PREDICTIVE PATTERNS OF INSTITUTIONAL MISCONDUCT, PRO-SOCIAL BEHAVIOR, AND LENGTH OF STAY OF INCARCERATED YOUTH IN A SECURE, LONG-TERM, JUVENILE REHABILITATION FACILITY

A dissertation submitted to the Kent State University College of Education, Health, and Human Services in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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The purpose of this quantitative study was to determine whether a data driven profile of incoming youth can predict pro-social behavior, institutional misconduct, and length of stay during their term of incarceration at a juvenile rehabilitation facility.

The analysis used data of 65 juvenile participants obtained during their intake process at a regional, juvenile rehabilitation facility, as well as the youths’ performance during their commitment. Independent variables include age, sex, and race. Along with the demographic information, continuous data results from the Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2) and How I Think Questionnaire (HIT) were part of the statistical pool utilized by the analysis. Dependent variables consisted of points for pro-social behavior, disciplinary write-ups for misconduct, and length of stay. Multiple regression and correlational analyses were applied to the data yielding varying degrees of correlations and statistically significant predictors of pro-social behavior, misconduct, and length of stay.

The results of the study found that minorities had higher pro-social and misconduct rates than white youth. In addition, the MAYSI-2 angry-irritable and traumatic experiences, along with race, were predictive of institutional misconduct. Furthermore, correlations were evident between HIT scores and misconduct rates, as well
as HIT and MAYSI-2 scores, suggesting some similarities in assessment qualities between the two measures.

Juvenile correctional facilities can apply these findings by proactively implementing intervention strategies and services focusing on incoming youth exhibiting risk factors leading to negative behavior patterns. For example, anger management training would be beneficial for those exhibiting elevated scores on the angry-irritable subscale.
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To my wife, Michele, and children, Hannah, Carissa, and Zachary. Can you believe I finished?

To my dissertation director, Dr. Pam Luft. You stepped in while under no obligation to do so. Without your willingness to assist, this would never have been possible.

In memory of my parents, Don and Mary. They never failed to ask how the dissertation was going.
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CHAPTER I
INTRODUCTION

Research has identified an array of risk factors contributing to maladaptive and
criminal behaviors of adolescents and subsequent delinquency (Martin, Martin, Dell,
Davis, & Guerrieri, 2008; Puzzanchera & Kang, 2014). Arbeit et al. (2014), for example,
detailed the interaction between depression, substance abuse, eating disorders, social
popularity, and bullying during the adolescent path toward a delinquency. These
inappropriate activities established prior to confinement are then transferred into the
correctional system when the youth is committed (Lampron & Gonsoulin, 2013). As
some juveniles progressively acquire more negative characteristics inherent in
delinquency, adopting interventions for positive outcomes can become a challenging and
complex task.

This range of factors illuminates the difficult undertaking confronting correctional
organizations where personnel must consider treatment options for both victims and
victimizers. The current study identifies cognitive, mental health, and behavioral risk
factors associated with delinquency, recidivism, and institutional misconduct. The study
then uses a regression analysis to examine predictive patterns of positive or negative
behavioral incidents within a correctional environment. Results may assist correctional
personnel in their pursuit of implementing programs and supports to improve behavioral
outcomes for incarcerated youth.

The following sections begin with an overview of juvenile correctional facilities in
general. A description of the life course trajectory theory, including the pertinent phase
of delinquency, follows with a model of the trajectory in Figure 1. The life course trajectory discussion includes a review of individual characteristics of incarcerated youth, which comprise a portion of the delinquent phase of the life course trajectory. The section concludes with a discussion of methods for improving outcomes of incarcerated juveniles that may be gleaned from this study.

**Characteristics of Juvenile Justice Facilities**

Approximately 50,000 juveniles reside in correctional facilities on any given day in the United States. Their detentions are for relatively short stays of several weeks or commitments for months or years depending on the severity of the delinquent act (Sickmund, Sladky, Kang, & Puzzanchera, 2017). Nearly 2,500 facilities across the nation typically house these youth based upon the type and severity of the offense. Within the State of Ohio, state run correctional facilities house those serving time for the most serious offenses. Detention centers, on the other hand, are equipped for juveniles confined for short stays (Bartollas & Miller, 2008; Jolivette & Nelson, 2010). Low capacity facilities have produced a significantly lower recidivism rate than the 50% national average (Bullis, Yovanoff, Mueller, & Havel, 2002; Nelson, Jolivette, Leone, & Mathur, 2010; Sedlak, 2009). This study will analyze data from a secure, low capacity, regional facility.

**Life Course of Delinquency and Model**

Developmental studies of at-risk youth have been acknowledged for their value in identifying effective prevention and intervention strategies (Park, Lee, Bolland, Vazsonyi, & Sun, 2008). For instance, the recognition that children experiencing
significant racial discrimination are more likely to offend at an early age encourages the insertion of programming options directed at discriminatory behavior and responses (Evans, Simons, & Simons, 2016). This study examines the influence of organic risk factors (e.g., mental health) and demographic characteristics (e.g., age and race) upon a life course through delinquency and specifically on institutional misconduct within a secure, juvenile rehabilitation center. The study analysis is anticipated to examine factors predictive of institutional misbehavior, ultimately shaping future treatment decisions.

Delinquency theorists have posited that existing characteristics (e.g., race) and emerging risk factors (e.g., mental health concerns and abuse victimization) enter an individual’s life during the developmental years of childhood and adolescence. Available data in the study will permit an investigation into two areas of developmental influence: organic risk factors such as mental health disorders and symptoms, and demographic features including age and race. These categories of developmental factors can be instrumental when interacting with societal influences leading to pathways toward or away from delinquent conduct (Martsolf & Draucker, 2008; Piquero, Farrington, Nagin, & Moffit, 2010; Piquero, MacDonald, & Parker, 2002).

Persistent, life-course delinquency generally exhibits consistent levels of anti-social behavior from early childhood through adolescence (Zheng & Cleveland, 2013). Patterns of delinquency and pre-incarceration behavior, commonly arising from anti-social tendencies, routinely correlate with elevated recidivism rates. Furthermore, institutional misconduct has been identified as a predictor of recidivism placing substantial burdens upon society (Trulson, 2007). The cost of recidivism was articulated
by Ryan, Abrams, and Huang (2014) who noted a juvenile correctional facility costs the taxpayer an average rate of $241.00 per juvenile per day. In addition to financial expenditures, recidivism has been blamed for educational failure, chronic mental health and substance abuse disorders, and high mortality rates for formerly incarcerated youth (Ryan et al., 2014). This study targets negative outcomes of institutional misconduct and length of stay, as well as a positive outcome of pro-social behavior. These outcomes are individual components in a complex life course trajectory of a persistent delinquency that largely originates in childhood and routinely continues through adolescence with influences continuing on into adulthood (See Figure 1). This study examines a variety of influencing factors derived from demographic and organic sources and their impact on
Figure 1. Life course trajectory

the confinement phase of a delinquent life course. Building upon these findings, correctional facilities can identify interventions and strategies, which will encourage incarcerated juveniles to pursue pro-social pathways of behavior.

Demographic Characteristics of Incarcerated Youth

Incarcerated youth in the United States constitute a diverse population. The National Center for Juvenile Justice reports that, racially, white youth make up the greatest percentage of the incarcerated populace with Hispanics and black juveniles comprising sizable minority populations. Though males represent the largest sex grouping, females represent approximate 15% of incarcerated youth. In recent years, fewer young juveniles have entered the juvenile justice system though arrests for violent offenses committed by this age group has increased. Committed youth also have shown higher rates of special education identification than traditional students (Baltodano, Harris, & Rutherford, 2005; Sickmund & Puzzanchera, 2014).

Researchers have acknowledged the importance of recognizing pertinent characteristics of offending juveniles for purposes of crafting effective interventions and treatment (Martin et al., 2008; Snyder & Sickmund, 2006). Larson and Turner (2002) identified a range of evidence-based practices for use within correctional settings. Their eight programming domains were crafted upon characteristics commonly found within the correctional population including disability status and behavioral patterns. The selection of treatment options should come only after an individual assessment of a juvenile’s academic, psychological, and social skills which Larson and Turner deemed
the domain of Individual Juvenile Planning. A thorough understanding of relevant demographic characteristics is foundational to a successful treatment protocol.

**Organic Risk Factors of Incarcerated Youth**

In addition to the unique demographic features, youth entering the juvenile justice system present with abnormalities in psychological functioning that underlie their emotional and behavioral status (Dembo et al., 2007). To wit, more than 40% have already been treated for mental health disorders prior to commitment (Kreuzmien, Mulcahy, & Leone, 2008). The sheer number of incarcerated youth with mental health disorders has created a considerable need for treatment during the typical stay of this population (Fazel, Doll, & Langsrom, 2008), leading some to refer to juvenile corrections facilities as “de facto mental health clinics” (Meservy & Skowrya, 2015).

A majority of incarcerated youth present with a diagnosable mental health issue upon admission (Shufelt & Cocozza, 2006; Underwood, Phillips, von Dresner, & Knight, 2006). For example, in a Midwestern detention center, Martin et al. (2008) found 22% of incarcerated females reported clinical levels of depression or anxiety whereas 9% of their non-incarcerated peers showed similar levels of depression. In the same study, males reported a prevalence rate of 26% for depression and anxiety, as well as 5% for anger. These numbers reflect only primary mental health symptoms and disorders with co-morbid conditions adding to the concerning statistical picture. Cognitive distortions (i.e., biased thinking) and antisocial behavior (i.e., socially irresponsible behavior) also contribute to the significant mental health concerns imported by juveniles upon their admission to a juvenile facility (Black, 2015; Gini & Pozzoli, 2013).
To generate treatment options within a correctional context, authorities must be able to identify those youth with mental health needs (Cauffman, 2004). Measurements such as the Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001), Diagnostic Interview Schedule for Children (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000), Adolescent Psychopathology Scale (Reynolds, 1998), and the How I Think Questionnaire (HIT; Barriga, Gibbs, Potter, & Liau, 2001) are some of the screening tools available to intake coordinators. Fazel et al. (2008) examined the use of mental health assessments in juvenile correctional facilities and detention centers. Across studies, calculated mean prevalence rates among the incarcerated male youth included psychotic illnesses (3.3%), major depression (11.7%), and conduct disorder (52.8%). For females, the analysis showed some significant differences with mean rates of psychotic illness (2.7%), depression (29.2%), and conduct disorder (52.8%) reinforcing the significant number of youth at risk for mental illness and in need of treatment. Screening youth upon admission can benefit facilities as they seek to identify juveniles in need of mental health services reducing the potential of mental illness symptoms transforming into misbehavior within correctional facilities (Underwood et al., 2006).

Statistical profiles derived from existing data, such as screening assessments, have been used to identify future risks including violent behavior (Zheng & Cleveland, 2013) and delinquency rates (Nijhof et. al., 2011). The measures used in this study (HIT and MAYSI-2) have been assessed for reliability and validity in their use as intake assessments. Their analytical application has determined a correlation between elevated
scores and behavior including adolescent anti-social tendencies and institutional misconduct (Butler, Loney, & Kistner, 2007; Wallinuis, Johansson, Larden, & Dernevik, 2011). This study will add to this research base by examining data via a multiple regression analysis drawn from multiple data sources and institutional misconduct.

The literature base is void of any published studies in which both the HIT and MAYSI-2 have been utilized as measures in a predictive study. Thus, this study addresses the prediction of institutional misconduct from a statistical vantage point unique from prior investigations. Early prediction of misbehavior related to mental health issues can assist with the provision of mental health services which has become commonplace in juvenile correctional facilities. Rogers, Pumariega, Atkins, and Cuffe (2006) noted, however, that mental health treatment referrals in juvenile facilities are commonly subjective rather than objective. To support their conclusion, Rogers et al. found no particular referral patterns in their study which instead saw “non-Latino youths (African-American, Asian and Caucasian), repeat offenders, violent offenders, and youths with more externalizing symptoms were more likely to be referred for mental health services” (p. 27). Establishing a predictive, systematic process based upon mental health factors will permit correctional personnel to offer treatment options objectively grounded in a quantitative resource.

This study acknowledges the impact of organic risk factors and demographic characteristics on the behavior of youth throughout their lives. The study seeks to take these important characteristics and determine their impact on misconduct during
confinement with the goal of refining treatment to increase program success and ultimately reduce recidivism.

