent population of the United States.

Study Results

A binary logistic regression analysis will be conducted to answer the four research questions. Each research question will be analyzed while controlling for five plausible confounders (age, gender, race, annual income, and education).

Research Question 1

Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income?

A binary logistic regression was conducted to investigate if there is a relationship between a specific LD diagnosis, age, gender, race, annual income, recent GPA and a

history of sex abuse. The outcome of interest was history of sex abuse, the predictor was specific LD along with age, gender, race, annual income, and recent GPA as control variables. I used races as my categorical covariates in the analysis, and because Caucasian was the largest group, it was selected as last in the analysis. The Hosmer-Lemeshow goodness-of-fit was not significant ($p = .943 > .05$), indicating the model is correctly specified (Table 4). The Hosmer-Lemeshow test is a goodness test of fit that tells how well a data fits the model, the test calculates if the observed event rates match the expected event rates in the population of interest (Hosmer, Lemeshow, & Sturdivant, 2013). While Table 4 shows that the full model is not statistically significant, Table 5, gives the [*Cox & Snell R Square* = .288], and the [*Nagelkerke R squared* = .439*]* indicating that between 28.8% and 43.9% of the variance in history of sexual abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington can be explained by the independent variables.

The model resulted that the independent variable specific LD diagnosis was significant ($p = .022 < .05$). Controlling for age, annual income, youth gender, race, and recent GPA, the predictor variable (specific LD diagnosis) was found to contribute to the model (Table 6). There is a statistically significant association between a diagnostic of LD and a history of sexual abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington. The unstandardized B = [-.658], SE = [.288], Wald = [5.236], p < .05. The estimated odds ratio [Exp (B) = [.518], 95% CI (295, .910)] showed that adolescents with a specific of LD diagnosis are nearly 49% less likely to have a history of sexual abuse when compared to adolescents without a specific of LD According to

Szumilas (2010), an OR < 1 means that the exposure is associated with lower odds of the outcome. However, when the analysis is run between the dependent variable and the independent variable alone, the result (unadjusted *OR* = [1.163], 95% CI = [.710, 1.903], *p* = .549 > 0.05) shows that there is no statistically significant association between a diagnostic of specific LD and a history of sexual abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington (Table 7). In Table 6, age, annual income, race, and recent GPA) were not significant (*p* > .05). However, the independent variable youth gender was found to be significant (*p* < .05). Controlling for specific LD diagnosis, age, annual income, race, and recent GPA, the predictor variable (youth gender), in the logistic regression analysis was found to contribute to the model. The unstandardized *B* = [2.021], *SE* = [.274], *Wald* = [54.496], *p* < .001. The estimated odds ratio favored a positive relationship of 7 and one-half fold [*Exp (B)* = 7.547], 95% CI (4.413, 12.906)] for men compared to women, or men were seven and one-half fold more likely to have a history of sexual abuse compared to women among adolescents aged 10 to 19 years incarcerated in the state of Washington.

Table 4

Hosmer and Lemeshow Test RQ1

Step	Chi-square	df	Sig.
1	2.858	8	.943

Table 5

Model Summary RQ1

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square

1	464.176a	.288	.439

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 6

Binary Logistic Regression Between Specific Learning Disability and History of Sex Abuse/Rape With Age, Gender, Race, Annual Income, and Recent GPA as Confounders

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b) Lower	Upper
Specific LD diagnosis	−.658	.288	5.236	1	.022	.518	.295	.910
Age	−.008	.091	.008	1	.931	.992	.830	1.186
Gender	2.021	.274	54.496	1	.000	7.547	4.413	12.906
Caucasian			7.266	4	.122			
African American	.134	.291	.211	1	.646	1.143	.646	2.024
Hispanic	−.562	.325	2.995	1	.084	.570	.302	1.077
Other races	−23.324	5826.573	.000	1	.997	.000	.000	.
Mixed	.711	.466	2.334	1	.127	2.037	.818	5.074
Recent GPA	.115	.134	.738	1	.390	1.122	.863	1.458
Annual income	−.183	.113	2.642	1	.104	.833	.667	1.038
Constant	.489	1.577	.096	1	.757	1.631		

a. Variable(s) entered on step 1: Specific learning disability diagnosis, youths age, youths gender, race, recent GPA., annual income.

Table 7

Binary Logistic Regression Between Specific Learning Disability and History of Sex Abuse/Rape

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b) Lower	Upper
Specific LD diagnosis	.151	.252	.358	1	.549	1.163	.710	1.903
Constant	1.204	.104	133.805	1	.000	3.333		

a. Variable(s) entered on Step 1: Specific learning disability diagnosis.

Research Question 2

Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income?

The binary logistic regression was conducted to investigate if there is a relationship between a specific LD diagnosis, age, gender, race, annual income, recent GPA and having been physically abused. The outcome of interest was having been physically abused, the predictor was specific LD along with age, gender, race, annual income, and recent GPA as control variables. The Hosmer-Lemeshow goodness-of-fit was not significant ($p = .963 > .05$), indicating the model is correctly specified (Table 8). Table 8 shows that the full model is not statistically significant, but, the [*Cox & Snell R Square* = .137], and the [*Nagelkerke R squared = .183]* in Table 9, indicate that between 13.7% and 18.3% of the variance in history of physical/violence abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington can be explained by the independent variables.

The model resulted that the independent variables age and race except other races were not significant ($p > .05$), the independent variables specific LD diagnosis, youth gender, annual income, recent GPA and other races were found to be significant ($p < .05$) (Table 10). Controlling for age, annual income, race, youth gender, and recent GPA*,* the predictor variable (specific LD diagnosis), in the logistic regression analysis was found to contribute to the model (Table 10). The unstandardized *B* = [-.544], *SE* = [.218], *Wald* = [6.237], *p = .013* < .05. There is a statistically significant association between a diagnostic of LD and a history of physical/violence abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington. The estimated odds ratio [Exp (B) = [.581], 95% CI (.379, .890)] showed that adolescents with a diagnostic of LD are nearly 42% less likely to have a history of violence/physical abuse when compared to

adolescents without an LD diagnosis. However, the binary logistic regression analysis

run between the dependent variable and the independent variable without the control

variables (unadjusted OR= [.734], 95% CI = [.489, 1.102], p = .136> 0.05), showed that

there is no statistically significant association between a diagnostic of specific LD and a

history of violence/physical abuse among adolescents aged 10 to 19 years incarcerated in

the state of Washington (Table 11). Controlling for specific LD diagnosis, age, annual

income, race, and recent GPA, the predictor variable (youth gender), in the logistic

regression analysis was found to contribute to the model. The unstandardized B = [.838],

SE = [.248], $Wald$ = [11.414], p < .05. The estimated odds ratio favored a positive

relationship of more than two and one-quarter fold [$Exp (B)$ = [2.311], 95% CI (1.421,

3.757)] for men compared to women, meaning that a men adolescent aged 10 to 19 years

incarcerated in the state of Washington was 2 and one-quarter fold more likely to have a

history of violence/physical abuse than a women adolescent incarcerated in the state of

Washington. Controlling for specific LD diagnosis, age, youth gender, African American,

Hispanic, mixed, annual income, and recent GPA, the predictor variable other races in the

logistic regression analysis was found to contribute to the model. The unstandardized B =

[-3.882], SE = [1.026], $Wald$ = [14.323], p = .001. The estimated odds ratio [$Exp (B)$ =

[.021], 95% CI (.003, .154)] showed that adolescents classified as other races are nearly

98% less likely to have a history of violence/physical abuse when compared to

adolescents classified as Caucasian. Controlling for specific LD diagnosis, age, youth

gender, race, and recent GPA, the predictor variable (annual income), in the logistic

regression analysis was found to contribute to the model. The unstandardized B = [-239],

SE = [.079], *Wald* = [9.100], *p* = .003 < .05. The estimated odds ratio [*Exp (B)* = [.787],

95% CI (.674, .920)] showed that adolescents with high annual income are nearly 22%

less likely to have a history of violence/physical abuse when compared to adolescents

with low annual income. for every unit increase in annual income. Controlling for

specific LD diagnosis, age, youth gender, annual income, and race, the predictor variable

(recent GPA), in the logistic regression analysis was found to contribute to the model.

The unstandardized *B* = [-.222], *SE* = [.098], *Wald* = [5.160], *p* = .023 < .05. The

estimated odds ratio [*Exp (B)* = [.801], 95% CI (.661, .970)] showed that adolescents with

a high GPA are nearly 20% less likely to have a history of violence/physical abuse when

compared to adolescents with a low recent GPA.

Table 8

Hosmer and Lemeshow Test RQ2

Step	Chi-square	df	Sig.
1	2.467	8	.963

Table 9

Model Summary RQ2

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	786.932a	.137	.183

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 10

Binary Logistic Regression Between Specific Learning Disability and History of Violence/Physical Abuse With Age, Gender, Race, Annual Income, and Recent GPA as

Confounders

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b)	
							Lower	Upper
Specific LD diagnosis	–.544	.218	6.237	1	.013	.581	.379	.890
Age	–.093	.064	2.129	1	.145	.911	.801	1.032
Gender	.838	.248	11.414	1	.001	2.311	1.421	3.757
Recent GPA	–.222	.098	5.160	1	.023	.801	.661	.970
Caucasian			16.927	4	.002			
African American	.044	.206	.046	1	.830	1.045	.698	1.567
Hispanic	.066	.243	.073	1	.787	1.068	.663	1.720
Other races	–3.882	1.026	14.323	1	.000	.021	.003	.154
Mixed	.404	.295	1.880	1	.170	1.498	.841	2.668
Annual income	–.239	.079	9.100	1	.003	.787	.674	.920
Constant	2.348	1.128	4.330	1	.037	10.466		

a. Variable(s) entered on step 1: Specific learning disability diagnosis, age, gender, recent GPA, race, annual income.

Table 11

Binary Logistic Regression Between Specific Learning Disability and History of Violence/Physical Abuse

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b)	
							Lower	Upper
Specific LD diagnosis	–.309	.207	2.220	1	.136	.734	.489	1.102
Constant	–.054	.088	.377	1	.539	.948		

a. Variable(s) entered on step 1: Specific learning disability diagnosis.

Research Question 3

Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of family imprisonment after controlling for age, gender, race, education level, and family income?

The binary logistic regression was conducted to investigate if there is a relationship between a specific LD diagnosis, age, gender, race, annual income, recent GPA and a history of family imprisonment. The outcome of interest was a history of

family imprisonment, the predictor was specific LD along with age, gender, race, annual income, and recent GPA as control variables. The Hosmer-Lemeshow goodness-of-fit was not significant ($p = .775 > .05$), indicating the model is correctly specified (Table 12). The observation in Table 13, the [*Cox & Snell R Square* = .066], and the [*Nagelkerke R squared* = .093] indicates that even though the model is not statistically significant, between 6.6% and 9.3% of the variance in history of family imprisonment among adolescents aged 10 to 19 years incarcerated in the state of Washington can be explained by the independent variables.

The model resulted that the independent variable specific LD diagnosis was not significant ($p = .488 > .05$). Controlling for age, annual income, youth gender, race, and recent GPA, the predictor (specific LD diagnosis) was found not to contribute to the model; there is no statistically significant association between a diagnosis of specific LD and a history of family imprisonment among adolescents aged 10 to 19 years incarcerated in the state of Washington.

In Table 14, age, youth gender, African American, Hispanic, mixed, were also not significant ($p > .05$). However, the independent variable other races was found to be significant ($p < .05$). Controlling for specific LD diagnosis, age, youth gender, African American, Hispanic, mixed, annual income, and recent GPA, the predictor variable (other races), in the logistic regression analysis was found to contribute to the model (Table 14). The unstandardized B = [.769], SE = [.355], *Wald* = [4.698], $p = .030 < .05$. The estimated odds ratio [*Exp (B)* = [.463], 95% CI (.231, .929)] showed that adolescents classified as other races are nearly 54% less likely to have a history of family

imprisonment when compared to adolescents classified as Caucasian. The independent

variable recent GPA was found to be significant ($p < .05$). Controlling for specific LD

diagnosis, age, race, youth gender and annual income, the predictor variable (recent

GPA), in the logistic regression analysis was found to contribute to the model (Table 14).

The unstandardized B = [.203], SE = [.101], $Wald$ = [4.063], p = .044 < .05. The

estimated odds ratio favored a positive increase of nearly 23% [$Exp\ (B)$ = [1.225], 95%

CI (1.006, 1.492)] for every one unit increase of recent GPA, meaning that the odds of

having a history of family imprisonment increased by 23% for every one unit increase of

an incarcerated adolescent recent GPA. The independent variable annual income was

found to be significant ($p < .05$). Controlling for specific LD diagnosis, age, race, youth

gender and recent GPA, the predictor variable (annual income), in the logistic regression

analysis was found to contribute to the model (Table 14). The unstandardized B = [.439],

SE = [.083], $Wald$ = [27.721], $p < .001$. The estimated odds ratio favored a positive

relationship of nearly [56%], [$Exp\ (B)$ = [1.551], 95% CI (1.317, 1.826)] for every one

unit increase of annual income, meaning that the odds of having a history of family

imprisonment increased by 55% for every one unit increase of an incarcerated adolescent

annual income.

Table 12

Hosmer and Lemeshow Test RQ3

Step	Chi-square	df	Sig.
1	4.832	8	.775

Table 13

Model Summary RQ3

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	750.706a	.066	.093

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 14

Binary Logistic Regression Between Specific Learning Disability and Any Family Imprisonment History With Age, Gender, Race, Annual Income, and Recent GPA as Confounders

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1a	Specific LD Diagnosis	.166	.240	.481	1	.488	1.181	.738	1.889
	youths age	-.066	.066	.999	1	.317	.936	.822	1.066
	youths gender	-.160	.260	.378	1	.539	.853	.513	1.418
	Caucasian			6.302	4	.178			
	African American	-.244	.223	1.198	1	.274	.784	.506	1.213
	Hispanic	-.211	.263	.641	1	.423	.810	.483	1.357
	Other races	-.769	.355	4.698	1	.030	.463	.231	.929
	Mixed	.176	.315	.313	1	.576	1.193	.643	2.213
	Annual Income	.439	.083	27.721	1	.000	1.551	1.317	1.826
	Recent GPA.	.203	.101	4.063	1	.044	1.225	1.006	1.492
	Constant	.094	1.165	.007	1	.936	1.099		

a. Variable(s) entered on step 1: Specific Learning Disability Diagnosis, youths age, youths gender, Race, Annual Income, Recent GPA.

Research Question 4

Among adolescents aged 10 to 19 years incarcerated in the state of Washington, is there an association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income?

To analyze RQ4, I conducted three analyses. Using binary logistic regression, I first investigated if there is a relationship between a specific LD diagnosis, age, gender, race, annual income, recent GPA and a history of alcohol abuse. The outcome of interest was a history of alcohol abuse, the predictor was specific LD along with age, gender, race, annual income, and recent GPA as control variables. The Hosmer-Lemeshow goodness-of-fit was not significant ($p = .933 > .05$), indicating the model is correctly specified (Table 15). The [*Cox & Snell R Square* = .101], and the [*Nagelkerke R squared* = .137] in Table 16, indicates that between 10% and 13.7% of the variance in history of alcohol abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington can be explained by the independent variables.

The model resulted that the independent variable specific LD diagnosis was not significant ($p = .969 > .05$). Controlling for age, annual income, youth gender, race, and recent GPA, the predictor (specific LD diagnosis) was found not to contribute to the model (Table 17), there is no statistically significant association between a diagnostic of specific LD and a history of alcohol abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington.

In Table 17, age, youth gender, African American, Hispanic, other races, annual income, and recent GPA) were also not significant ($p > .05$). However, the independent variable mixed was found to be significant ($p < .05$). Controlling for specific LD diagnosis, age, annual income, youth gender, African American, Hispanic, other races, and recent GPA, the predictor variable (mixed), in the logistic regression analysis was found to contribute to the model. The unstandardized *B* = [2.484], *SE* = [.354], *Wald* =

[49.253], *p < .001*. The estimated odds ratio favored a positive relationship of nearly

twelvefold [*Exp (B)* = [11.992], 95% CI (5.992, 24.000)] for adolescents classified as

mixed compared to adolescents classified as Caucasian, or adolescents classified as

mixed are nearly twelve fold more likely to have a history of alcohol abuse compared to

adolescents classified as Caucasian among adolescents aged 10 to 19 years incarcerated

in the state of Washington.

Table 15

Hosmer and Lemeshow RQ4

Step	Chi-square	df	Sig.
1	3.023	8	.933

Table 16

Model Summary RQ4

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	782.818a	.101	.137

a. Estimation terminated at iteration number 4 because
parameter estimates changed by less than .001.

Table 17

Binary Logistic Regression Between Specific Learning Disability and History of Alcohol Abuse With Age, Gender, Race, Annual Income, and Recent GPA as Confounders

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b) Lower	Upper
Specific LD diagnosis	.009	.228	.002	1	.969	1.009	.645	1.578
Age	.086	.065	1.742	1	.187	1.090	.959	1.238
Gender	.196	.249	.622	1	.430	1.217	.747	1.980
Caucasian			49.864	4	.000			
African American	.301	.214	1.979	1	.160	1.351	.888	2.053
Hispanic	.472	.247	3.649	1	.056	1.603	.988	2.600

Other races	.330	.351	.883	1	.347	1.391	.699	2.767
Mixed	2.484	.354	49.253	1	.000	11.992	5.992	24.000
Recent GPA	−.007	.099	.005	1	.942	.993	.818	1.205
Annual income	.029	.080	.136	1	.712	1.030	.881	1.204
Constant	−2.488	1.155	4.643	1	.031	.083		

a. Variable(s) entered on Step 1: Specific learning disability diagnosis, age, gender, race, recent GPA, annual income.

Second, using the binary logistic regression, I investigated if there is a relationship between a specific LD diagnosis, age, gender, race, annual income, recent GPA and a history of drug abuse. The outcome of interest was a history of drug abuse, the predictors were specific LD along with age, gender, race, annual income, and recent GPA as control variables. The Hosmer-Lemeshow goodness-of-fit was not significant (p = .736 > .05), indicating the model is correctly specified (Table 18). The [*Cox & Snell R Square* = .209], and the [*Nagelkerke R squared* = .297] in Table 19, indicates that between 20% and 30% of the variance in history of drug abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington can be explained by the independent variables.