**Study Purpose**

Within juvenile corrections, screening tools have been embraced as providing early indicators of potential behavioral concerns during confinement. The purpose of this study is to identify patterns of pro-social behavior, misconduct and length of stay using demographic characteristics and organic risk factors of incarcerated juveniles that may be used to predict appropriate behavior and institutional misconduct while in a secure, long-term, juvenile rehabilitation facility. A multiple regression analysis was conducted using continuous data from two intake measures, Massachusetts Screening Instrument 2 (MAYSI-2) and the How I Think Questionnaire (HIT), as well as categorical data regarding educational disability status and other demographic characteristics. The MAYSI-2 is a screening tool useful in the identification of potential for severe mental health disorders and includes seven distinct scales of psychiatric symptoms (Grisso et al., 2001). The HIT is a screening measurement targeting the cognitive distortions of adolescents (Barriga et al., 2001).

The analysis seeks to determine whether a data driven profile of incoming youth can be created to predict behavioral patterns (pro-social behavior and institutional misconduct) and length of stay during their term of incarceration. Specifically, the study reviews appropriate behavior as measured by the awarding of points earned within a behavior intervention framework as a measure of pro-social behaviors and the number of write-ups issued due to misconduct. Length of confinement serves to measure the
acquisition of pro-social behavior and, by implication, the success of intervention strategies. Though research in the juvenile correctional field is generally sparse, a number of interventions and strategies have been found relatively effective in addressing the academic and behavioral needs of incarcerated youth (Wexler, Pyle, Flower, Williams, & Cole, 2014). Study findings may provide practical assistance in isolating those interventions most suitable for the identified groups of juveniles that share specific characteristics. The application of those interventions could ultimately increase pro-social behavior while reducing the length of confinement.

**Research Questions**

The study seeks to predict patterns between mental health data obtained from intake assessments, disability status, and demographic characteristics and institutional misconduct, pro-social behavior, and length of stay of incarcerated youth. Existing data was obtained from the Miami Valley Juvenile Rehabilitation Center (MVJRC), a long-term juvenile rehabilitation facility at which all of the participating juveniles served their term of incarceration.

The following research questions guided the study:

1. What are the strongest predictors of pro-social behavior among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?
2. What are the strongest predictors of institutional misconduct among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?
3. What are the strongest predictors of length of stay among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

**Definitions**

The following definitions were used in this study.

**Adjudication**

A juvenile court proceeding to determine if the offense was committed. Similar in nature to an adult trial (Stohr, Walsh, & Hemmens, 2013).

**Anti-Social Personality Disorder**

A pervasive pattern of disregard for the rights of others, manifesting at approximately 15 years of age (American Psychiatric Association, 2013).

**Commitment**

Once adjudication and disposition have occurred, the court may order the juvenile remanded to a variety of institutions or programs including probation or residential facilities.

**Conduct Disorder**

A persistent pattern of behavior violating the basic rights of others or major age-appropriate societal norms during the past 12 months (American Psychiatric Association, 2013).

**Cognitive Distortions**

“Cognitive distortions (CD) are erroneous or biased ways of attending to or applying meaning to everyday situations” (Gini & Pozzoli, 2013, p. 510). Also referred
to as “self-serving cognitive distortions” (Groeneweg, van der Helm, Stams, & Asscher (2013).

**Delinquency**

Illegal or morally wrong behavior by non-adults (Merriam-Webster, 2015). Legal adulthood begins at age 18 though some states have re-defined the age of a juvenile for delinquency proceedings to 18 or 19 (Pitts, 2017). Conversely, an individual under the age of 18 may be tried as an adult if the court so orders after a bind-over or transfer hearing (Gianelli, 1994).

**Disposition**

Court proceeding to determine what to do with the adjudicated offender. Similar to the sentencing of an adult (Stohr et al., 2013).

**Emotional and Behavioral Disorder (EBD)**

An emotional and behavioral disorder is an emotional disability characterized by the following: (i) An inability to build or maintain satisfactory interpersonal relationships with peers and/or teachers. For preschool-age children, this would include other care providers. (ii) An inability to learn which cannot be adequately explained by intellectual, sensory or health factors. (iii) A consistent or chronic inappropriate type of behavior or feelings under normal conditions. (iv) A displayed pervasive mood of unhappiness or depression. (v) A displayed tendency to develop physical symptoms, pains or unreasonable fears associated with personal or school problems. (Individuals with Disabilities Education Act, 2004).
Individualized Education Program (IEP)

“The IEP describes the goals the team sets for a child during the school year, as well as any special support needed to help achieve them” (Kidshealth, 2016).

Individuals with Disabilities Education Act (IDEA)

“The Individuals with Disabilities Education Act (IDEA) provides a detailed procedural scheme that includes requirements associated with all phases of providing a free and appropriate public education (FAPE) to children with disabilities” (Peterson, 2013, p. 888).

Institutional Misconduct

Institutional misconduct generally is described as institutional rule breaking or criminal offenses committed during incarceration (Blackburn & Trulson, 2010). That description applies to Miami Valley Juvenile Rehabilitation Center (MVJRC), which tracks multiple behaviors during a juvenile’s stay at the facility. Thirty-one behaviors are identified by the facility (Program Manual, 2017). The behaviors are further categorized as either “serious I” or “serious II.” Serious II behaviors include lying, damaging property, stealing or cheating, self-abuse, and “other.” The remaining 10 behaviors are classified as serious I and include impulsivity (e.g., leaving an area and activating the intercom), opposition (e.g., conspiring to escape and gang communication), peer conflict (e.g., physical aggression, threatening, instigating, and inappropriate touching), or disrespect (e.g., defiance and insulting; M. Higgins, personal communication, July 8, 2015).
**Intellectual Disabilities**

Significant “subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child’s education performance” (Individuals with Disabilities Education Act, 2004).

**Multiple Disabilities**

Impairments occurring concurrently which cause such severe educational needs that they cannot be met by special educational services targeting only one of the impairments (Individuals with Disabilities Education Act, 2004).

**Office Discipline Referral (ODR)**

An event in which (a) a student engaged in a behavior that violated a rule/social norm in the school, (b) a problem behavior was observed by a member of the school staff, and (c) the event resulted in a consequence delivered by administrative staff who produced a permanent (written) product defining the whole event. (Sugai, Sprague, Horner, & Walker, 2000, p. 96)

**Oppositional Defiance Disorder**

A pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness lasting at least 6 months (American Psychiatric Association, 2013).

**Positive Behavioral Interventions and Supports (PBIS)**

“A broad range of systemic and individualized strategies for achieving important social and learning outcomes while preventing problem behavior” (Sugai & Horner, 2002, p. 29). The goal of PBIS has been described as the acquisition of “skills that
enable [students] to participate successfully in a broad range of family, school, and community settings” (T. M. Scott, Nelson, et al., 2002, p. 535). PBIS is implemented using a tiered system of behavioral rewards and supports. Tier 1 (see below) is considered a universal program applied to all individuals. Tier 2 provides increased structure and supports to small groups, and Tier 3 delivers the most intensive support on an individualized basis. Placement into tiers indicates failure to respond positively to interventions at less intensive levels.

**Pro-Social Behaviors**

The Miami Valley Juvenile Rehabilitation Center (MVJRC) program manual (Program Manual, 2017) identifies three target behaviors. Rather than distinct definitions, the manual contrasts the pro-social behaviors with their equivalent misconduct category. As such, “Accepting Limits” is the converse of “Oppositional Behavior.” “Self-Control” is the pro-social opposite to “Impulsive Behavior” while “Respect for Others” is the converse of “Disrespectful Behavior.”

**Specific Learning Disabilities (SLD)**

A “disorder in one or more of the basic psychological processes involved in understanding or in using language spoken or written” (Individuals with Disabilities Education Act, 2004).

**Suspended Sentence**

The court’s delaying of a defendant’s sentence after a finding of guilty or delinquent. The charges are typically dismissed if the defendant successfully meets the court’s conditions during the delay. Commonly associated with lesser crimes (Suspended
sentence, n.d.). For youth assigned to MVJRC, failure to complete the program can result in the imposition of the original disposition and possible commitment to a state facility.

**Tier 1**

The level of Positive Behavioral Interventions and Supports (PBIS) focusing on monitoring and preventing inappropriate behaviors across all students (T. M. Scott & Eber, 2003). These universal supports may include token economies and praise. This study examines Tier 1 variables.

**Token Economy**

Token economies consist of (a) an operationally defined target behavior; (b) tokens, tickets, or points as rewards to individuals engaged in the target behavior (or avoiding the target behavior if the focus is behavior reduction; and (c) backup reinforcers available for exchange with their earned tokens (Cooper, Heron, & Heward, 2007). The study utilizes previously described pro-social behaviors from the MVJRC program manual as target behaviors with points exchangeable for tangible (e.g., food items) and intangible (e.g., additional phone use) rewards which serve as backup reinforcers.
CHAPTER II
REVIEW OF THE LITERATURE

Youth do not enter the juvenile justice system with a clean slate as they carry with them static or demographic characteristics that impact their life course. In addition, dynamic features, such as the organic risk factors included in this study, add to the intangible influences brought into juvenile correctional facilities by committed youth (Martin et al., 2008). Among the uniqueness of this population are high rates of disabilities, mental health concerns, and destructive behavioral patterns such as substance abuse (T. P. Johnson et al., 2004; Krezmien et al., 2008). These characteristics, whether static or dynamic, comprise the source of factors that influence the life course trajectory of individuals. This study examines the relationship between demographic characteristics comprised of race, sex, and age; and organic factors of mental health disorders and symptoms including conduct disorder, oppositional defiance disorder, anger, irritability, depression, anxiety, and cognitive distortions, along with disability status.

The present study categorized these distinctive characteristics into identifiable groups and determined whether any particular grouping predicted institutional misconduct, pro-social behavior or length of stay. Establishing patterns that are predictive of future behavior will encourage the adoption and tailoring of effective behavioral strategies suitable for the identified groups that share common characteristics. These targeted treatments should increase the likelihood of positive outcomes and the interruption of a negative life course trajectory, particularly during the delinquency phase.
The differentiation of individual characteristics into distinct groups through a statistical analysis requires an understanding of predictive, static and dynamic factors. This chapter reviews these factors along with the differential responses to demographic features like age, race, and sex. Furthermore, the chapter serves as a foundation for the synthesis of characteristics necessary for selecting appropriate interventions to treat the disorders affecting many incarcerated juveniles.

The context for the study is provided through a review of theories pertaining to institutional misconduct. The framework enunciated by these theories will allow the reader to fit individual characteristics into an aggregate whole permitting a deeper understanding of their role in a life course trajectory through delinquency, as well as strengthen the exploration of available data.

**Institutional Misconduct Models**

A number of theoretical models related to institutional misconduct have been espoused over the years. Though the following discussion articulates multiple theories, the data available for this study do not permit an evaluation of theories nor is the study intended to subscribe to any particular model. Nonetheless, the scope of the data lends itself to the use of the importation model of institutional misconduct within the overall conceptual framework of a life course through delinquency.

This review of theories is useful in providing a rationale for selection of the variables for this study. For instance, relevant literature on institutional misconduct has identified anger, irritability, and traumatic experiences as predictive of misbehavior during confinement (Butler et al., 2007; DeLisi, Drury, et al., 2010). Research has also
supported the premise that cognitive distortions influence behavior at multiple points along the life course through delinquency, including negative externalizing behavior in general and interactions with the juvenile justice system in particular (Nas, Brugman, & Koops, 2008). Furthermore, demographic variables, mental health issues, and disability status have repeatedly interacted with maladaptive behavior at pivotal junctures across the delinquent life course (Krezmien et al., 2008; Malmgren, Abbott, & Hawkins, 1999; Martin et al., 2008).

**Deprivation and Situational Models**

On the whole, literature regarding the prevalence of institutional misconduct and its ability to be predicted is sparse (Byrne & Hummer, 2007; Drury & DeLisi, 2011). Nonetheless, several theoretical models have been developed to explain confinement behavior, including institutional misconduct. The deprivation model suggests that incarcerated juveniles or adult inmates have been deprived of many of the freedoms during their confinement normally found on the outside and therefore resort to misconduct within the facility. Deprivations may include stark housing units, limiting personal interaction with other prisoners, restricted reading options, and a prohibition of craft and hobby material (Shalev, 2011). Under the deprivation theory, then, inmates in solitary confinement would be most problematic due to the high level of deprivation (Gover, Perez, & Jennings, 2008).

Though some similarities exist with the deprivation model, the situational model holds that misconduct is contextual in nature and that environmental factors such as overcrowding, staff demographics, and even the temperature of a facility will affect the
institutional behavior (Jiang & Fisher-Giorlando, 2002). Overcrowding, specifically, has received considerable attention from researchers though results in this area have been mixed with Steiner and Wooldredge (2009) opining that the connection between misconduct and overcrowding may be diminished by factors such as improper oversight.