The model resulted that the independent variable specific LD diagnosis was not significant (p = *.118* > .05). Controlling for age, annual income, youth gender, race, and recent GPA, the predictor (specific LD diagnosis) was found not to contribute to the model (Table 20), there is no statistically significant association between a diagnostic of specific LD and a history of drug abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington.

In Table 20, youth gender, African American, annual income, and recent GPA) were also not significant (p > .05). However, the independent variables age, Hispanic,

other races, and mixed were found to be significant ($p < .05$). Controlling for specific LD

diagnosis, annual income, race, youth gender, annual income, and recent GPA, the

predictor variable (age), in the logistic regression analysis was found to contribute to the

model. The unstandardized B = [.164], SE = [.077], $Wald$ = [4.596], p = .032 < .05. The

estimated odds ratio favored a positive increase of history of drug abuse of nearly 18%

[$Exp (B)$ = [1.179], 95% CI (1.014, 1.370)] for every one unit increase of age. Controlling

for specific LD diagnosis, age, annual income, youth gender, African American, other

races, mixed, and recent GPA, the predictor variable (Hispanic), in the logistic regression

analysis was found to contribute to the model. The unstandardized B = [.888], SE =

[.267], $Wald$ = [11.098], p = .001. The estimated odds ratio [$Exp (B)$ = [2.430], 95% CI

(1.441, 4.097)] shows that the odds of having a history of drug abuse increased by nearly

two and one-half fold for Hispanic adolescents compared to Caucasian incarcerated in the

State of Washington. Controlling for specific LD diagnosis, age, annual income, youth

gender, African American, Hispanic, mixed, and recent GPA, the predictor variable

(other races), in the logistic regression analysis was found to contribute to the model. The

unstandardized B = [-2.158], SE = [1.029], $Wald$ = [4.401], p = .036 < .05. The estimated

odds ratio [$Exp (B)$ = [.116], 95% CI (.015, .868)] shows that the odds of having a history

of drug abuse decreased by nearly 89% for adolescents classified as other races compared

to Caucasian incarcerated in the state of Washington. Controlling for specific LD

diagnosis, age, annual income, youth gender, African American, Hispanic, other races,

and recent GPA, the predictor variable (mixed), in the logistic regression analysis was

found to contribute to the model. The unstandardized B = [3.518], SE = [.420], $Wald$ =

[70.290], *p* < .001. The estimated odds ratio [*Exp (B)* = [33.718], 95% CI (14.815,

76.745)] shows that the odds of having a history of drug abuse increase by nearly thirty

four fold for adolescents classified as mixed compared to Caucasian incarcerated in the

state of Washington.

Table 18

Hosmer and Lemeshow RQ4(2)

Step	Chi-square	df	Sig.
1	5.198	8	.736

Table 19

Model Summary RQ4(2)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	626.962a	.209	.297

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 20

Binary Logistic Regression Between Specific Learning Disability and History of Drug Abuse With Age, Gender, Race, Annual Income, and Recent GPA as Confounders

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b) Lower	Upper
Specific LD diagnosis	.385	.246	2.442	1	.118	1.469	.907	2.381
Age	.164	.077	4.596	1	.983	.994	.568	1.738
White			81.052	4	.000			
Black	.412	.241	2.929	1	.087	1.509	.942	2.418
Hispanic	.888	.267	11.098	1	.001	2.430	1.441	4.097
Other races	–2.185	1.029	4.401	1	.036	.116	.015	.868
Mixed	3.518	.420	70.290	1	.000	33.718	14.815	76.745
Recent GPA	–.096	.114	.704	1	.401	.909	.727	1.136
Annual income	–.008	.092	.007	1	.935	.993	.829	1.188
Constant	–3.786	1.360	7.751	1	.005	.023		

a. Variable(s) entered on step 1: Specific learning disability diagnosis, age, gender, race, recent GPA, annual income.

Third, to investigate if there was an association between the independent variables and history of drug and alcohol abuse, I computed the variables to create a variable where history and drug abuse are under one category, but some adolescents had reported both past uses, therefore SPSS created a variable with 3 categories were 0: no past use, 1: past use alcohol or drug use, and 2: past use for alcohol and drug abuse as seen in the frequency table in table 21.

Table 21

Abuse

		Frequency	Percent	Valid percent	Cumulative percent
Valid	.00	359	56.4	56.4	56.4
	1.00	119	18.7	18.7	75.0
	2.00	159	25.0	25.0	100.0
	Total	637	100.0	100.0	

To resolve this issue, I created another variable where the 1 and 2 categories were added together to create one variable of substance past use, where 0 is coded as no past use and 1 coded as past use either drug or alcohol abuse or both as seen in table 22.

Table 22

Substance Abuse

		Frequency	Percent	Valid percent	Cumulative percent
Valid	No past	359	56.4	56.4	56.4
	past use	278	43.6	43.6	100.0
	Total	637	100.0	100.0	

Using binary logistic regression, I then investigated if there is a relationship

between a specific LD diagnosis, age, gender, race, annual income, recent GPA and a

history of alcohol and drug abuse. The outcome of interest was a history of drug and

alcohol abuse, the predictors were specific LD along with age, gender, race, annual

income, and recent GPA as control variables. The Hosmer-Lemeshow goodness-of-fit

was not significant ($p = .567 > .05$), indicating the model is correctly specified (Table

23). The [*Cox & Snell R Square = .129*], and the [*Nagelkerke R squared = .173]* in Table

24, indicates that between 13% and 17% of the variance in history of drug and alcohol

abuse among adolescents aged 10 to 19 years incarcerated in the state of Washington can

be explained by the independent variables.

The model resulted that the independent variable specific LD diagnosis was not

significant ($p = .414 > .05$). Controlling for age, annual income, youth gender, race, and

recent GPA, the predictor (specific LD diagnosis) was found not to contribute to the

model (Table 25); there is no statistically significant association between a diagnostic of

specific LD and a history of alcohol and drug abuse among adolescents aged 10 to 19

years incarcerated in the state of Washington.

In Table 25, age, youth gender, annual income, African American, other races,

and recent GPA) were also not significant ($p > .05$). However, the independent variables

Hispanic and mixed were found to be significant ($p < .05$). Controlling for specific LD,

age, annual income, youth gender, African American, other races, mixed, and recent

GPA, the predictor variable (Hispanic), in the logistic regression analysis was found to

contribute to the model. The unstandardized B = [.633], SE = [.242], $Wald$ = [6.843], $p <$

.05. The estimated odds ratio favored a positive relationship of history of alcohol/drug

abuse of nearly 89% [*Exp (B)* = [1.883], 95% CI (1.172, 3.026)] for Hispanic adolescents

compared to Caucasian incarcerated in the state of Washington. Controlling for specific

LD, age, annual income, youth gender, African American, Hispanic, Other races, and

recent GPA, the predictor variable (mixed), in the logistic regression analysis was found

to contribute to the model. The unstandardized *B* = [3.067], *SE* = [.454], *Wald* = [45.701],

p < .001. The estimated odds ratio *Exp (B)* = [21.473], 95% CI (8.826, 52.243)] shows

that the odds of having a history of alcohol/drug abuse increase by nearly twenty two fold

for adolescents classified as mixed compared to Caucasian incarcerated in the state of

Washington.

Table 23

Hosmer and Lemeshow RQ4(3)

Step	Chi-square	df	Sig.
1	6.723	8	.567

Table 24

Model Summary RQ4(3)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	784.660a	.129	.173

a. Estimation terminated at iteration number 5 because parameter estimates changed by
less than .001.

Table 25

Binary Logistic Regression Between Specific Learning Disability and History of Alcohol

and Drug Abuse With Age, Gender, Race, Annual Income, and Recent GPA as Confounders

Step 1a	B	SE	Wald	df	Sig.	Exp(b)	95% CI for Exp(b)	
							Lower	Upper
Specific LD diagnosis	.184	.225	.668	1	.414	1.202	.773	1.869
Age	.114	.065	3.058	1	.080	1.120	.986	1.273
Gender	.154	.247	.389	1	.533	1.166	.719	1.892
White			48.430	4	.000			
Black	.306	.208	2.156	1	.142	1.358	.903	2.043
Hispanic	.633	.242	6.843	1	.009	1.883	1.172	3.026
Other races	.234	.350	.447	1	.504	1.264	.637	2.507
Mixed	3.067	.454	45.701	1	.000	21.473	8.826	52.243
Recent GPA	–.090	.098	.852	1	.356	.914	.755	1.106
Annual income	–.010	.079	.017	1	.895	.990	.847	1.156
Constant	–2.334	1.153	4.095	1	.043	.097		

a. Variable(s) entered on step 1: Specific learning disability diagnosis, age, gender, race, recent GPA, annual income.