**Importation Model**

The importation model of institutional misconduct, championed by DeLisi, Trulson, Marquart, Drury, and Kosloski (2011) takes the life course theme and introduces it to periods of confinement. In fact, DeLisi et al. entitled their study of inmate misconduct, “Inside the prison black box: Toward a life course importation model of inmate behavior,” a clear indication of the role life decisions and events play in the trajectory toward institutional misconduct. DeLisi et al. contends that the life course of the confined individual imports antisocial behavior which commonly emerges from childhood events then surges through adolescence and subsequent periods of confinement, a similar paradigm to the life course trajectory illustrated in Figure 1.

The importation model not only ascribes to a life course perspective described earlier, it also appears to have gained the most traction among theorists arguing that individual pre-incarceration characteristics are imported into the system and are nothing more than a reflection of behaviors prior to lock up (Blevins, Listwan, Cullen, & Jonson, 2010; DeLisi et al., 2011; Foster, 2012). These risks form a life course thread of criminality from childhood to adulthood. A juvenile’s history of delinquency and the associated risk factors not only indicate the potential for inappropriate behavior within a correctional facility but are strongly predictive of the danger of juvenile recidivism.
(Trulson, DeLisi, et al., 2011). Though the range of possible imported characteristics is large, factors relevant to this theory include disability status, demographic features, and mental health concerns. The organic risk factors noted in Figure 1 were selected for inclusion in the present study due to their responsiveness to various pharmacological, therapeutic, and instructional interventions (Marrow, Knudson, Olafson, & Bucher, 2012; Quinn & Shera, 2009), as well as their connection to the measures utilized as independent variables. Though static in nature, demographic risk factors can influence outcomes and treatment patterns (Vaughn, Wallace, Davis, Fernandes, & Howard, 2008), which this study seeks to identify.

Several studies have quantitatively compared misconduct theories (Gover, MacKenzie, & Armstrong, 2000; Gover et al., 2008; J. M. MacDonald, 1999). For example, Jiang and Fisher-Giorlando (2002) examined the relationship between these three theories of institutional misconduct described in this section (deprivation, situational, and importations models) by reviewing 431 disciplinary reports generated by a men’s state prison. Thirty-six independent variables were categorized by misconduct theory. Under the deprivation model sentence length, length of time already served, and residency in either a cell block or dormitory setting were clustered together. The situational model encompassed differences between guard and inmate characteristics (e.g., race, education, and age), as well as housing factors and restrictions on activities. The importation model components centered on family characteristics, prior misconduct, and drug use. Findings revealed that all three models supplied valuable information with the deprivation and situational model best predicting misconduct directed at staff. On the
other hand, variables associated with the situational and importation theories explained violence between inmates. The present study has incorporated the importation model into its framework, with the examination of length of stay, race, and age in these institutional misconduct studies supporting their usage in the study based on several studies exploration of these and other variables.

Unlike Jiang and Fisher-Giorlando (2002), which separated misconduct towards staff and inmates into distinct statistical categories, the present study examines institutional misconduct as a whole, regardless of the target of the misbehavior. Adopting this same use of institutional misconduct, DeLisi et al. (2011) reviewed data from 2,520 incarcerated male youths to ascertain whether the importation model established the strongest theory for institutional misconduct. DeLisi et al.’s measures included family background characteristics, delinquency history, and race and ethnicity, similar demographic factors utilized in the present study. Controlling for length of confinement, their findings determined that prior criminal involvement was predictive of institutional misconduct with the type and age onset of the offense(s) varying the degree of predictive strength. DeLisi et al.’s findings highlighted the effect of intervening factors on outcomes across a young life course and bolstered the value of viewing delinquency through the life course model represented in Figure 1. Most importantly, DeLisi et al. concluded that the results were supportive of the importation model of institutional misconduct and a “useful conceptual framework” to study crime during the life course, including confinement (p. 1186). DeLisi et al.’s use of length of stay and race
highlighted the importance of these variables, as did the focus on institutional misconduct rates as the dependent variable.

Furthermore, DeLisi et al. (2011) stated that family variables may be a driving force into delinquency but show less connection to institutional misconduct. This finding supports what DeLisi et al. described as a life course where family dysfunction drove delinquency rates and delinquency drove institutional misconduct. A notable exception included sexual abuse during childhood which was the only family background variable to be positively related to institutional misconduct. For comparison purposes, gang involvement by family members was negatively related to misconduct. Finally, neither race nor ethnicity produced a significant difference in institutional misconduct rates though DeLisi et al. noted their findings were counter to prior research. Similar to the present study, DeLisi et al. employed a regression analysis to obtain data predictive of institutional misconduct. Though his predictive variables included family dysfunction attributes, which the present study does not include, the mental health issues arising from childhood trauma and family dysfunction are a critical element of the present study.

DeLisi et al. (2011) connected the life course trajectory theory with the importation model by opining that “institutional behavior can be understood as the importing of family deprivation experiences and chronic delinquency” (p. 1186). According to DeLisi et al., the importation model serves as the most viable theory for institutional misconduct. Though the deprivation and situational models offer substance to the discussion of institutional misconduct, the importation theory generates the most insightful link for the current study, which scrutinizes existing demographic features,
disabilities, and mental health issues brought into a correctional facility by adjudicated youth and their impact on conduct during confinement.

Constructing a coherent theory of criminality involves explanations of behavior on multiple fronts. From a criminal justice standpoint, there is a focus on a deterrent effect across criminal behaviors, settings, and time frames. Criminology also consists of far-reaching policy considerations (e.g., justice system) and societal concerns (Carrabine, 2016; Freilich & Newman, 2016). Despite the expansive nature of criminology, theorists have understood that singular events and demographic characteristics play a role in guiding individuals through a life course that can involve law-breaking conduct (T. R. McGee, Farrington, Homel, & Piquero, 2015). Though confinement is one segment of a criminal life course, it is the developmental quality of the life course that finds itself embedded in the importation model of institutional misconduct. The common thread of the developmental influences links the life course theory of criminology with the importation model of institutional misconduct.

The life course trajectory model (Figure 1) visually represents some of the substantive risk factors influencing the path toward delinquency and institutional misconduct, including mental health issues, disability status, and demographic characteristics. As the model illustrates, there is no single cause of delinquency or institutional misconduct (Evans et al., 2016; Trulson, 2007). However, the imposition of interventions and treatments can interrupt a trajectory exacerbated by organic risk factors and demographical influences and positively affect their outcomes (Piquero et al., 2010).
Research regarding maladaptive behaviors in adolescence has been scarce (Lynne-Landsman, Graber, Nichols, & Botvin, 2011). Rogers et al. (2006), for instance, stated, “Most prior studies have focused on youths who were referred for treatment prior to detention [while] . . . less is written on the process of mental health referral for youths who are referred for treatment after being detained” (p. 27). The results generated by this study may assist in filling this absence of literature on treatment of confined juveniles. Given the lack of direct causation between individual risk factors and life course, risk factors may serve as criteria for the therapeutic decisions.

**Demographic Characteristics**

Though the intensity of the impact varies across studies, there is little question that a relationship exists between demographics and pathways toward delinquency (Hagan & Foster, 2003; Piquero et al., 2002). From an overall demographic standpoint, the juvenile population comprises approximately 24% of the entire U.S. populace. Its numbers are expected to grow by 16% over the next several decades though its proportion to the general population will decline slightly (Sickmund & Puzzanchera, 2014). Within this population, demographic variables such as race, age, and sex have been explored for their connection to a life course trajectory. Piquero et al. (2002), for example, concluded that race “continues to be associated with criminal activity over the life course” (p. 654). In addition, Evans et al. (2016) found that youth from minority classes, subjected to racial discrimination, offended earlier and more chronically than their non-minority peers.
Life course research acknowledges the developmental nature of delinquency but also emphasizes that intervention strategies can interrupt the progression down the pathway toward delinquency (Evans et al., 2016). The present study also recognizes how negative behavior patterns develop as children reach adolescence and the impact demographic characteristics may have upon that developmental progress. The predictive character of the study seeks to identify the role that demographics may play during confinement whether directly or as a controlling variable to organic risk factors. Furthermore, it can provide correctional facilities with data to predict which juveniles may be at higher risk for institutional misconduct and then construct strategies targeting specific issues faced by particular at-risk demographic groups. The remainder of this section details the demographic patterns that find themselves enmeshed within the delinquency phase of a life course trajectory and prepares correctional facilities to develop treatment protocols suited for their population.

Race and Ethnicity

From the universal population of juveniles, 83% of juveniles self-report their ethnicity as non-Hispanic. From the pool of non-Hispanic youth, the racial breakup shows nearly 79% were White with Blacks making up approximately 14%, and Asian and American Indian comprising the remainder (Puzzanchera, Sladky, & Kang, 2016).

Clearly most juveniles do not commit acts bringing them into contact with the juvenile justice system. Conceding that local prevalence rates are important, the 1.5 million individual, juvenile court cases reported nationally in 2013 reveal the extent of troubled youth navigating a life course that has led them to delinquency. Exposing the
often unbalanced demographics of court involved juveniles is the realization that 62% of the youth are White, 35% Black, and the remainder of various other minority groups. In terms of sex, 72.3% are male, and approximately 78% of the total youth referred to a juvenile court are 16 years old or younger ( Sickmund et al., 2017).

Some court-involved juveniles will be found delinquent by reason of some enumerated criminal behavior. A portion of that number will be remanded to a residential setting outside of their home. Of the remanded youth, a disproportionate number of Blacks (40%) are sent to a residential placement along with a 32% Hispanic rate. During confinement, black and Hispanic inmates have been found more likely to engage in assaultive behavior (Steiner & Wooldredge, 2009). These statistics portend the risk of assaultive behavior during confinement if correctional facilities fail to intervene. The present study concurs with the opinion of Lynne-Landsman et al. (2011) who asserted that “gaining a better understanding of commonalities and differences between . . . racial/ethnic groups in the etiology of problem behaviors is informative for the development and refinement of intervention strategies” (p. 175).

Sex

The second demographic feature in Figure 1 is sex, which has also shown a connection to incarceration. According to Puzzancera et al. (2016), black youth make up 33% of confined females and white juveniles representing 39%. When considering sex only, males make up the greatest percentage of incarcerated youth at 84%. Hagan and Foster (2003) suggested that delinquent behavior is “structured” by gender. If so, the need for ascertaining its influence on institutional misconduct is essential. No less
imperative is the need to infuse appropriate treatment options into correctional programming to minimize any negative impact associated with sex.

Age

Since life course is framed as a developmental process, the impact of age and aging can be significant. The age span of incarcerated youth is sizable with 43% of all committed and detained youth being 17 years old or above, the upper end of the delinquency age span. On the other end of the age spectrum, 5% of the juveniles are 13 years old or below (Sickmund et al., 2017). Age and sex were linked in a study by Blackburn and Trulson (2010) who found age determinative of institutional misconduct among females at a juvenile correctional facility with misconduct rates decreasing as age increases. These demographic relationships and comorbid presentations with organic risk factors are further explored in the following sections, which also strive to connect identified risk patterns with treatment decisions.

Though the present study examines race, sex, and age as demographic factors, a number of other imported features have been explored in the literature base though they are not available as a data source for this study’s analysis. However, it is important to acknowledge that life course factors comprise a wide swath of characteristics. Among these factors is prior criminal history, including disciplinary reports from earlier terms of incarceration, which was the single most important predictor of institutional misconduct in several studies (Cunningham & Sorensen, 2007; Drury & DeLisi, 2011), suggesting that the ability to predict institutional misconduct can also improve treatment effectiveness. In addition, Steiner, Butler, and Ellison (2014) explored 46 imported
variables drawn from 98 institutional misconduct studies in their meta-analysis. Their inquiry identified age, prior drug use, prior physical and sexual abuse, and a prior criminal record as statistically significant predictors of institutional misconduct. It is anticipated that the availability of demographic data from MVJRC and its predictive strength will refine future attempts to address institutional misconduct. Moreover, as misconduct risk factors are identified, programming decisions can be improved, an upgrade from the current situation where model treatment programs are in short supply across the country (Krisberg, 2014).

**Organic Risk Factors**

There is little dispute that organic risk factors, including mood and conduct disorders, are prevalent within juvenile corrections (Wasserman et al., 2002). Organic risk factors are not limited to the correctional environment as their impact is felt across the life course often producing an adolescent with disorders and symptoms common among incarcerated juveniles (Evans et al., 2016). Sadly, juvenile correctional facilities now serve as the heart of treatment for juveniles with disorders and behaviors. Nonetheless, a correctional facility can reduce the effects of these factors with timely identification and appropriate treatment (Underwood et al., 2006).

The effects of demographic characteristics on the life course trajectory are not the only factors influencing the pathway toward delinquency, as well as paths to positive outcomes. Though race, sex, and age have all proven instrumental in some measure, organic risk factors also have shown significance in shaping a life course (Schubert, Mulvey, & Glasheen, 2011). This section reviews research focusing on the role mental
health symptoms and diagnoses play on youth as they negotiate their life course. The review begins with an overview of adolescent mental health issues and continues with an examination of some of the most prominent mental health concerns confronting juveniles who find themselves entering a delinquent life course.

As the following sections suggest, mental health and disability status, whether independently or on a co-morbid basis, can pull youth onto a pathway toward confinement. As Underwood et al. (2006) noted, relying on records from prior mental health treatment is problematic given the sizable number of juveniles undiagnosed during their life course prior to incarceration. For that reason, identification of risk factors upon admission can set in motion a stronger, broader, and more timely course of mental health and behavioral interventions across mental health and disability conditions ultimately leading to greater positive outcomes (Underwood et al., 2006).

**Mental Health Overview**

The behavioral manifestation of mental illness has led some scholars to describe a juvenile’s incarceration as merely an opportunity to offend on the “inside” (Trulson, DeLisi, & Marquart, 2011). The sheer number of youth importing mental health issues into confinement prompts some to describe the situation as a crisis (Nelson et al., 2010; Parker, Morton, Lingefelt, & Johnson, 2005). Despite a variance in reported numbers, juveniles with diagnosable mental health disorders range from between 50% and 75% of the incarcerated population (Underwood et al., 2006). Though a causal relationship has not been established, research has identified a significant correlation between emotional disorders and criminal conduct, which often leads to incarceration (Baer & Maschi, 2003;
Dixon, Howie, & Starling, 2004; Fazel et al., 2008). Among the more common issues affecting incarcerated youth are antisocial behavior, poor impulse control, and depression. In fact, depression in juvenile males has been found to increase recidivism rates by a multiple of five (Martin et al., 2008; Ritakallio, Kaltiala-Heino, Kivivuori, Luukkaala, & Rimpela, 2006).

Statistically, the magnitude of mental health problems in juvenile corrections is disturbing with the majority of the population entering confinement with a mental health diagnosis (Underwood et al., 2006). The breadth of disorders can also be confounding for supervising personnel. Antisocial behaviors and their components, such as anger and irritability, have shown a close relationship to delinquency. Mood disorders, including depression and anxiety, affect the mental health status of many juveniles. Though the directional impact of mood disorders and delinquency is debated (Mellin & Fang, 2010), there is no doubt a strong association exists between the disorders and delinquent behaviors. Conduct disorder (CD) and oppositional defiant disorder (ODD) are commonly interwoven with other mental health conditions and are closely connected with each other. Given the range of their relational influence, CD and ODD serve to complicate an already difficult treatment environment for correctional personnel.

Mental health disorders within the juvenile population of correctional facilities are problematic and commonly co-occur with maladaptive behavior and substance addictions creating a dangerous combination (Sedlak & Bruce, 2010). T. P. Johnson et al. (2004) observed that psychological and psychiatric disorders are connected by a web of conditions including substance abuse, violence, and education. Identifying predictive
patterns using intake assessment data has the potential to assist in treatment selection and implementation for this complex collection of issues. Despite the complexity of the challenges, treatment is available to mitigate progression of symptoms and, in turn, focus a youth’s energy on learning pro-social behaviors (A. Quinn & Shera, 2009).

Mental health issues confronting youth during their adolescent life course challenge both the social welfare and juvenile justice systems which often find themselves working with the same population (Kapp, Petr, Robbins, & Choi, 2013). Within the correctional environment, mental health concerns such as anger (DeLisi, Caudill, et al., 2010), anxiety, and depression (McDougall, Campbell, & Santor, 2013) have been blamed for creating a pattern of misconduct during confinement. These symptoms and disorders are reflected in the life course trajectory model (Figure 1) with subsequent sections adding substance and context to the model, aiding the juvenile justice practitioner’s understanding of the life course trajectory toward delinquency.

A number of mental health diagnoses are abundant within the incarcerated population of juveniles (Rogers et al., 2006). These conditions are part of a juvenile’s imported characteristics that correctional personnel must address during a typical stay. The following sections examine mental health issues researchers have identified as risks for increased institutional misconduct while the related life course model (Figure 1) illustrates their effect on a delinquency trajectory.

**Mental Health Risk Factors**

Given the large number of juveniles presenting with mental health disorders in the juvenile justice system, an expectation has arisen that correctional facilities will provide
mental health services and treatment to the committed youth (Underwood et al., 2006). Concurrently, there has been a fundamental shift in mental health services within the juvenile justice system from community based preventive care to institutional treatment of juveniles with severe mental health concerns (Underwood et al., 2006). The change in treatment focus makes the identification of mental health issues of incarcerated juveniles all the more imperative. Fortunately, as organic risk factors are recognized, intervention options can be applied to serve these critical needs (Hong, Ryan, Chiu, & Sabri, 2013).

Though the present study does not serve to assess treatment options or therapeutic outcomes, results from intake data may identify those juveniles whose mental health status requires follow-up mental health care and/or behavioral interventions.

Intake variables were used to predict both positive and negative behavioral patterns in order to maximize subsequent treatment decisions. To that end, the present study reviews mental health categories noted in Figure 1 in order to identify specific issues and challenges that impact institutional outcomes. The ability to tailor differentiated therapies and interventions based upon behavioral predictions will be invaluable to juvenile correctional facilities.

**Conduct disorder (CD).** Conduct disorder has been described as the initial phase of a life-course trajectory toward juvenile delinquency with a path commonly traversing into antisocial personality disorder with the onset of early adulthood (Miller, 2014). By definition, conduct disorder “is a repetitive and persistent pattern of behavior in which the basic rights of others . . . are violated” (p. 124). It is externalized by three or more of the following behavioral characteristics: serious aggression toward people or
animals; destruction of property; deceit or theft, or serious rule violations such as truancy (Miller, 2014).

**Demographic and co-morbid organic risk factors.** Conduct disorder is the most frequently diagnosed mental health disorder in juvenile corrections (Colins et al., 2010; Hong et al., 2013). Overall, rates of clinical conduct disorder among juvenile offenders range from 50–90% (T. M. Scott, Nelson, et al., 2002).

Some demographic characteristics have shown a correlation to CD. For example, minority race and ethnic status were related to lower levels of CD, particularly in the Latino community (Wiesner et al., 2015). In terms of sex, one report indicated 81% of delinquent males meeting minimal criteria for CD with females reporting 76% at the minimal level or above (Drerup, Croysdale, & Hoffman, 2008). Female delinquents fared no better in CD rates. Dixon et al. (2004), for example, determined that 91% of offending females presented with CD whereas their non-offending peers reported a rate of only 1%. Rates of co-morbidity include 66% of delinquent males and 82% of delinquent females reporting CD as one of multiple conditions (Drerup et al., 2008).

Though typically an adolescent related concern, CD has been classified as either childhood-onset or adolescent-onset. Silberg, Moore, and Rutter (2015) found these age differentials to be significant in terms of a co-morbid presentation. Early-onset CD was related to ADHD, family dysfunction, and parental depression. Adolescent-onset, on the other hand, was only slightly associated with parental depression but none of the other risk factors in the study. Stalk, Love, and Mueller (2015) reiterated the connection
between age and ADHD but also found that even a one year difference in the age of CD onset increased the probability of a co-morbid presentation of depression.

Though CD generally develops during adolescence after an initial diagnosis of oppositional defiance disorder (ODD) (Drerup et al., 2008), when the disorder appears in childhood its manifestations have included deficits across executive functions, verbal learning, and memory. This finding was not considered unusual as verbal abilities are considered necessary for self-control, which influences socialization skills (V. A. Johnson, Kemp, Heard, Lennings, & Hickie, 2015). Children with early onset CD were also more apt to be a victim of childhood physical abuse (V. A. Johnson et al., 2015). Though CD alone has shown a correlation with delinquency (Drerup et al., 2008), the relationship of age to CD illustrates the interwoven nature of demographic features with the mental health disorders and symptoms themselves. Given the severity of the inappropriate behaviors associated with CD, it is no surprise that as a youth ages CD becomes one of the primary risk factors of future delinquency (Dauber & Hogue, 2011; M. A. Scott, Snowden, & Libby, 2002; Yampolskaya & Chuang, 2012).

Figure 1 illustrates the interconnected horizontal relationship between demographic features and organic risk factors, as well as the vertical association between organic risk factors. It is this relationship that finds CD rarely in isolation but, instead, often occurring with a number of other conditions. Among the blending of diagnoses, researchers have observed elevated rates of depression accompanied by conduct disorder (Rohde, Clarke, Mace, Jorgensen, & Seeley, 2004). In several studies, conduct disorder has contributed to the emergence of substance abuse along with the co-morbid existence
of ADHD (Coetzee & Tuinier, 2009; Jones & Foster, 2009). Disability as a life course factor is discussed later but from a co-morbid standpoint specific learning disabilities (SLD) and attention deficit hyperactivity disorder (ADHD) occur with conduct disorder one third to one half of the time (Larson & Turner, 2002). Thus, facilities can expect a high percentage of their populations arriving with CD as part of a co-morbid diagnosis. Identifying possible interrelationships between conditions and symptoms, and any moderating factors, is central to developing statistical patterns during the analytical phase of this study.

**Outcomes of CD.** Along with co-morbid relationships, conduct disorder has been associated with an array of conditions exacerbating risk factors and increasing rates of negative outcomes. Interestingly, however, the characteristics of CD in the recently issued *DSM-5* now include a consideration of an individual’s capacity for pro-social emotions (V. A. Johnson et al., 2015). Though recidivism rates are elevated among juveniles with mental health disorders in general (Yampolskaya & Chuang, 2012), when conduct disorder and childhood maltreatment are combined in one profile, instances of juvenile arrests and recidivism increase significantly revealing the impact of traumatic events during the early childhood phase of a life course (DeSanctis, Nomura, Newcorn, & Halperin, 2012). Though noted above as co-morbid, from an outcome perspective depression and CD were found to produce lower response rates to pharmacotherapy—a notable consideration for those selecting successful treatment for these individuals (Rohde et al., 2004). The often complicated nature of mental health disorders and behavioral concerns is particularly suited to the predictive nature of this study which can
evaluate the influence of multiple variables including pro-social behaviors, institutional misconduct, and length of stay.

Oppositional defiant disorder (ODD). The Diagnostic and Statistical Manual of Mental Disorders (DSM) places oppositional defiant disorder (ODD) and conduct disorder (CD) in the same diagnostic category. Though each disorder is considered distinct, under DSM the diagnosis of CD supersedes ODD as a diagnosis when the magnitude of the behavior escalates and the patient ages (Drerup et al., 2008).

Despite this relationship, ODD is distinguished from CD and described as an abnormal and persistent externalization of disobedient and hostile behavior toward authority manifested as argumentative, irritable, or vindictive conduct. However, the behavior does not develop into a pattern of serious physical or threatening altercations as typified under CD (American Psychiatric Association, 2013; Miller, 2014). For example, an adolescent with ODD may talk back to a teacher whereas the student with CD may threaten physical harm or display aggressive hostility to the teacher.

Demographic and co-morbid organic risk factors. The linkage between CD and ODD has been previously explained. It is no surprise, then, that some of the demographic and organic risk factors are common to each. Wiesner et al. (2015) highlighted this by finding that minority racial status has a correlation with both CD and ODD with lower rates of CD and ODD found among minority children though other studies have not found a statistically significant connection (Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009). Christensen, Baker, and Blacher (2013) also found no sex
differences in ODD prevalence rates nor were age differences in the onset of ODD statistically significant.

Age, however, does play a role in ODD research, which typically focuses upon preschool age children and early intervention strategies (Ezpeleta, Granero, de la Osa, & Domènech, 2015; Niemczyk, Equit, Braun-Bither, Klein, & Gontard, 2015; Winther, Carlsson, & Vance, 2014). Despite the strong correlation to early childhood, some studies have shown stable ODD prevalence rates into late adolescence and early adulthood (J. D. Burke, Rowe, & Boylan, 2014) reinforcing the interrelationship age plays in the presentation of both disorders. In terms of disability status, children with intellectual disabilities (ID) have shown higher rates of ODD than their typically developing peers bolstering the connections between disability status and ODD (Christensen et al., 2013). Despite the prevalence of ODD co-morbidity with other disabilities and disorders, rates of ODD were not increased by interaction with other conduct disordered youth in a residential care program (Huefner & Ringle, 2012).

The continuum between ODD and CD makes CD an integral component of any discussion involving ODD. For example, Miller (2014) noted that ODD diagnosis is often subsumed by antisocial behavior. Given the diagnostic linkage, CD and ODD are sometimes reported as one statistical category. Thus, when reviewing any prevalence data pertaining to ODD, CD, and an antisocial disorder, care should be taken how the conditions are being reported. Teplin, Abram, McClelland, Dulcan, and Mericle (2002), for instance, stated that approximately 40% of youth within the juvenile justice system have a disruptive behavior diagnosis, including ODD and CD. When reported separately
results have varied with Vogel and Messner (2012) identifying 12.3% of their participants meeting ODD criteria and only 5% identified with CD. J. D. Burke, Mulvey, and Schubert (2015), on the other hand, found 43% of first time juvenile offenders met criteria for ODD as opposed to 37% for CD.