Summary

In this chapter, I presented the demographic characteristics of the samples and the results of hypothesis testing. The data analysis was conducted on a sample of 637 adolescents aged 10 to 19 years incarcerated in the state of Washington who had participated in cohort study 1 of the therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008-2015 study. The results showed a statistically significant association only between a diagnostic of specific LD, a history of sexual abuse and a history of physical/violence abuse. In RQs 2, 3, 4, the control variable race was found to have a statistical association with the dependent variables when controlling by the other factors. In RQs 2 and 3, annual income had a statistically significant association with the dependent variables (history of physical abuse and history of family imprisonment) when controlled by the other variables. In RQs 1 and 2, youth gender was found to have a statistically significant association with the

dependent variables (history of sexual and physical abuse) when controlling for the other

independent variables. The independent variable youth age showed a statistically

significant association only with a history of drug abuse when controlled by the other

variables. Interpretation of the findings, limitations of the study, recommendations,

implications, and conclusion of the analysis are discussed in Section 4.

Section 4: Application to Professional Practice and Implications for Social Change

The purpose of this quantitative study was to examine if an association exists between the dependent variables—sexual/physical abuse, family imprisonment, and alcohol/drug abuse—and a diagnosis of specific LDs among incarcerated adolescents aged 10 to 19 years in the state of Washington. The therapeutic change, length of stay, and recidivism in incarcerated juvenile offenders in Washington state, 2008–2015, was used as the data set, and specific LD diagnosis was the independent variable. Confounding factors (age, gender, race, education, and economic status) were also controlled as variables that may influence these associations. In Section 4, I include a summary of key findings, interpretation of the findings, limitations of the study, recommendations, implications for professional practice, conclusion of the analysis, and positive social change.

Summary of Key Findings

Four research questions and their corresponding hypotheses were tested to address the associations. In the findings of the binary logistic regression analysis, I found a statistically significant association only between specific LD diagnosis and a history of sexual and physical/violence abuse when the control variables were added to the analysis. But the results showed an inverse association with an OR < 1 in the binary logistic regression model, meaning that a specific LD diagnosis was associated with lower odds of having a history of sexual and physical/violent abuse among incarcerated adolescents aged 10 to 19 years in the state of Washington. For the confounding variables, in RQ2, RQ3, and RQ4 (history of physical abuse, history of family imprisonment, substance past

use), I found that race had a significant association with the dependent variables when controlled by the other factors (specific LD, age, gender, annual income, and recent GPA). Compared to Caucasian adolescents, other races adolescents were found to be less likely to have a history of physical abuse, a history of family imprisonment, and drug abuse, while Hispanic and mixed adolescents were found to be more likely to report a history of drug and/or alcohol abuse. In RQ2 and RQ3, annual income had a statistically significant association with the dependent variables (history of physical abuse and history of family imprisonment) when controlled by the other variables (specific LD, age, gender, race, and recent GPA). Having a high income was associated with lower odds of history of physical violence but with a higher chance of history of family imprisonment. In RQ1 and RQ2, gender was found to have a statistically significant association with the dependent variables (history of sexual and physical abuse) when controlled by the other independent variables (specific LD, age, race, annual income, recent GPA), meaning that male adolescents incarcerated reported a history of sexual and physical abuse more often than incarcerated female adolescents. I found that incarcerated adolescents who were classified as other races were less likely to report a history of physical abuse, a history of family imprisonment, and a history of drug use compared to Caucasian incarcerated adolescents. But adolescents classified as mixed and Hispanic were found to be more likely to report a history of alcohol and drug abuse than Caucasian adolescents. I also found that an increase in annual income and recent GPA was more likely to be associated with a history of family imprisonment but less likely to be associated with a history of

physical abuse. I found that an increase in age was more likely to be associated with a history of drug use.

Interpretation of the Findings

In the following subsection, I compare the findings with the previous literature to extend knowledge in the discipline. I also interpret the findings in the context of the SEM used as theoretical framework in the study.

Findings in the Literature

Previous researchers demonstrated that a specific LD diagnosis was prevalent among incarcerated adolescents (Beckford, 2016; Mallett, 2014a; Mallett, 2014b; Mallet & Kirven, 2015; Rucklidge et al., 2013). Among the possible causes, Mallett and Kirven (2015) and Rucklidge et al. (2013) underlined factors like school difficulties, mental health problems, family concerns, and poverty. Other factors like child maltreatment or abuse were also found linked more often to children with LDs (Helton et al., 2018). Previous researchers reported that age, gender, race, education status, and economic status play a role in incarceration among adolescents (Brinkley-Rubinstein et al., 2014; Butcher et al., 2017; Ewert et al., 2014; Mallett, 2015; Western, 2007). There was also a reported association between a family history of incarceration and incarceration of adolescents (Lee et al., 2013) and an association between incarceration and drug/alcohol abuse (National Criminal Justice Association, 2018).

Alternate Hypothesis 1

The binary logistic regression for RQ1 showed a statistically significant association between a specific LD diagnosis and a history of sexual abuse (*OR*: .518,

95% *CI*: .295, .910, *p* = .022) when age, gender, race, education level, and family income were added as controlled variables in the analysis. Therefore, with the findings, I rejected the null hypothesis of no association between a diagnosis of a specific LD and having been sexually abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

Having a diagnosis of specific LD may have contributed to incarceration of an adolescent, but there was no direct relationship between a specific LD diagnosis and a history of sexual abuse because the results showed an inverse relationship, meaning that incarcerated adolescents with a specific LD diagnosis were less likely to report a history of sexual abuse. This result differs from what previous researchers indicated: McEachern (2012) asserted that children with disabilities are at greater risks of sexual abuse; Helton et al. (2018) underlined that the odds of a sexual abuse allegation were 2.5 times greater for children with LDs than children without LDs regardless of confounders. Researchers Baglivio and Epps (2016) and Moore et al. (2013) found that juvenile offenders were four times more likely to have experienced childhood abuse, but there is still a lack of previous research to support the findings of an association between a diagnosis of a specific LD and having been sexually abused among incarcerated adolescents. One possible explanation for the contrasted findings could be that among the population/sample used in this study, only 117 incarcerated adolescents were diagnosed with LDs, which represented 18% of the sample (n = 637); usually in the literature the percentage of adolescents incarcerated with LDs ranges from 30% to 60% (Evans et al., 2015; Rucklidge et al., 2015). Other possible explanations are that adolescents from the

sample may have been raised in a more secure and protected environment or that some

adolescents did not report the event even though they were sexually victimized.

According to Wissink, van Vugt, Moonen, Stams, and Hendriks (2015), generally, sexual

abuse of children with LDs is underreported because of not only communication

difficulties but also lack of awareness that abuse has taken place. Therefore, further

research is needed to investigate the relationship between incarcerated adolescents with

LDs and sexual abuse.

The binary logistic regression for RQ1 also indicated a positive association

between being male and a history of sexual abuse, which is not consistent with the

literature, which has projected that between 11 and 17 years, one in three female

adolescents and nearly one in four male adolescents will be a rape victim (Centers for

Disease Control and Prevention, 2019), indicating that young women are more likely to

report a history of sexual abuse. Power et al. (2016) highlighted that men and women

were equally likely to experience childhood abuse, but women were more likely to report

sexual abuse; thus, there is a possible explanation that male adolescents in this study were

more open to reporting their past sexual experiences than the female adolescents were.

Another explanation could be that female adolescents in the sample came from a more

protective environment. Helton et al. (2018) argued that family dynamics are important

factors in child sexual abuse risk. Last, personal characteristics of the male adolescents

may have played a role in the contradictory finding; Helton et al. pointed out that some

personal characteristics of children match the needs, motives, or triggers of sexual

offenders. In other words, the population sampled may have been the cause of the

differences in results when compared with previous literature. Therefore, it might be important that further research also focuses on adolescents' characteristics and environments to better clarify the relationship between gender and sexual abuse among incarcerated adolescents with LDs.

Alternate Hypothesis 2

To answer RQ2, I conducted a binary logistic regression to investigate if an association exists between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington. There was a statistically significant association between a specific LD diagnosis and a history of physical abuse (*OR*: .581, 95% *CI*: .379, .890, *p* = .013) when the control variables were added to the analysis. Therefore, I rejected the null hypothesis of there is no association between a diagnosis of a specific LD and having been physically abused after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington.

An association between a history of violence/physical abuse and incarceration is well documented. Many researchers indicated that adolescents who have experienced child maltreatment have a higher chance of being incarcerated than those who were not (Grimshaw, 2008; Letourneau et al., 2008; McCuish et al., 2017). There is no found literature indicating a relationship between a diagnosis of LD and a history of physical abuse among incarcerated adolescents, making it difficult to support or not a claim of a negative relationship between incarcerated adolescents with LDs and history of physical

abuse. Like for sexual abuse, explanations for this difference between the literature and the present study could be the low representation of adolescents with LDs in the sample, a possible under-reporting of physical abuse or those adolescents from the sample came from a more stable environment. Fisher, Hodapp, and Dykens (2008) argued that families with children with disabilities often have to provide additional care and supervision to those children which increase stress and risks of child maltreatment, but Martin and Citrin (2014) added that parents who have access to quality services and culturally appropriate care are more confident and have more self-esteem, which can reduce stress and risk factors of abuse. Further research is needed to examine a relationship between the history of physical abuse and incarcerated adolescents with LDs and to elucidate if physical abuse could be a factor that facilitates their incarceration.