The present study does not utilize specific diagnoses in the data analysis but instead uses intake assessment subscale scores drawn from a composite DSM definition for ODD and CD, specifically opposition-defiance, physical aggression, lying and stealing. This method of combining ODD and CD symptomologies into common scales or profiles has been adopted in other studies (Ezpeleta et al., 2015). Though a composite definition forms the basis for the subscales of the assessments used in the present study, the differentiation between disorders presented in this literature review clarifies the distinctions between the two. In addition, evidence of confounds in labeling these conditions will be avoided by using subscale scores to indicate severity. As a result, a clinical delineation during the analysis will not pose a statistical problem.

**Outcomes of ODD.** The influence of ODD on various outcomes and conditions is notable. Vogel and Messner (2012) stated that ODD appears to have an offsetting effect on self-control among delinquent youth. Its mediating impact was further revealed by Sarver, McCart, Sheidow, and Letourneau (2014) who concluded ODD and CD exacerbated the effect of ADHD on risky sexual behavior by adolescents. As Fazel et al. (2008) noted in their meta-analysis, 11.7% of incarcerated juveniles have been diagnosed with ADHD making the negative influence of the disorder a significant concern
especially in its co-morbid presentation. These links have implications in the development of predictors.

Among the outcomes connected with mental health disorders such as ODD is the juvenile’s increased risk of contact with law enforcement due to erratic behavior and hostility toward authority figures (Hirschfield, Maschi, White, Traub, & Loeber, 2006). This conclusion finds support in the determination by Beerthuizen, Brugman, and Basinger (2013) that ODD was a positive correlate of delinquency that strengthened with age. The Beerthuizen et al. study did not follow the participants into adulthood, but their findings do provide warning to juvenile officials who should view ODD diagnoses as an additional risk factor for institutional misconduct. As institutional misconduct increases, the probability of lengthier stays also increases. Increasing pro-social behavior levels may disrupt this harmful progression.

**Anger and irritability.** Anger has been defined as “a failure to regulate emotional responses to anger-producing stimuli” (N. E. Goldstein, Dovidio, Kalbeitzer, Weil, & Strachan, 2007, p. 3). This failure to control an emotional response to a negative experience, such as a perception of unfair treatment, can subsequently serve to increase the likelihood of delinquency (Mazerolle, Burton, Cullen, Evans, & Payne, 2000) and predict deviance from behavioral norms (Moon, Morash, McCluskey, & Hwang, 2009). Piquero, Gomez-Smith, and Langton (2004) noted that the manner in which negative consequences or sanctions are delivered influences the recipient’s perception of fairness and precipitates expressions of anger. Piquero et al.’s own research inserted self-control as part of the anger-fairness relationship, finding that individuals with low self-control
tend to perceive sanctions as unfair and react with anger at being chosen for the application of the sanction. Inserted into reinforcement decisions, the preference for punitive corrective methods in juvenile facilities may increase the risk of angry responses by youth, whereas positive reinforcement could reduce the likelihood of negative reactions. The present study investigates the integration of positive reinforcement and behavioral outcomes, such as anger and irritability, in a secure, juvenile rehabilitation center.

Similar to anger in its definition, irritability has been described as an excessive reaction to negative emotional stimuli that is typified by “easy annoyance, low frustration, touchiness, and anger/temper outbursts” (Ezpeleta et al., 2016, p. 115). Irritability has been differentiated from headstrong or hurtful dimensions of ODD behavior due to its ability to predict depression and other internalizing behavior (Althoff, Kuny-Slock, Verhulst, Hudziak, & Ende, 2014). The definitional application of irritability has produced some confusion given inconsistences in measurement and inclusion as a symptom of 15 different DSM-5 disorders (Toohey & Digiuseppe, 2017).

**Demographic and co-morbid organic risk factors.** From a demographic standpoint, delinquent and incarcerated youth have been found to express anger differently. Race, as a variable, has been related to the expression of anger. Simons, Chen, Stewart, and Brody (2003) noted that African American youth are more likely to convey anger inappropriately than white adolescents. Taking the analysis one step further, Berg and DeLisi (2006) analyzed racial influences on violent institutional misconduct from a broader perspective, which included 1,000 inmates from six racial
groups. Results identified Hispanic and Native American male inmates as yielding the highest rates of violence whereas African American and Native American rates of violence were highest among female inmates.

Furthermore, investigations of sex differences have identified that females, for example, present with higher rates of conduct disorder and oppositional defiant disorder than the delinquent population as a whole. As can be seen through demographic statistics, graphically depicted in Figure 1, the effects of anger and irritability are pervasive and impactful across the life course. These particular diagnoses are often associated with anger-induced behaviors (N. E. Goldstein et al., 2007). Smith and Thomas (2000) asserted that anger emanating from violent females was more intense and generalized, whereas nonviolent females focused on specific incidents of perceived injustice or unfairness. Anger of violent females, intense enough to encourage physical violence, correlated with feelings of unfair treatment from adults and school authorities, lending support to the underlying definition of anger. In addition to race and sex differences, age and anger have exhibited a correlation, with Ford, Chapman, Pearson, Borum, and Wolpaw (2008) reporting younger adolescents scoring at higher levels on the MAYS1-2 anger-irritability subscale than older juveniles. Intake procedures, such as predicting behavior patterns, can identify groups having a propensity for anger and consequentially assist in the targeting of treatment.

Anger and irritability are both described as affective disorders highlighted by chronic mood states, which can adversely impact all facets of a juvenile’s life (Underwood et al., 2006). Anger has been shown to affect a wide range of factors. For
instance, the general health of juvenile offenders, including insomnia, anxiety, and
depression, increased with elevated levels of anger (Swaffer & Hollin, 2001). Irritability
demonstrates analogous influence on mental health outcomes as evidenced by Kuny et
al.’s (2013) finding that children reporting elevated irritability levels produced higher
scores when assessed for anxiety, depression, and internalizing behaviors.

The close connection between the anti-social nature of irritability and anger is
reflected in elevated MAYSI-2 anger-irritability subscale scores. Savage et al. (2015)
isolated the anti-social emotion of irritability as they explored its relationship with
anxiety and depression. Savage et al. used results from more than 2,000 administrations
of the Child/Adult Behavior Checklist (CBCL/ABCL; Achenbach, 1991) to assess the
association. Savage et al. (2015) concluded that irritability was a strong predictor of
anxiety and depression though the opposite did not hold true. Furthermore, the
relationship was only significant in older children and younger adolescents.

**Outcomes of anger and irritability.** The conditions of CD and ODD often
manifest themselves through behavioral symptoms such as anger and irritability (K.
MacDonald, 2012; Stepp, Burke, Hipwell, & Loeber, 2012). Some propose that
pathways to anti-social behavior and delinquency include the inability to self-regulate
anger (Pardini & Frick, 2013) whereas irritability and ODD, in combination, have been
found to be strong predictors of violent reoffending (Aebi et al., 2016). In sum, anger
and irritability have been found on a co-morbid basis with CD and ODD.

Across the delinquent life course, anger has demonstrated a role in the
institutional misbehavior within correctional facilities (DeLisi, Caudill, et al., 2010).
Anger also positively influences aggressive forms of delinquency including violent acts and recidivism (Aseltine, Gore, & Gordon, 2000; Parker et al., 2005). In addition, adjudicated juveniles experience anger under stress conditions more than their traditional high school counterparts (Plattner et al., 2007). Given correctional programming domains such as social and transition skills, the need to teach alternate and pro-social responses to anger over negative life experiences is foundational to successful outcomes. In terms of the present study, establishing the predictive power of anger on institutional misconduct and length of stay can assist correctional personnel in fashioning interventions to counter negative responses and promote pro-social behaviors.

**Depression.** By definition, depression is the state of feeling sad, unimportant, or hopeless (Depression, 2016). Depression has been described as “a multifaceted construct with distinct physical, cognitive, emotional, and behavioral components, and each component may be associated with delinquency in different ways” (Allwood, Baetz, DeMarco, & Bell, 2012, p. 115). On an individual level, depression worsens overall physical health and contributes to the prevalence of adolescent suicide (Wasserman & McReynolds, 2006). Its significance as a co-morbid disorder with other organic and demographic factors is explained later in this section and highlights the multifaceted nature of the disorder that is graphically displayed in Figure 1.

**Demographic and co-morbid organic risk factors.** A sizable portion of incarcerated juveniles present with clinically significant levels of depression upon commitment (males = 36%; females = 54%; Cauffman, 2004). From a demographic perspective, race and sex form an interactive juncture when examining internalizing
behaviors such as depression and anxiety. For instance, white males have higher rates of internalizing problems than their minority counterparts. Sex plays a particularly powerful role in internalizing behavior where females, in general, report as symptomatic for internalizing behavior (Rosenfield, Phillips, & White, 2006).

An examination of depression based on sex found high rates of depression were predictive of violent offenses in female youth (Mellin & Fang, 2010). Rabinovitch, Kerr, Leve, and Chamberlain (2015) observed depression failing to intensify the risk of suicide by female juvenile delinquents with a history of childhood sexual abuse. Lower levels of depression, in fact, increased the risk of future delinquency among females victimized during childhood (Weaver, Borkowski, & Whitman, 2008).

Age has also been identified as a correlate to depression and delinquency. Kofler et al. (2011) discovered that early onset depression was predictive of age-related delinquent behavior. Seroczynski (1999) examined cross-categorical influences of age and sex on depression and delinquent behavior, finding female misbehavior in third grade was predictive of a small decrease in depression over a four-year period again confirming the multi-variable nature of a life course trajectory. Focusing on juveniles already involved in the juvenile justice system, Mallett, Dare, and Seck (2009) studied 555 youth involved in the juvenile court proceedings or on probation. Mallett et al. determined that depression, diagnosed at an early age and emerging as a chronic condition through early adolescents, was predictive of later delinquency. However, the authors themselves treated this result with caution given the very broad definition of a depressive disorder used in the study.
Furthermore, depression has been linked to conditions such as bi-polar disorder (Mallett et al., 2009), post-traumatic stress disorder (PTSD; Paparrigopoulos et al., 2014), and drug addiction (Paterson & Markou, 2007). Co-morbidity can also extend to disability and special education status, which are both reflected as organic risk factors in Figure 1. For example, O’Brien, Langhinrichsen-Rohling, and Shelley-Tremblay (2007) described findings that identified a significant relationship between reading disabilities and depression among younger males. These demographic features of depression capture the intricacies of the aforementioned definition and description of depression stressing the co-morbidity between variables. It also reinforces the advantage of visually representing the complexities through the life course model (Figure 1).

DeFoe, Farrington, and Loeber (2013) investigated the association of depression, hyperactivity, delinquency, and socioeconomic status. However, depression is classified as an internalizing behavior along with anxiety and withdrawal, both of which have been negatively linked to delinquency. DeFoe et al. began by describing the often confounding relationship between depression and delinquency, acknowledging that depression is positively related to delinquency. DeFoe et al.’s description of direct associations highlights the often misunderstood links between variables. From a programming standpoint, these conflicts should remind correctional administrators and educators that behavior strategies must be individualized as variables can manifest themselves in a variety of ways including internalizing and externalizing behaviors.
Outcomes of depression. The interaction of depression and various other disorders is significant. Allwood et al. (2012), supporting a life course perspective of variable interaction, stated that depressive cognitions, such as feelings of hopelessness, appear to affect delinquency more than other depression related symptoms. Moreover, consistent levels of depression are predictive of future delinquency over time. It is no wonder, therefore, that the relational connections between depression, behaviors, personality disorders, and other affective disorders are complex. These associations offer potential relationships that are examined in this study as groupings of affective disorders and other characteristics are analyzed for their predictive power of institutional behavior.

DeFoe et al.’s (2013) examined a similar population to the proposed study by analyzing the youngest cohort of participants in the Pittsburgh Youth Study. The analysis produced a model of variable relationships, which visually represented a chain of factors, such as socioeconomic status and hyperactivity, independently influencing low academic achievement, which, in turn, impacts delinquency. The results of the DeFoe et al. analysis identified delinquency as the cause of depression rather than vice versa, a conclusion deemed “surprising” given the general premise that depression leads to delinquency. Defoe et al. added that this particular finding may explain why depression can be positively related to delinquency and anxiety, while anxiety is negatively related to delinquency. The researchers hypothesized that low anxiety may have a connection to delinquency or conversely that high levels of anxiety serve as a protective factor against delinquent behavior. The DeFoe et al. conclusions emphasize the intricacy of depression
as a causal or predictive factor. Nonetheless, its association with delinquency is noteworthy.