I found a statistically significant association between youth gender and a history of physical abuse (*OR*: 2.311, 95% *CI*:1.421, 3.757, *p* = .001), demonstrating that men were more likely to report a history of physical violence than women, also not consistent with the literature. Although, men are more likely than women to be incarcerated (Butcher et al., 2017), studies like Roos et al. (2016) corroborate Power et al. (2016) findings of equality of childhood abuse experiences among both sexes. Roos et al. showed that 50.4% of incarcerated women compared to 49.6% of men of their sample reported physical maltreatment. But the finding is consistent with previous results from a study published in 1997. Sobsey, Randall, and Parrila. Sobsey et al. (1997) found out that compared with their peers without disabilities, boys with disabilities represented a significantly larger proportion of physically abused children, in fact, boys with

disabilities were over-represented in all categories of abuse. Platt et al. (2017) also

supported that boys with disabilities usually report more abuse than girls (61.9% vs

58.2%). But Platt et al. remarked that studies analyzing the role of gender in violence

against people with disabilities have found inconsistent results. Thompson, Kingree, and

Desai (2004) had underlined the lack of research on gender differences in child

maltreatment and the fact that most studies on the consequences of child maltreatment

have focused on women. In that light of inconsistency in previous literature, it is

challenging to compare the finding of this present study with past results; further research

on physical abuse and adolescents with LDs is needed and should consider gender

characteristics more in depth.

The binary logistic regression demonstrated that adolescents classified as other

races were less likely to report a history of physical abuse (*OR*: .021, 95% *CI*: .003, .154,

p < .001), than their Caucasian peers. African American and Hispanic were most often

cited in the literature as the most incarcerated groups (Blankenship et al., 2018; Cottrell et

al., 2019), but the analysis did not show any relationship between being African

American or Hispanic and a history of sexual abuse. This finding was partly in agreement

with the findings of Dakil, Cox, Lin, and Flores, 2011 who found that compared with

Caucasian, Native Americans have lower odds of reports for physical abuse. Unlike the

findings by Dakil et al., 2011, I did not find African Americans, Latino, and multiracial

children to have greater odds of reports. A possible explanation for the partial agreement

is that the study by Dakil et al. was done in the general population to examine racial

disparities and physical abuse among children, unlike the current study which was

oriented in an incarcerated group. Further research is needed to clarify an association

between physical abuse and race among incarcerated adolescents.

Adolescents with high annual income (*OR*: .787, 95% *CI*: .674, .920, *p* = .003 <

.05), and high recent GPA (*OR*: .801, 95% *CI*: .661, .970, *p* = .023 < .05), were also

found to be less likely to report a history of physical abuse. The findings were consistent

with the literature, Lefebvre, Fallon, Van Wert, and Filippelli (2017) demonstrated a

strong association between economic hardship and child maltreatment, which according

to the authors, could be explained by the greater array of risk factors and stressors that

families experienced. Kim and Drake (2018) and Eckenrode, Smith, McCarthy, and

Dineen (2014) found an association between low economic status and maltreatment

among children. The findings are also consistent with McGaha-Garnett (2013) who also

indicated that violence reduces academic progress for children and adolescents.

Alternate Hypothesis 3

The binary logistic regression for RQ3 was conducted to investigate if there is an

association between a diagnosis of a specific LD and history of family imprisonment

after controlling for age, gender, race, education level, and family income among

adolescents aged 10 to 19 years incarcerated in the state of Washington. The results

showed no statistically significant association between a diagnosis of specific LD and a

history of family imprisonment (*OR*: 1.181, 95% *CI*: .738, 1.889, *p* = *.488* > .05) among

adolescents aged 10 to 19 years incarcerated in the state of Washington after controlling

for age, gender, race, education level, and family income. Therefore, I failed to reject the

null hypothesis of there is no association between a diagnosis of a specific LD and a

history of family imprisonment after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington. This finding differed from Morsy and Rothstein (2016) who found a strong relationship between children of incarcerated parents and the development of LDs. One reason why I failed to demonstrate an association between a specific LD diagnosis and a history of family imprisonment could be that the data was from only one state, therefore there is a lack of evidence to support the claim of no association between the two variables. Further research is needed to clarify a possible association between family imprisonment and specific LD diagnosis.

The analysis for RQ3 also demonstrated that adolescents classified as other races were less likely to report a history of family imprisonment (*OR*: .463, 95% *CI*: .231, .929, *p* = .030 < .05), when compared to Caucasian adolescents. As mentioned above, African American and Hispanic groups are more represented in the prison population than Caucasian (Vogel and Porter, 2016). Because in this study other races represented only 7.1% of the sample, the finding of the analysis makes sense because other races are not often cited in the literature as an incarcerated group. Adolescents with high GPA were found to be more likely to report a history of family imprisonment (*OR*: 1.225, 95% *CI*: 1.006, 1.492, *p* = .044 < .05). This finding contrasted with Hjalmarsson et al. (2015) who found that incarcerated people are likely to be less educated than the rest of the population. I also found that adolescents from households with a high annual income (*OR*: 1.551, 95% *CI*: 1.317, 1.826, *p* < .001) were more likely to report a history of family imprisonment. Consistent with this finding, Morsy and Rothstein (2016) found

that children of incarcerated parents experience more economic instability because inmates were the primary income providers to their families. Therefore, a loss of income can lead children to unhealthy behaviors and incarceration, perhaps especially if the loss is substantial. On the other hand, Martin (2017) found that the concentration of imprisoned parents is in low-income neighborhoods of African American children. A possible explanation for the contradictory findings may have been because the population used in the data set was mostly Caucasian and in one geographic location. Future research can include a more diverse population and geographic area to have more comparable results.

Alternate Hypothesis 4

For RQ 4, the binary logistic regression was conducted to find out if there is a relationship between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington. The results indicated no statistically significant association between a diagnosis of specific LD and a history of alcohol/drug abuse (*OR*: 1.202, 95% *CI*: .773, 1.869, *p* = .414 > .05) among adolescents aged 10 to 19 years old incarcerated in the State of Washington after controlling for age, gender, race, education level, and family income. Therefore, I failed to reject the null hypothesis of no association between a diagnosis of a specific LD and a history of alcohol and drug abuse after controlling for age, gender, race, education level, and family income among adolescents aged 10 to 19 years incarcerated in the state of Washington. This finding is not consistent with previous research. The U.S. Department

of Health and Human Services (2010) pointed out that people with LDs are two to four

times more likely to experience substance abuse than others. The Essential Learning

Institute (n.d.) noted that 60% of adolescents who received treatment for substance abuse

have LDs. A possible explanation for the contradictory finding may have been because

the U.S. Department of Health and Human Services and the Essential Learning Institute

used a more diverse reference group for their data, and their results were from the general

population not incarcerated people. This highlights the importance of more research

targeting other geographic areas to examine relationships between substance abuse and

specific LD diagnosis.

The analysis also demonstrated that adolescents reported as mixed were more

likely to report a history of alcohol abuse (*OR*: 11.992, 95% *CI*: 5.992, 24.000, $p < .001$)

when compared to Caucasian adolescents, more likely to report a history of drug abuse

(*OR*: 33.718, 95% *CI*: 14.815, 76.745, $p < .001$), and more likely to report a history of

alcohol/drug abuse (*OR*: 21.473, 95% *CI*: 8.826, 52.243, $p < .001$) than their Caucasian

peers. Hispanic adolescents were also more likely to report a history of drug abuse (*OR*:

2.430, 95% *CI*: 1.441, 4.097, $p = .001$), and a history of alcohol/drug abuse (*OR*: 1.883,

95% *CI*: 1.172, 3.026, $p = .001$), but there was no association between Hispanic

adolescents and history of alcohol abuse alone. On the other hand, adolescents reported

as other races were found to be less likely to report a history of drug abuse (*OR*: .1161,

95% *CI*: .015, .868, $p = .036 < .05$) when compared to Caucasian adolescents, but there

was no association between adolescents classified as other races and a history of alcohol

abuse, or a history of alcohol/drug abuse. The findings in this study contrasted with Wu,

Woody, Yang, Pan, and Blazer (2011) who found Native American adolescents to have the highest prevalence of substance-related use (20.5%), followed by adolescents of multiple races (18.1%), and adolescents of white race/ethnicity (16.2%) than other groups. Wu et al. conducted their study in the general population, while this current study considered an incarcerated group within a single area, which can explain the contradictory finding and support the need for additional more diverse research.

In the analysis of a history of drug abuse alone, youth age was found to be associated with the dependent variable. I found that an increase in youth age increased the chance of having a history of drug abuse (*OR*: 1.179, 95% *CI*: 1.014, 1.370, $p = .032 < .05$) by almost 18%. This result is consistent with Jordan and Anderson (2017), and Gallimberti et al. (2017) who found that early substance use by adolescents is associated with a higher chance of developing substance dependence as they age. In addition, in 2013, Bracken, Rodolico, and Hill argued that the percentage of individuals using most drug classes increases with age.

Findings to Bronfenbrenner's Social-Ecological Model

I applied the Bronfenbrenner's (SEM) in this study because it provided a useful framework to analyze and interpret the findings relating to (a) an association between the independent variable (specific LD diagnosis) and the dependent variables (sexual abuse, physical abuse, family imprisonment, alcohol/drug abuse), along with the control variables (age, gender, race, socioeconomic status, and education level); and (b) how the independent, dependent, and control variables in this study can fit into the various levels (microsystem, mesosystem, exosystem, and macrosystem) in an individual life described

in the model. According to Bronfenbrenner (1994), the systems in the SEM influence

individual behaviors. Some circumstances and actions can produce stress, affecting

psychological functioning and drive unhealthy behaviors among individuals, at the same

time healthy environments create healthy practices. Bronfenbrenner explained that one

event can change an individual's attitudes as can a group of events. Where an individual

is born, raised, goes to school, or works can shape his/her behavior. The SEM emphasizes

multiple levels of influence.

The findings from this study largely support the SEM. While having a specific LD

diagnosis was associated with lower odds of having a history of sexual and physical

abuse, and not associated with history of family imprisonment and substance abuse, those

results correspond to the microsystem of the SEM which Bronfenbrenner (1994)

considered as the most influential system and encompasses the relationship of a person

with the immediate surroundings. For Bronfenbrenner, if an adolescent with LDs raised

in a more secure environment may have been less subject to maltreatment, or exposed to

substance use, even though they end up being incarcerated, where they lived may have

prevented them from having those negative experiences. In other words, the behavior of a

person depends on a series of environmental factors and circumstances.

The findings also demonstrated that individual factors (age, race, gender, annual

income, and education level) play a role in certain characteristics among incarcerated

adolescents. For example, an increase in youth age was associated with a history of drug

abuse. Being classified as other races seem to influence a lower odds of physical abuse

and lower odds of drug abuse when compared to their Caucasian peers while being

classified as mixed increased the likelihood of a history of alcohol or/and drug abuse when compared to Caucasian adolescents. Being a Hispanic was associated with higher odds of having a history of drug abuse or a history of drug/alcohol abuse in comparison to their Caucasian peers. Individual characteristics as Bronfenbrenner posits, play an important role in behaviors but at the same time, there are influenced by external factors like culture, religion, or policies. For example, the National Institute of Drug Abuse (2015) underlined that because policies on marijuana use have started to be adopted in certain states, there has been an increase in the use of marijuana among young people.

Having a high recent GPA or high annual income was associated with lower odds of physical abuse. This finding can correspond also to the microsystem of SEM where Bronfenbrenner accentuated the importance of the environment in which a person evolves. This finding aligns with Essabar et al. (2015) who found a link between physical abuse, regression in school performance, and negative behaviors that can lead to incarceration. However, having a high recent GPA or high annual income resulted in significantly higher odds to have a history of a family member imprisoned. Although this finding may seem to be contradictory to SEM, it can fit into the exosystem of SEM where actions or circumstances are not directly related to the adolescent but can affect his life. Murray et al. (2014) showed that households that have imprisoned parents have a loss of income, and stress that could eventually bring negative health behaviors among adolescents such as using substances, making them at risk of sexual/physical abuse, or dropping out of school which can result in delinquent behaviors and increase the likelihood of being incarcerated. While incarceration is mostly found in poor

neighborhoods (Lofstrom & Raphael, 2016), it is not uncommon that people in wealthy

situations are incarcerated which leads to an economic crisis in the household. Sykes and

Maroto (2016) found that the incarceration of one individual can influence the overall

household wealth accumulation, in fact, in their study, having an incarcerated family

member reduced household assets by 64.3%. The findings that male gender was

significantly associated with a history of sexual and physical abuse although it does not

support findings in the literature but can be seen as a reference of the environment in

which the primary study was conducted. The SEM was a good fit in this study because of

the multiple interactions that exist in children's lives.

Limitations of the study

The current study was a cross-sectional study; therefore, it cannot be used to

determine a cause and effect relationship between the variables used. There are some

limitations to this study, which require the need for future research. The first limitation

was related to the methodology used in the primary study. The primary study was a

quasi-experimental study, information was collected through interviews, participants

were not blind to the study and they had to self-report their answers, which may have

influenced responses and reporting and therefore affected the external validity of the

results. For example, an adolescent may have been scared or ashamed to report sexual

abuse or substance use, or an adolescent with a LD may have difficulty understanding a

question properly or be unable to accurately recall an event. Therefore, it is uncertain to

know if all questions were answered honestly and properly. Those self-reported answers

may have been biased and lead to a question about the integrity and external validity of

the data. Nevertheless, the R- PACT assessment tool used in the previous study is a reliable instrument used since 2004 by the Department of Juvenile Justice to identify residential youths' criminogenic needs and risks (Hay & Widdowson, 2013). Based on the measurement used in the primary study, it is safe to say that there was no threat to the reliability of the study. Haradhan (2017) argued that the result of a researcher is considered reliable if consistent results have been obtained in identical situations but in different circumstances.

The second limitation which is also a threat to external validity was related to the generalizability of the study. The primary study was conducted only in one state, men and Caucasian were overrepresented, therefore demographics of this area could be different than other regions of the country, making it impossible to generalize the findings of this present study to the whole U.S. population. In addition, the primary study had two cohort studies but because the question of specific LD diagnosis was not present in the second cohort, I only used the first cohort to answer the research questions which limited the sample size used in the study. Lastly, because the study was limited to adolescents incarcerated not all adolescents in the population, it may be difficult to gauge the different perspectives in a relationship between the dependent variables and the independent variable, limiting the generalizability of the findings to a more diverse group, and to demonstrate if there is a difference between incarcerated and nonincarcerated groups.

Recommendations

The findings in the present study call for several potential future research studies. First, this study needs to be replicated in other geographic areas to allow researchers to capture different demographic features that may exist between states. Second, future research should also replicate this study in the general population to enable a comparison between incarcerated and nonincarcerated groups, and test if there is a difference between the dependent variables within an incarcerated adolescent population with a specific LD and an adolescent population with a specific LD who is not incarcerated. Third, finding literature for incarcerated adolescents with LDs was scarce, Maxey and Beckert (2017) argued that adolescents and disabilities literature, in general, is lacking. While research has shown that the proportion of adolescents with LDs who are incarcerated is greater than in the general population, it is difficult to find an explanation for this difference. Are adolescents with LDs more vulnerable leading them to adopt more unhealthy or delinquent behaviors? Or is it because of their vulnerability, they are more easily apt to get caught than adolescents without LDs and end up being incarcerated? Future analysis of the characteristics of incarcerated adolescents with LDs is suggested to fully understand the high prevalence of this group in the justice system. Fourth, because the population of children with disabilities is considered a vulnerable group, states or federals data collecting household reports should capture more clues on children with LDs and their family to allow research to have more information when studying this group. Fifth, because the results of this present study were contradictory with previous literature, other

studies could examine what characteristics present in this population may have led to different outcomes.

Implications for Professional Practice and Social Change

The study explored a possible relationship between specific LDs and sexual abuse, physical abuse, family imprisonment, drug/alcohol abuse among incarcerated adolescents, controlled by demographic factors (age, gender, race, education level, and family income). Although the results failed to demonstrate a positive association between a specific LD diagnosis and history of sexual/physical abuse; and a significant relationship between a diagnostic LD diagnostic and history of family imprisonment, and history of drug/alcohol abuse, the findings of this study may have stumbled upon an interesting subject highlighted in the theory used, of how when the environment (culture, background) is more protective of children with LDs, they are less subject to be exposed to unhealthy behaviors or maltreatment. It is important to have a better understanding of incarcerated adolescents with LD environments (parents, neighborhood, schools) that could impact the quality of their living, and consequently their wellness and behaviors.

The findings of this study do have many implications for professional practice and social change that could be relevant to guide people who are involved with adolescents with LDs. Assessing factors that are present among incarcerated adolescents with LDs would provide greater knowledge to parents, teachers, policymakers, health professionals, and the juvenile court. The results of this study could help parents, family members and teachers understood the importance of providing a secure and stable environment for children with LDs. Authorities, health professionals, or policymakers

involved in decisions that could impact children with LDs may use the findings of this study as a tool not only to encourage more research on incarcerated adolescents with LDs but also to promote the development of more interventions that could empower families who have children with LDs with more resources to raise them. Furthermore, a better understanding of factors that could influence the incarceration of adolescents with LDs is useful for advancing positive social change, by reducing the number of children incarcerated in the country, but also limiting public resources associated to this issue, resources that could be used in communities and other public health challenges.

Conclusion

In this study, I used a secondary data set from the National Archive of Criminal Justice Data to investigate which factors could be associated with incarceration of adolescents with a diagnosis of LD. Four research questions were analyzed through binary logistic analysis. The null hypothesis for RQ1 and RQ2 was rejected, the results showed a negative relationship between the variables, which lead to the conclusion that this study did not find a particular factor associated with adolescents incarcerated with a diagnosis of LD. Demographic characteristics were also measured in the analysis, and some characteristics were found to be more likely present among those adolescents, like a low annual income and low GPA was associated with a history of physical violence, but less likely to be associated with a history of family imprisonment. An increase in age was more likely to be associated with a history of drug use, and men in this study seem to report more sexual and physical abuse than women. Hispanic adolescents were more likely to report a history of drug abuse and a history of alcohol/drug abuse when

compared to Caucasian, while other races adolescents were less likely to report a history of drug or/and alcohol abuse, or a history of physical abuse when compared to Caucasian adolescents.