DeFoe et al.’s (2013) study examines the complexities of the depression-delinquency association. Siennick (2007), for example, reviewed data from a longitudinal study concluding that low academic attainment and later involvement in the juvenile justice system may partially explain the link between depression and delinquency. Nonetheless, Mellin and Fang (2010) conceded that the exact relationship between depression and delinquency “seems to be less understood” (p. 58). The Mellin and Fang inquiry was able to determine that affiliation with troubled peers was a significant mediating factor in the link between depression and delinquency. As the seemingly contradictory findings suggest, the relationship between delinquency and depression remains unclear.

This section describes the interaction of depression with a diverse assortment of conditions (Turner, Larimer, Sarason, & Trupin, 2005). Moreover, the research base regarding delinquency and depression highlights the difficulties inherent in crafting clear causal and correlational relationships. Nonetheless, there is consensus that an association between depression and a delinquency outcome does exist. For practitioners, accepting the premise that both present a risk factor in the correctional environment is vital to selecting programming options. Given the difficulties inherent in discerning linkages between depression and other life course variables, the present study will permit the identification of factors influencing or clarifying the co-morbidity connection between depression, misconduct, pro-social behavior, and length of stay.
**Anxiety.** Anxiety is a basic, normal human emotion in response to a real or imagined threat. Anxiety becomes a detrimental disorder when the reaction becomes one of distress, hinders concentration and physical performance, and is in response to an unidentifiable or vague threat. It often brings with it an elevated level of apprehension, chronic nervousness, tension, and fear (Kramer & Zimmerman, 2009; Underwood et al., 2006).

**Demographic and co-morbid organic risk factors.** Demographically, race and sex have been found to impact the presence and intensity of anxiety and other internalizing behaviors (Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005). In terms of specific ethnic groups, a positive correlation has been discovered between American Indian and Alaska Natives with negative childhood experiences population exhibiting elevated levels of anxiety (Kenney & Singh, 2016). Caldwell, Sturges, and Silver (2006) discovered Caucasian and Hispanic males experienced the most severe home and school environmental problems with increased intensities of depression and anxiety. Hispanic males, in particular, displayed the strongest relationship between the school environment and affective dispositions. In terms of diagnosed anxiety disorders, however, Gordon-Hollingsworth et al. (2015) found no racial differences in behavioral patterns when controlling for other demographic variables.

Sex has been associated with heightened levels of anxiety. In general, the prevalence of mental health disorders is higher among non-Hispanic, White and female juveniles (Washburn et al., 2007). Within its sphere of influence is the finding that delinquent females present with anxiety disorders at a significantly higher rate than
males, regardless of race (Z. T. McGee, Barber, Joseph, Dudley, & Howell, 2005; Wasserman et al., 2005). Furthermore, Wasserman et al. noted a substantially increased level of anxiety in violent females when compared to non-violent females. Zhou et al. (2014), on the other hand, incorporated anxiety, impulsivity, depression, and substance use in their evaluation of violent and non-violent male offenders, concluding that anxiety did not differentiate between violent and non-violent offenders but did comprise part of the characterization of incarcerated youth as a whole.

As a predictor, childhood anxiety is related to the early onset of depression (Bufferd et al., 2014). Both generalized and social anxiety have been used to predict the onset age of substance use in males (Marmorstein, White, Loeber, & Stouthamer-Loeber, 2010) though the trajectory of anxiety for all children stabilizes in early adolescence (Voltas, Hernández-Martinez, Arija, & Canals, 2016). As with previous disorders discussed in this review, demographic characteristics are only one aspect found to effect levels of anxiety in a trajectory of delinquency and must be viewed within the context of an individual’s overall life course experiences, particularly those with negative outcomes within the juvenile justice system (Nadia, 2016).

Internalizing symptoms such as depression and anxiety are known to increase the risk of additional mental health concerns (Ali, 2016). Moreover, externalizing behaviors including delinquency frequently occur co-morbidly and are positively associated with anxiety (Kramer & Zimmerman, 2009; Perrino et al., 2015).
**Outcomes of anxiety.** Anxiety is just one of many factors that are often associated with the pathway to delinquency though DeFoe et al. (2013) noted it is not a causal relationship and, in fact, may operate as a protective factor in the pathway. That pathway often includes dysfunctional homes and negative school environments with high levels of behavioral problems, which provided the setting for a study by Caldwell et al. (2006). Overall, the school environment was found most predictive of both affective and behavioral disorders across racial classifications. Correctional facilities are tasked with providing educational services to its juveniles and this study suggests the importance of a positive school environment. As a result, a need to understand the interplay between school and incarcerated youth needs to be part of any programming, along with the proactive management of the environment to reduce misconduct. Filtering the impact of anxiety through other demographic and organic factors is necessary from a life course perspective focusing on delinquency, and a goal of the present study to maximize positive treatment effects. For example, instituting a mentoring program may proactively improve an institutional environment while diminishing feelings of anxiety.

Anxiety disorders find themselves associated with a variety of mental health and behavioral concerns. As a predictor, anxiety provides mental health professionals with a warning of potential psychiatric problems. Its association with unlawful behavior and delinquency affords value to the juvenile justice system seeking to identify and treat at-risk juvenile offenders.

As pre-incarceration behavior leads to actual incarceration, one concern becomes the role anxiety plays in institutional misconduct, a goal of the present study. Its
inclusion into mental health screening tools, such as the MAYSI-2, offers correctional officials early recognition opportunities for vulnerable, incoming youth. Building on the identification process, Townsend et al. (2010) reviewed effective programming suggestions for incarcerated youth with mental health disorders, including anxiety. Among the prominent evidence based therapies examined was Cognitive Behavior Therapy (CBT), which significantly reduced anxiety symptoms among study participants, as well as decreasing misconduct, in order to allow for the emergence of positive behavioral patterns. At MVJRC, CBT was specifically acknowledged as reducing length of stay averages among their juveniles, suggesting the link between anxiety and length of stay may also be noteworthy.

**Cognitive Distortions (CD).** Cognitive distortions, often referred to as self-serving cognitive distortions (Barriga, Sullivan-Cosetti, & Gibbs, 2009), are woven into the thinking process “by serving to protect the individual from self-blame and a negative self-concept . . . lessen inhibitions and permit an individual to justify antisocial behavior” (Gini & Pozzoli, 2013, p. 510). Manifestations of cognitive distortions can include self-serving thoughts, misinterpretation of social cues, and blaming others (Lipsey, Chapman, & Landenberger, 2001; McGlynn, Hahn, & Hagan, 2012). Cognitive distortions are generally merged with other psychological traits and poor social skills to paint a fuller picture of a delinquency pattern (Helmund, Overbeek, & Brugman, 2012).

**Demographic and co-morbid organic risk factors.** The proclivity of cognitive distortions serving as a pre-cursor to anti-social behavior, that cognitive distortions typically affect delinquent youth to a greater extent than non-delinquent
juveniles (Chrissy, Asscher, Stams, & van der Laan, 2016). Cognitive distortions, themselves, are associated some demographic variances within the juvenile population.

Though studies comparing cognitive distortion rates between racial groupings are sparse, some research has identified disparities across sex and age classifications that support the proposition of demographic influence across the delinquency phase of a life course. Muris and Field (2008) noted that females are more prone to cognitive distortions than males as a result of their higher rates of anxiety. However, some findings have reported sex serving as a moderating factor of cognitive distortions (Leeuwen, Rodgers, Gibbs, & Chabrol, 2014), with some finding that females presenting with fewer cognitive distortions prior to treatment (McGlynn et al., 2012). In addition, some evidence exists for age as influencing cognitive distortions when analyzed as a co-variant basis with anxiety disorder (Muris, Huijding, Mayer, Den Breejen, & Makkelie, 2007). Though Muris and Field cautioned not to assume an age-cognitive distortion linear relationship because of the lack of longitudinal data on the subject. McGlynn et al., however, discovered younger offenders tended to have higher rates of cognitive distortions; yet, advising restraint in generalizing the findings in that relatively few younger adolescents are incarcerated and generally only those with significant behavioral issues.

Cognitive distortions often present on a co-morbid basis. Eposito-Smythers, Penn, Stein, Lacher-Katz, and Spirito (2008) discovered a correlation between elevated levels of pre-incarceration, alcohol abuse, and cognitive distortions. It is noteworthy that both cognitive distortions and substance abuse serve to reduce inhibitions, potentially
encouraging the rationalization of inappropriate and delinquent behavior. In contrast, Holmqvist (2008) evaluated the relationship between cognitive distortions and psychopathy on the thought processes of 47 juveniles residing in multiple treatment facilities. Their analysis found no measureable connection between psychopathy and cognitive distortions, though the connection was related to reduced feelings of shame.

**Outcomes of cognitive distortions.** A number of outcomes have been scrutinized for their association to cognitive distortions of delinquent juveniles. Studies have identified correlations between cognitive distortions and self-reported antisocial behavior (McGlynn et al., 2012), as well as externalizing and delinquent behavior (Larden, Melin, Holst, & Langstrom, 2006) including non-suicidal self-injury (Weismoore & Esposito-Smythers, 2010). Adding to the foundational impact of cognitive distortions was Barriga et al.’s (2009) study of 78 adjudicated youth attending a mandated empathy course. Among the findings was the conclusion that as cognitive distortion levels stabilized, the participant’s ability to empathize improved.

Cognitive distortions were found to impact delinquency in a study by Frey and Epkins (2002). One hundred seventy-seven incarcerated youth were statistically profiled through several measures and sub grouped into psychological profiles. Juveniles classified as aggressive reported more cognitive distortions related to overt behavior than their non-aggressive counterparts. Each of these findings provides valuable insight for correctional officials in their screening, identification, and programming initiatives for at-risk admissions and in developing appropriate treatment programs.
The moral judgment process was scrutinized by Beerthuizen et al. (2013) who examined the moral judgment process, cognitive distortions, and oppositionally defiant attitudes characteristic of incarcerated juveniles. Oppositional defiance levels were measured with the How I Think (HIT) questionnaire and not deemed to be a diagnosis of oppositional defiance disorder (ODD), although still significant in terms of behavioral manifestations. Their review of 351 juvenile delinquents found cognitive distortions were “the strongest associate of delinquent behaviour” (p. 471), exceeding the impact of ODD. Additionally, those delinquents with fewer cognitive distortions and higher moral reasoning were less likely to commit delinquent acts.

Cognitive distortions commonly relate to specific behaviors. For instance, juvenile offenders confined for serious, non-status sexual crimes presented with altered sexual perspectives, in part, due to cognitive distortions (Eastman, 2005). In addition to sexual misconduct, cognitive distortions intensify suicidal tendencies (Jager-Hyman et al., 2014) and gambling disorders (Conenza & Nigro, 2015) both of which are issues in a correctional environment.

As previously described, cognitive distortions alter the thought process of an individual thereby allowing them to shift blame away from their own inappropriate conduct. Research has recognized negative outcomes ranging from a lack of empathy to inappropriate sexual behavior. Most importantly for this study, higher rates of cognitive distortions appear in delinquent juveniles than their non-delinquent contemporaries (Chabrol, Goutaudier, Melioli, van Leeuwen, & Gibbs, 2014). As youth acquire cognitive distortions through the early phase of a life course, their identification of these
distortions upon admission to a correctional facility is critical to providing the necessary treatment to counter the potentially negative outcomes. The present study will identify juveniles exhibiting cognitive distortions through the administration of an intake assessment. The study will proceed from identification to ascertain the predictive strength of cognitive distortions and their influence on misconduct, pro-social behaviors, and length of stay alterations across participants.

The preceding review of mental health issues has detailed often intricate interrelationships between mental health, demographic, and disability status. For example, anger, even when controlled for numerous demographic features, predicted physical aggression during confinement (DeLisi, Caudill, et al., 2010). The reduction of depressive symptoms encouraged pro-social behaviors related to adolescent entry into young adulthood, according to Siennick (2007), thereby reducing the risk of continued delinquency. Length of stay has also been associated with the increase of internalizing behaviors (Schwalbe, Gearing, MacKenzie, Brewer, & Ibrahim, 2013). These associations, reflected in the life course trajectory model (Figure 1), are examined further in the present study to underscore the connection between mental health factors and demographic variables, as well as to optimize positive outcomes. This study will allow an analysis of those relationships, with the results having the potential of identifying factors that predict pro-social behaviors, institutional misconduct, and length of stay. The next section continues the review of life course influences with a discussion of disabilities including their prevalence, severity, and outcomes during the correctional phase of a life course, and their potential influence on institutional behavior.
Presence of Disabilities

Youth with disabilities form another substantial subset of confined juveniles. Although these subgroups are impacting variables in their own right, research has identified a number of interrelationships between the two. The importance of including disability status as a variable was affirmed by Gagnon, Barber, Van Loan, and Leone (2009) who found that disability status, specifically emotional and behavioral disorders (EBD), was statistically significant when determining length of stay, one of the three dependent variables in this study. According to the study results, incarcerated juveniles with EBD were statistically more likely to remain confined longer than juveniles with other special education labels. The present study acknowledges the significance of disability status as a variable and examines the potential impact of disability factors in order to enhance treatment effectiveness. To that end, the following sections first look at general demographical statistics related to disabilities and then consider the demographic characteristics of specific disabilities and how these affect institutional outcomes.