The findings in this study were mostly different from the literature that indicated adolescents with LDs are overrepresented in the juvenile system. The findings justified the need for more research with incarcerated adolescents and in diverse geographical areas to help comprehend the high prevalence of incarcerated adolescents with LDs reported in the literature. There is a lack of information available about incarceration and LDs among adolescents and a lot to be learned about this public health issue in the country. Knowing the factors associated with the incarceration of adolescents with LDs would be beneficial for the development and implementation of collaborative intervention and policies. Further research is also needed to investigate if existing policies and interventions available for children with LDs can meet their needs and help protect this vulnerable group.

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Appendix A: Data Use Agreement

Restricted Data Use Agreement
for Restricted Data from
the Inter-university Consortium
for Political and Social Research (ICPSR)

I. Definitions

A. "Investigator" is the person primarily responsible for conducting the research or statistical activities relative to the Research Description of the Online Application (the "Research Description"), or supervising the individuals conducting the research or statistical activities relative to the Research Description, for which Restricted Data are obtained through this Agreement.

B. "Research Staff" are all persons at the Investigator's Institution, excluding the Investigator, who will have access to Restricted Data obtained through this Agreement, including students, other faculty and researchers, staff, agents, or employees for which Institution accepts responsibility.

C. "Institution" is the university or research institution at which the Investigator will conduct research using Restricted Data obtained through this Agreement.

D. "Representative of the Institution" is a person authorized to enter into binding legal agreements on behalf of Investigator's Institution.

E. "Restricted Data" are the research dataset(s) provided under this Agreement that include potentially identifiable information in the form of indirect identifiers that if used together within the dataset(s) or linked to other dataset(s) could lead to the re-identification of a specific Private Person, as well as information provided by a Private Person under the expectation that the information would be kept confidential and would not lead to harm to the Private Person. Restricted Data includes any Derivatives.

F. "Private Person" means any individual (including an individual acting in an official capacity) and any private (i.e., non-government) partnership, corporation, association, organization, community, tribe, sovereign nation, or entity (or any combination thereof), including family, household, school, neighborhood, health service, or institution from which the Restricted Data arise or were derived, or which are related to a Private Person from which the Confidential Information arise or were derived.

G. "ICPSR" is the Inter-university Consortium for Political and Social Research.

H. "Online Application" includes all information entered into the ICPSR web-based data access request system, including Investigator information, Research Staff information, Research Description, Data Selection specifying which files and documentation are requested, Confidentiality Pledge signed by the Investigator, Supplemental Agreement and Confidentiality Pledge signed by each Research Staff, Data Security Plan, and a copy of a document signed by the

Institution's Institutional Review Board (IRB), or equivalent, approving or exempting the research project.

I. "Data Security Plan" is a component of the Agreement which specifies permissible computer configurations for use of Restricted Data and records what the Investigator commits to do in order to keep Restricted Data secure.

J. "Deductive Disclosure" is the discerning of a Private Person's identity or confidential information through the use of characteristics about that Private Person in the Restricted Data. Disclosure risk is present if an unacceptably narrow estimation of a Private Person's confidential information is possible or if determining the exact attributes of the Private Person is possible with a high level of confidence.

K. "Derivative" is a file or statistic derived from the Restricted Data that poses disclosure risk to any Private Person in the Restricted Data obtained through this Agreement. Derivatives include copies of the Restricted Data received from ICPSR, subsets of the Restricted Data, and analysis results that do not conform to the guidelines in Section VI.F.

II. Responsibility to Address Disclosure Risk

Deductive Disclosure of a Private Person's identity from research data is a major concern of federal agencies, researchers, and Institutional Review Boards. Investigators and Institutions who receive any portion of Restricted Data are obligated to protect the Restricted Data from Deductive Disclosure risk, non-authorized use, and attempts to identify any Private Person by strictly adhering to the obligations set forth in this Agreement.

III. Requirements of Investigator

A. The Investigator assumes the responsibility of completing the Online Application and any other required documents, reports, and amendments.

B. The Investigator agrees to manage and use Restricted Data, implement all Restricted Data security procedures per the Data Security Plan, and ensure that all Research Staff understand their requirements per this Agreement and follow the Data Security Plan.

C. Investigators must meet each of the following criteria:

1. Have a PhD or other research-appropriate terminal degree; and
2. Hold a faculty appointment or have an appointment that is eligible to be a principal investigator at Institution.

IV. Requirements of Institution

The Institution represents that it is:

A. An institution of higher education, a research organization, a research arm of a government agency, or a nongovernmental, not-for-profit, agency.

B. Not currently debarred or otherwise restricted in any manner from receiving information of a sensitive, confidential, or private nature under any applicable laws, regulations, or policies.

C. Have a demonstrated record of using sensitive data according to commonly accepted standards of research ethics and applicable statutory requirements.

V. Obligations of ICPSR

In consideration of the promises made in Section VI of this Agreement, and upon receipt of a complete and approved Online Application, ICPSR agrees to:

A. Provide the Restricted Data requested by the Investigator in the Restricted Data Order Summary within a reasonable time of execution of this Agreement by Institution and to make the Restricted Data available to Investigator via download or removable media.

B. Provide electronic documentation of the origins, form, and general content of the Restricted Data sent to the Investigator, in the same time period and manner as the Restricted Data.

ICPSR MAKES NO REPRESENTATIONS NOR EXTENDS ANY WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THAT THE USE OF THE RESTRICTED DATA WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK, OR OTHER PROPRIETARY RIGHTS. Unless prohibited by law, Institution assumes all liability for claims for damages against them by third parties that may arise from the use, storage, disposal, or disclosure by the Institution of the Restricted Data, except to the extent and in proportion such liability or damages arise from the negligence of ICPSR.

VI. Obligations of the Investigator, Research Staff, and Institution

Restricted Data provided under this Agreement shall be held by the Investigator, Research Staff, and Institution in strictest confidence and can be used or disclosed only in compliance with the terms of this Agreement. In consideration of the promises in Section V of this Agreement, and for use of Restricted Data from ICPSR, the Institution agrees:

A. That the Restricted Data will be used solely for research or statistical purposes relative to the project as identified in the Research Description of the Online Application (the "Research Description"), and for no other purpose whatsoever without the prior written consent of ICPSR. Further, no attempt will be made to identify Private Person(s), no Restricted Data of Private Person(s) will be published or otherwise distributed, the Restricted Data will be protected against Deductive Disclosure risk by strictly adhering to the obligations set forth in this Agreement, and precautions will be taken to protect the Restricted Data from non-authorized use.

B. To comply fully with the approved Data Security Plan at all times relevant to this Agreement.

C. That no persons other than those identified in this Agreement or in subsequent amendments to this Agreement, as Investigator or Research Staff and who have signed this Agreement or a Supplemental Agreement, be permitted access to the contents of Restricted Data files or any Derivatives from the Restricted Data.

D. That within five (5) business days of becoming aware of any unauthorized access, use, or disclosure of Restricted Data, or access, use, or disclosure of Restricted Data that is inconsistent with the terms and conditions of this Agreement, the unauthorized or inconsistent access, use, or disclosure of Restricted Data will be reported in writing to ICPSR.

E. That, unless prior specific, written approval is received from ICPSR, no attempt under any circumstances will be made to link the Restricted Data to any Private Person, whether living or deceased, or with any other dataset, including other datasets provided by ICPSR.

F. To avoid inadvertent disclosure of Private Persons by being knowledgeable about what factors constitute disclosure risk and by using disclosure risk guidelines, such as but not limited to, the following guidelines[1] in the release of statistics or other content derived from the Restricted Data.[2]

   1. No release of a sample unique for which only one record in the Restricted Data provides a certain combination of values from key variables.

   2. No release of a sample rare for which only a small number of records (e.g., 3, 5, or 10 depending on sample characteristics) in the Restricted Data provide a certain combination of values from key variables. For example, in no instance should the cell frequency of a cross-tabulation, a total for a row or column of a cross-tabulation, or a quantity figure be fewer than the appropriate threshold as determined from the sample characteristics. In general, assess empty cells and full cells for disclosure risk stemming from sampled records of a defined group reporting the same characteristics.

   3. No release of the statistic if the total, mean, or average is based on fewer cases than the appropriate threshold as determined from the sample characteristics.

   4. No release of the statistic if the contribution of a few observations dominates the estimate of a particular cell. For example, in no instance should the quantity figures be released if one case contributes more than 60 percent of the quantity amount.

   5. No release of data that permits disclosure when used in combination with other known data. For example, unique values or counts below the appropriate threshold for key variables in the Restricted Data that are continuous and link to other data from ICPSR or elsewhere.