Demographic Characteristics of Disabilities

A comparison of incarcerated and non-incarcerated student populations demonstrates striking differences in disability prevalence rates. Overall, only 13.8% of non-incarcerated students are identified as having a disability (U.S. Department of Education, 2012). This marks a major contrast to their peers in correctional facilities where Cruise, Evans, and Pickens (2011) found 39.8% of incarcerated juveniles had been classified with a disability with some states posting rates in excess of 50% (Ohio Department of Youth Services, 2017).
Disabilities and race are two important groupings commonly found in correctional facilities. For example, Baltodano et al. (2005) examined a long-term, secure facility for male offenders. They studied 174 juvenile males ($M = 16.23, SD = 0.92$) with 47% of participants being Hispanic, 35% White, 16% African-American, and 8% Mexican Nationals. Of those whose disability qualified them to receive special education services, 39% of White, 24% of Hispanic, 44% of African American, and 100% of Mexican Nationals. The effects of these characteristics separately, and combined, can contribute to exacerbating their frequent educational impairments and therefore, producing differentiated response to treatment (Gruber & Machamer, 2000).

M. Quinn, Rutherford, Leone, Osher, and Poirer (2005) enumerated the prevalence of individual disability categories by noting that emotional and behavioral disorders exceeded all categories with 47.7% of those identified with disabilities falling within this single category. Disability rates for other categories include specific learning disabilities at 38.6%, intellectual disabilities at 9.7%, other health impairments (OHI) at 2.9%, and multiple disabilities at 0.8%. In comparison, the most common disability within the public school system is specific learning disabilities (Hagner, Malloy, Mazzone, & Cormier, 2008).

Gagnon et al. (2009) conducted their own survey, primarily to assess curriculum standards. As part of the survey, disability rates were tallied from responses of 131 principals of correctional facilities overseeing 15,209 incarcerated students in both long-term facilities and detention centers. From the student population, approximately 5,802 were identified with a disability with 45.3% classified with emotional and
behavioral disorders (EBD), 44.4% with specific learning disabilities (SLD), 4.9% with an intellectual disability, and the remaining 5.4% classified under other IDEA categories. Gagnon et al. suggested that the nature of the respondents (principals versus state directors) and the year of each survey likely accounts for the variance between the Gagnon et al. and M. Quinn et al. (2005) figures. Despite the slight statistical differences between studies, the distinction between the general school population and juvenile corrections is notable as students diagnosed with learning disabilities remaining the largest category within public schools while emotional and behavioral disorders are most prevalent within juvenile corrections.

**Outcomes of Disabilities**

The Individuals with Disabilities Education Act (IDEA) supplies the framework for schools to provide a free and appropriate public education (FAPE) to students with disabilities (Peterson, 2013). The Individualized Education Program (IEP) is driven by the directives of IDEA and provides the blueprint of individualized school year goals for students with disabilities (Kidshealth, 2016). With a large percentage of confined youth already on IEPs upon admission, IDEA mandates often encumber facilities with additional responsibilities to provide appropriate special education, related services, and procedural rights of due process (Leone, Meisel, & Drakeford, 2002). Nonetheless, these services and interventions are legally required to provide an acceptable education to these juveniles committed to correctional facilities (Leitch, 2013). Failure to provide services to those with mental health needs and disabilities increases the probability of delinquency during a life course (Hong et al., 2013). Among the challenges relevant to this study is
the ability to exhibit pro-social behavior during confinement, avoid institutional misconduct, and reduce lengths of stay.

**Academic outcomes.** Academic success, largely missing from the lives of juvenile delinquents, has been related to misbehavior and therefore becomes a noteworthy variable in adolescent phase of a life course. Trulson (2007), for instance, found that juveniles with more education were less apt to engage in institutional misconduct. Unfortunately, academic achievement of youth with disabilities, including those inside and outside the correctional system, indicates “they are . . . functioning below the mean on all measures of achievement” (Baltodano et al., 2005, p. 361). Achievement levels were particularly disturbing as youth with disabilities had standardized test scores in excess of one standard deviation below the mean, far more than youth without disabilities. Native American youth, in particular, struggled most noticeably producing scores approximately four standard deviations below the mean.

Gagnon and Barber (2014) noted the “youth with disabilities, in general, have serious academic difficulties and low performance on state assessments in reading and mathematics” (p. 7). Those difficulties find students with disabilities achieving basic levels in reading and math assessments at less than half the rate of their non-disabled peers (Gagnon & Barber, 2014). Baltodano et al. (2005) added to this conclusion by noting reading fluency rates for juveniles receiving special education services were roughly 30 words per minute less than juveniles without a disability.

These outcomes suggest that delinquent youth with disabilities bring a range of academic needs and deficits to correctional facilities (Foley, 2001). Nonetheless, Leone
et al. (2002) noted that despite the inherent difficulty in working with incarcerated juveniles with disabilities, empirical evidence exists that achievement gains are possible with intensive, short-term instruction and treatment. The identification of students with disabilities may aid in the discovery of behavioral patterns for such youth as this study proposes.

Even incarcerated juveniles without diagnosed disabilities face academic challenges. Sedlak (2009) found an unusually high proportion of incarcerated youth have failed a course, contributing to nearly 50% of confined juveniles performing below grade level compared with the general population rate of slightly more than 25%. Most important in terms of programming and outcomes, these deficiencies have been related to general misbehavior (Loeber & Farrington, 2000), and within correctional facilities this would translate into institutional misconduct. As noted previously, academic success or failure can be important influences on behavioral patterns during incarceration. The extent of their academic failings is seen in the nearly 2/3 of adjudicated youth who have been suspended or expelled in the school year preceding their term of incarceration (Brunner, 1993; Vacca, 2004). The life course trajectory through delinquency suggests that a behavioral pattern of academic failure may intensify other negative patterns that flows from early childhood to adulthood. It is no surprise that such gaps in schooling have contributed to poor academic outcomes. Baltodano et al. (2005) found incarcerated juveniles reading at the eighth grade level and performing math computations at the seventh grade level while Yan and Wilkerson (2014) noted that one third are illiterate. The lack of academic achievement, common among individuals with disabilities, has
been associated with maladaptive behavioral (Katsiyannis, Ryan, Dalun, & Spann, 2008). If left unidentified or untreated, maladaptive behaviors can hinder the acquisition of pro-social behavior patterns during confinement and possibly lengthen terms of stay.

**Emotional and behavioral disorders (EBD) and specific learning disabilities (SLD).** Institutional misconduct is a regular occurrence in juvenile corrections (JC) where youth with emotional and behavioral disorders (EBD) form the largest disability category (Hagner et al., 2008). In addition to these influences of maladaptive behaviors, conditions such as specific learning disabilities (SLD) comprise an additional set of risk factors that can contribute to the behavioral patterns of misbehaving adolescents.

Emotional and behavioral disorders represent the largest classification of disabilities within juvenile corrections (Gagnon et al., 2009). These individuals bring into the juvenile justice system an average GPA of 1.4, 18 school absences per year, and a 58% drop out rate (Benner, Kutash, Nelson, & Fisher, 2013). Reid, Gonzalez, Nordness, Trout, and Epstein (2004) found academic struggles were particularly noticeable in math and reading skills of students with emotional and behavioral disorders with resulting effect sizes of -.81 in both academic areas. The nondisabled control group, on the other hand, had an overall effect size of -.64. More positively, studies have shown that academic achievement improves for juveniles with emotional and behavioral disorders during a term of incarceration. Unfortunately, the gains are often lost upon their release and re-admittance to their sending school (Cavendish, 2014).

Serious misbehavior has led to dramatic arrest rates of young adults with EBD and SLD. Within the four years following high school graduation, students categorized
with EBD had arrest rates of 36% in 1990 rising to 61% in 2005. Young adults with SLD fared better but still had arrest rates that increased from 16% in 1990 to 24% in 2005 (M. Quinn et al., 2005). Obviously, as arrest rates increase so does the likelihood of confinement rates.

Chen, Symons, and Reynolds (2011) investigated whether the rate of delinquency and adult crime was driven by an association between demographic factors associated with childhood circumstances (e.g., academic failure, early problem behavior, family support, school mobility, and educational experience) and disabilities such as SLD and EBD. The authors used examined records of 1,370 disadvantaged children from the Chicago Public Schools continuously monitored nearly 20 years after the beginning of a longitudinal study. Participants were required to have at least one contact with the juvenile justice system or had committed an adult crime. From a demographic standpoint, the pool was evenly split between sexes and was composed of 92.3% African-Americans. From a disability perspective, 8.8% were classified as SLD, 2.6% as EBD, and 5.8% with a variety of other disabilities. After controlling for family demographics, results indicated a significant association between high-incidence disabilities (e.g., learning disabilities and EBD) and criminal conduct, at both juvenile and adult levels.

Malmgren et al. (1999) investigated the connection between SLD and delinquency when controlling for sex, ethnicity, and socioeconomic status. SLD was found to have a significant correlation with several measures of delinquency including violent behavior in the previous year, total arrests, and total number of days the youth had spent in a detention center. When considering only juvenile delinquency, students with
SLD had a 7.1% greater risk of involvement in the juvenile justice system than general education students whereas students diagnosed with EBD realized a 43.3% higher rate than their non-disabled peers. Among the findings was that childhood neglect increased the risk of delinquency (.093, \( p < .05 \)). As study results in this section suggest, juveniles with EBD and SLD have an increased risk of negative behavior potentially leading to misconduct during confinement and an absence of pro-social behavior, all of which can lead to lengthier terms of incarceration.

**Intellectual disabilities (ID).** Some disabilities prove more susceptible to maladaptive behavior than others. Youth diagnosed with intellectual disabilities and low IQ, for instance, are prone to delinquent behavior and are disproportionately represented in juvenile corrections with estimates ranging from 2–10% of the population (Robinson & Rapport, 1999). Koolhof, Loeber, Wei, Pardini, and D’escury (2007) examined these issues from a sample of 430 adolescents participating in the Pittsburgh Youth Study (PYS; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). Grouping the participants on the basis of IQ and delinquent behavior, Koolhof et al. (2007) concluded that IQ had no statistical impact on the timing of an individual’s first delinquent behavior nor the frequency of delinquent acts. However, low IQ scores correlated with increased impulsive behavior, minor crimes (e.g., theft < $5.00), depression, poverty, and broken homes, car theft and breaking and entering. Given the importance of avoiding early instances of misconduct, identifying students with disabilities, as part of a profiling process, may avoid a pattern that leads them to engage in institutional misconduct.
The range of findings in Koolhof et al. (2007) and preceding studies regarding the
linkage between disabilities and delinquency underscores the multifaceted dimensions of
behavioral interventions for youth with EBD, SLD, and ID. Not only do educators and
support staff need to address behavior concerns of this population, but also the academic
issues that can lead to increased institutional misconduct. As previously stated, the
mandate to provide services to students with disabilities is not optional. Consequentially,
correctional personnel assess needs of all these students and should seek to provide
academic and behavioral supports, thereby reducing lengths of stay. Using the predictive
patterns resulting from this study may assist in adopting interventions and strategies that
address the frequency of co-morbidity of mental health and disability status while
accounting for the unique effects due to demographic factors.

**Institutional Misconduct and Measures of Pro-Social Behavior**

Thus far, this review has investigated two primary categories of factors
influencing the life course trajectory through delinquency, namely demographic
characteristics and organic risk factors. Research to date has indicated that each
contributes to potentially negative outcomes throughout the life pathway that results in
juveniles who offend. The present study concentrates on confinement behavior, but
recognizes that the life course comprises the entirety of the pre-delinquency phase where
youth first become involved in the juvenile justice system as well as the influences and
choices that occur subsequent to confinement.

Demographic characteristics have been related to delinquency and associated
behavioral conditions such as antisocial personality disorder (Park et. al., 2008).
Attributes such as age and ethnicity are typically termed static due to their unchangeable nature (Kinard & Johnson, 2014). Despite the immutable quality of the demographic features, they have been statistically significant in predicting maladaptive behavior leading to delinquency or confinement (Evans et al., 2016). Their effect can be examined along the life course trajectory whether that be childhood, delinquency, or institutional misconduct nexuses (Lynne-Landsman et al., 2011; Trulson, 2007). The inability to change these intervening factors must not prevent juvenile justice and correctional officials from adopting effective treatment options before, during, and after periods of confinement. However, the potential for differential response to treatment can allow facilities to effectively tailor programs to meet demographic variations among juveniles.