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[1] For more information, see the U.S. Bureau of the Census checklist. *Supporting Document Checklist on Disclosure Potential of Data*, at http://www.census.gov/srd/sdc/S14-1_v1.3_Checklist.doc; *NCHS Disclosure Potential Checklist* at http:// http://www.cdc.gov/nchs/data/nchs_microdata_release_policy_4-02A.pdf; and *FCSM Statistical Policy Working Paper 22 (Second Version, 2005)* at http:// http://www.hhs.gov/sites/default/files/spwp22.pdf

[2] If disclosure review rules were established for a specific Restricted Dataset, they will be included in the dataset's documentation and are covered by this Agreement.

6. No release of minimum and maximum values of identifiable characteristics (e.g., income, age, household size, etc.) or reporting of values in the "tails," e.g., the 5th or 95th percentile, from a variable(s) representing highly skewed populations.

7. No release of ANOVAs and regression equations when the analytic model that includes categorical covariates is saturated or nearly saturated. In general, variables in analytic models should conform to disclosure rules for descriptive statistics (e.g., see #6 above).

8. In no instance should data on an identifiable case, or any of the kinds of data listed in preceding items 1-7, be derivable through subtraction or other calculation from the combination of tables released.

9. No release of sample population information or characteristics in greater detail than released or published by the researchers who collected the Restricted Data. This includes but is not limited to publication of maps.

10. No release of anecdotal information about a specific Private Person(s) or case study without prior written approval.

11. The above guidelines also apply to charts as they are graphical representations of cross-tabulations. In addition, graphical outputs (e.g., scatterplots, box plots, plots of residuals) should adhere to the above guidelines.

G. That if the identity of any Private Person should be discovered, then:

1. No use will be made of this knowledge;

2. ICPSR will be advised of the incident within five (5) business days of discovery of the incident;

3. The information that would identify the Private Person will be safeguarded or destroyed as requested by ICPSR; and

4. No one else will be informed of the discovered identity.

H. Unless other provisions have been made with ICPSR, all originals and copies of the Restricted Data, on whatever media, shall be destroyed on or before completion of this Agreement or within 5 days of written request from ICPSR. Investigator will complete and notarize an Affidavit of Destruction, attesting to the destruction of the Restricted Data. Investigators requiring the Restricted Data beyond the completion of this Agreement should submit a request for continuation three months prior to the end date of the agreement. This obligation of destruction shall not apply to Investigator's scholarly work based upon or that incorporates the Restricted Data.

I. That any books, articles, conference papers, theses, dissertations, reports, or other publications that employed the Restricted Data or other resources provided by ICPSR reference the bibliographic citation provided by ICPSR and be reported to ICPSR for inclusion in its data-related bibliography.

J. To provide annual reports to ICPSR staff (through ICPSR's online data access request system), which include:

1. A copy of the annual IRB approval for the project described in the Research Description;

2. A listing of public presentations at professional meetings using results based on the Restricted Data or Derivatives or analyses thereof;

3. A listing of papers accepted for publication using the Restricted Data, or Derivatives or analyses thereof, with complete citations;

4. A listing of Research Staff using the Restricted Data, or Derivatives or analyses thereof, for dissertations or theses, the titles of these papers, and the date of completion; and

5. Update on any change in scope of the project as described in the Research Description.

K. To notify ICPSR of a change in institutional affiliation of the Investigator, a change in institutional affiliation of any Research Staff, or the addition or removal of Research Staff on the research project. Notification must be in writing and must be received by ICPSR at least six (6) weeks prior to the last day of employment with Institution. Notification of the addition or removal of Research Staff on the research project shall be provided to ICPSR as soon as reasonably possible. Investigator's separation from Institution terminates this Agreement.

L. Upon Investigator's change in institutional affiliation, all electronic and paper Restricted Data will be securely destroyed with a notarized affidavit of destruction submitted to ICPSR. ICPSR will, at the request and cost of Investigator, store these files and transfer them to Investigator's new Institution upon submission and approval of an Online Application by the new Institution. Although the Restricted Data will be stored in a secure location, ICPSR assumes no responsibility for the Restricted Data or associated files and Institution and Investigator shall not be liable for any damages arising from any suits or claims arising from the storage of the Restricted Data or associated files by ICPSR. ICPSR makes no guarantees and provides no warranty that the exact same Restricted Data or associated files can be or will be provided to Investigator after such storage, or that any files or Restricted Data forwarded to Investigator after such storage will be free from defect or fit for any particular purpose.

M. That use of the Restricted Data will be consistent with the Institution's policies regarding scientific integrity and human subject's research.

N. To respond fully and in writing within ten (10) working days after receipt of any written inquiry from ICPSR regarding compliance with this Agreement.

VII. Violations of this Agreement

A. The Institution will investigate allegations by ICPSR or other parties of violations of this Agreement in accordance with its policies and procedures on scientific integrity and misconduct. If the allegations are confirmed, the Institution will treat the violations as it would violations of the explicit terms of its policies on scientific integrity and misconduct.

B. In the event of a breach of any provision of this Agreement, Institution shall be responsible to promptly cure the breach and mitigate any damages. The Institution hereby acknowledges that any breach of the confidentiality provisions herein may result in irreparable harm to ICPSR not adequately compensable by money damages. Institution hereby acknowledges the possibility of injunctive relief in the event of breach, in addition to money damages. In addition, ICPSR may:

1. Terminate this Agreement upon notice and require return of the Restricted Data and any derivatives thereof;

2. Deny Investigator future access to Restricted Data; and/or

3. Report the inappropriate use or disclosure to the appropriate federal and private agencies or foundations that fund scientific and public policy research.

4. Such other remedies that may be available to ICPSR under law or equity, including injunctive relief.

C. Institution agrees, to the extent not prohibited under applicable law, to indemnify the Regents of the University of Michigan from any or all claims, losses, causes of action, judgments, damages, and expenses arising from Investigator's, Research Staff's, and/or Institution's use of the Restricted Data, except to the extent and in proportion such liability or damages arose from the negligence of the Regents of the University of Michigan. Nothing herein shall be construed as a waiver of any immunities and protections available to Institution under applicable law.

D. In the event of a violation, the Investigator must:
1. Notify ICPSR within five (5) business days;
2. Stop work with the Restricted Data immediately;
3. Submit a notarized affidavit acknowledging the violation to ICPSR;
4. Inform the Representative of Institution of the violation and review security protocols and disclosure protections with them.
   i. The Representative of Investigator's Institution must submit an acknowledgment of the violation and security protocols and disclosure protections review to ICPSR; and
5. Reapply for access to the Restricted Data.

VIII. Confidentiality

This Agreement is consistent with the requirements of the United States Code -- 31 USC Section 3729 et seq. (The False Claims Act), and 34 USC Section 10231(a), which authorizes the Department of Justice to collect confidential data while mandating strict protections -- and the Code of Federal Regulations -- 28 CFR 22 (Confidentiality and Transfer of Confidential Data), 28 CFR 46 (Department of Justice version of the Common Rule), as well as 62 F.R. 35044 (June 27, 1997) (The Federal Confidentiality Order).

To the extent the Restricted Data are subject to a Certificate of Confidentiality, the Institution is considered to be a contractor or cooperating agency of ICPSR; as such, the Institution, the Investigator, and Research Staff are authorized to protect the privacy of the individuals who are the subjects of the Restricted Data by withholding their identifying characteristics from all persons not connected with the conduct of the Investigator's research project. "Identifying characteristics" are considered to include those data defined as confidential under the terms of this Agreement.

IX. Incorporation by Reference

All parties agree that the information entered into the Online Application, including the Data Security Plan, IRB approval, and any Supplemental Agreements and Confidentiality Pledges, are incorporated into this Agreement by reference.

X. Miscellaneous

A. All notices, contractual correspondence, and return of Restricted Data under this Agreement on behalf of the Investigator shall be made in writing and delivered to the address below:

   ICPSR
   P.O. Box 1248
   Ann Arbor, MI 48106-1248
   -or-
   help@icpsr.umich.edu

B. This agreement shall be effective for 24 months from execution or until the IRB expires.

C. The respective rights and obligations of ICPSR and Investigator, Research Staff, and Institution pursuant to this Agreement shall survive termination of the Agreement.

D. This Agreement and any of the information and materials entered into the Online Application may be amended or modified only by the mutual written consent of the authorized representatives of ICPSR and Investigator and Institution. Both parties agree to amend this Agreement to the extent necessary to comply with the requirements of any applicable regulatory authority.

E. The Representative of the Institution signing this Agreement has the right and authority to execute this Agreement, and no further approvals are necessary to create a binding agreement.

F. The obligations of Investigator, Research Staff, and Institution set forth within this Agreement may not be assigned or otherwise transferred without the express written consent of ICPSR.

**Investigator and Institutional
Signatures**

Read and Acknowledged by:
Investigator

                                       Institutional Representative

	10/21/19		11/8/2019
SIGNATURE	DATE	SIGNATURE	DATE

PhD

NAME TYPED OR PRINTED   NAME TYPED OR PRINTED

Senior Contributing Faculty   Dean of Research and Executive Director

TITLE   TITLE

Walden University   Walden University

INSTITUTION   INSTITUTION

100   100

BUILDING ADDRESS   BUILDING ADDRESS

Washington Avenue   Washington Avenue

STREET ADDRESS   STREET ADDRESS

Minneapolis, MN 55401   Minneapolis, MN 55401

CITY, STATE ZIP   CITY, STATE ZIP