Predictive patterns, produced by the present study, can aid treatment by identifying distinct patterns that suggest strategies to produce positive outcomes.

Organic risk factors, on the other hand, are responsive to interventions (i.e., dynamic; Kinard & Johnson, 2014). Though distinct from demographic characteristics in that regard, their effect on a youth’s developmental pathway can occur at multiple points. For instance, V. A. Johnson et al. (2015) discovered mental health issues originating during childhood but continuing to affect the life course through adolescence delinquency. Findings suggest that treatment can be effective during incarceration though mental health concerns often persist as the youth transition out of the correctional environment and into settings where care may not persist (Dembo et al., 2007). Effective treatment during a period of incarceration should reflect these various risk factors and correlate with and therefore effect, rates of misconduct, of pro-social behavior, and
ultimately length of stay (McDougall et al., 2013). The complexity of risk factors, both demographic and organic, their connection to delinquency, and the predicted effects on behavior during confinement offer the juvenile justice system an opportunity to institute differentiated strategies fostering positive outcomes during incarceration and transition back into society.

Of the three dependent variables in the study, pro-social behaviors provide both a measure of positive engagement of incarcerated youths, as well as a means for intervention. The second dependent variable measures negative behaviors, through the accumulation of points for misconduct. The length of stay variable reflects both positive growth and an absence of serious misconduct. Taken as a whole, the dependent variables provide a comprehensive picture of institutional behavior patterns.

A starting point to understanding the importance of pro-social behavior in the context of the delinquent phase of a life course may be appraising the incarceration experience itself. To that end, Wright (2005) authored a qualitative article on prison teaching poignantly titled, “Going to Prisons: Culture Shock.” One teacher confessed, “I was scared, I’ll admit it. I had no idea what to expect, I was looking over my shoulder ever [sic] two seconds, checking to make sure my wallet was still in my pants pocket” (p. 20). Wright goes on to portray prison culture as a mixture of authoritarian and militaristic oversight coupled with omnipotent surveillance within a fear based culture. Though this view may not be universal, it does portray a setting in which institutional misconduct can be easily fostered.
As youth traverse through the confinement portion of a delinquent life course, institutional misconduct can become a troubling and frequent outcome for both males and females (Blackburn & Trulson, 2010). Among the adverse outcomes associated with behavior within the life course confinement context is the impact on post-release consequences. These include the imposition of blended sentences, which begin as a term of incarceration at a juvenile facility but threaten the youth with an additional adult sentence if misconduct occurs during the juvenile stay (Trulson, Caudill, et al., 2011) and, to some extent, recidivism (Trulson, DeLisi, et al., 2011; Trulson, Haerle, DeLisi, & Marquart, 2011). An understanding of confinement conduct involves a discussion of the interaction between behavior and imported characteristics of incarcerated juveniles, as well as their overall influence on the life course during the delinquency phase of troubled youth, including institutional misconduct, pro-social behavior, and length of stay. The present study examines the interaction by identifying patterns of pro-social behaviors during confinement with the desire to assist correctional staff in optimizing differentiated treatments.

**Institutional Misconduct and Identifying Contributing Factors**

The present study seeks to offer an additional resource for correctional officials to utilize in identifying potential misconduct risks. The identification process is driven by the prediction of behavior patterns and its use of intake assessment scores, demographic characteristics, and disability status.
Assessments and Measurements

A variety of assessments administered at juvenile facilities can provide critical information utilized to tailor intervention toward achieving positive outcomes. Some assessments are comprehensive diagnostic measures while many are screening instruments used for initial identification of at-risk youth (Butler et al., 2007). The admission process at the Miami Valley Juvenile Rehabilitation Center (MVJRC) involves several components. A health screening ascertains the physical condition of each juvenile and any medications currently being taken, as well as a security screening to determine the appropriate housing option for each youth. In addition, the juvenile is administered two mental health screening assessments described later in this section that identifies potential risks of any mental health concerns. Finally, personal demographic information is collected from each juvenile including their age, sex, and race (Higgins, personal communication, May 21, 2015). It is from this body of data that the statistical analysis of this study was conducted.

Intake screening is an important element in the identification of factors contributing to potential misconduct (Cauffman, 2004). Few published studies exist evaluating the efficacy of intake assessments as a predictor of juvenile institutional misconduct (Fazel et al., 2008). Those that have been reported generally employed mental health instruments to predict misconduct. The Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2; Grisso et al., 2001), for example, is a prevalent self-reporting assessment tool for children and adolescents consisting of 52 items and designed for ease of administration within the juvenile correctional system. Its primary
purpose is to screen incoming youth for the potential of severe mental health disorders (Butler et al., 2007), though its use as a disability identification tool under IDEA seems possible as well. Positive and valid results in its use as a psychiatric screening instrument have been reported nationally and internationally, though some caution has been expressed in its use with ethnic minorities (Archer, Simonds-Bisbee, Spiegel, Handel, & Elkins, 2010; Ford et al., 2008; Stathis et al., 2008).

Results of MAYSI-2 have also been found similar to those derived from the Voice Diagnostic Interview Schedule for Children (DISC; Lucas et al., 2001), another mental health screening instrument (Hayes, McReynolds, & Wasserman, 2005). Though MAYSI-2 and DISC both address mental health concerns and have been used in juvenile facilities, DISC was developed as a diagnostic instrument and is now available in a self-administered version making its use as a screening tool more efficient (Wasserman et al., 2002; West, Sweeting, Der, Barton, & Lucas, 2003). The Youth Self-Report (YSR) (Achenbach, 1991) is another screening tool of 112 self-reporting items targeting the identification of juveniles over the age of 11 symptomatic of emotional and behavioral disorders (Bartels, Niels, van Beijsterveldt, Middeldorp, & Boomsma, 2011).

Though not created for its predictive value of institutional behavior, each of the aforementioned instruments has been used as a predictive tool within juvenile corrections. Of the seven subscales comprising the MAYSI-2, Butler et al. (2007) found only the angry-irritable subscale significantly associated with a juvenile’s serious institutional misconduct when comparing the elevated score group ($M = 71.12$, $SD = 61.54$) with the control group ($M = 36.85$, $SD = 49.19$). These results were supported by
DeLisi, Caudill, et al., 2010) who employed a Poisson Regression analysis to assess the relationship between MAYSI-2 scores and misconduct ($b = .10$, Robust $SE = .05$, $z$-score $= 2.97$). DeLisi, Drury, et al. (2010) added the traumatic experiences subscale as an effective predictor of institutional sexual misconduct (i.e., any sexual contact between with wards or staff), suicidal tendencies, and total infraction counts when the juvenile had scored high for exposure to early life trauma. Risk for misconduct within a correctional facility was actually found to be lower in juveniles who reported elevated scores for anxiety, affective disorder, disruptive behavior, or substance use on the DISC assessment (McReynolds & Wasserman, 2008). McDougall et al. (2013) administered the YSR, finding that younger juveniles with more convictions and time behind bars scored higher on the aggression and delinquency subscales and also consistently committed the more serious institutional offenses. Each of the aforementioned assessments provides reasonable benefits as a predictive asset for conduct within a juvenile correctional facility. The MAYSI-2, utilized at MVJRC, has been particularly popular as an intake assessment measure in juvenile corrections with more than 70,000 youth having been administered the MAYSI-2. Given the large number of administrations coupled with its validity as a predictor of institutional misconduct, its use by MVJRC and this researcher is properly warranted. Its predictive uses were expanded to include pro-social, as well as length of stay, allowing for the comparison of predictor variables among these outcomes in order to better identify treatment needs.

This section demonstrates the effectiveness of intake assessments as a method for predicting behavior during confinement. The present study seeks to predict pro-social
behavior and institutional misconduct through the use of two independent assessments. The existing research confirms the utility of predicting misconduct using intake procedures and this study expands this to include prediction of pro-social behaviors because of their importance in promoting more positive life trajectories. Length of stay provides the third variable and incorporates elements of pro-social behavior and misconduct, both of which can influence the term of incarceration. For instance, an increase in pro-social behavior would result in a reduction of institutional misconduct.

At MVJRC, however, the delivery of positive reinforcement to confined juveniles is central to transforming a pathway of improper behavior to appropriate conduct. The following section describes the foundational, evidence-based interventions utilized at MVJRC that serve to encourage positive behaviors, reduce misconduct, and shorten length of stay.

**Measures of Pro-Social Behavior**

By definition, a juvenile delinquent has engaged in behavior antithetical to social norms. It is the very reason they find themselves incarcerated. Teaching them pro-social behaviors, then, seems to be a common sense approach to reintegration into society. Research has demonstrated the benefits of teaching pro-social behaviors to those on the journey through a life course that includes a phase of delinquency. Carlo et al. (2014) observed a protective function of pro-social behavior against negative peer influence, as well as subsequent delinquency. Pro-social behaviors have been found to have a negative correlation to callous-unemotional traits in incarcerated juveniles (Pechorro, Nunes, Jimenez, & Hidalgo, 2015). Though pro-social behaviors may not have been prevalent
during the developmental years of a delinquent’s life, this research suggests that it is never too late to teach appropriate conduct during one’s life course.

A number of facilities have found that replacing institutional misconduct with pro-social behaviors can often be approached through the framework of positive behavioral interventions and supports (PBIS). An environment of exclusionary discipline and negative school climate, traditionally found in corrections, can be improved through the PBIS process of systematic implementation of evidence-based interventions (Swan-Bradway, Pinkney, & Flannery, 2015). Understanding institutional misconduct in conjunction with patterns of youth susceptible to maladaptive behavior while confined, may lead to the selection of interventions and treatments suitable for true rehabilitation back into society.

Positive behavioral interventions and supports is not a program or specific intervention but a framework, which “emphasizes an integration of measurable outcomes, data-based decision making, [and] evidence based practices” (Sugai & Horner, 2006, p. 245). The obvious stress on data collection and decision making within the PBIS structure makes it the ideal vehicle for the evaluation of programming. As such, it is also suitable as a measurement tool for the present study, which seeks to measure the predictive power of intake data on pro-social behavior within the institution.

Furthermore, PBIS encourages the utilization of evidence based practices (EBP). IDEA strongly recommends the use of EBP for all students with disabilities. Therefore, this is an important practice in addressing the high proportion of students with disabilities in the incarcerated population. Combes, Chang, Austin, and Hayes (2016) defined EBP
as “instructional techniques that meet prescribed criteria related to the research design, quality, quantity, and effect size of supporting research, which have the potential to help bridge the research-to-practice gap and improve student outcomes” (p. 548).

At MVJRC the primary interventions for encouraging pro-social behavior is a token economy and praise. Both of these behavioral strategies have been established as EBPs and implemented across settings including traditional school environments and correctional facilities (Maggin, Chafouleas, Goddard, & Johnson, 2011; Reinke, Herman, and Stormont, 2013). Moreover, each has the capacity to be measured thereby satisfying a primary requirement for PBIS in making data-based decisions. Each of these strategies are addressed later in this review.

Historically, reaction to student misbehavior has tended to emphasize the negative choices selected by the student and the equally negative consequences imposed by teachers and staff (Osher et al., 2004; T. M. Scott, Nelson, et al., 2002; Sutherland & Singh, 2004). Unfortunately, the aversive responses imposed by school authorities often serve to escalate antisocial behavior rather than diminish its frequency (Sugai & Horner, 2002). Gagnon, Rockwell, and Scott (2008) noted that:

Zero-tolerance policies that allow for little principal discretion, coupled with the inability of many public schools to address both student learning and emotional and behavioral concerns, have led to an increasing use of exclusionary school settings and what some have termed “the criminalization of behavior” (Leone, Mayer, Malmgren, & Meisel, 2000), whereby students are pushed out of the regular public school and into more restrictive settings. (p. 3)
In contrast, the literature base is replete with examples of positive reinforcement techniques reducing problem behavior (Maag, 2001). The supportive nature of positive reinforcement comes in many forms including verbal praise, activity opportunities, and tangible rewards (Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Temple & Robinson, 2014). Within juvenile corrections its utility has been displayed through the growing adoption of the PBIS framework (Nelson, Scott, Gagnon, Jolivette, & Sprague, 2008). Some have described positive reinforcement as a strength-based, behavior modification approach differing from the traditional, deficit based approach found in corrections (Butts, 2008). The White House Task Force for Disadvantaged Youth (2003) concluded that appropriate adolescent development requires the insertion of “caring adults in their lives, opportunities to learn marketable skills . . . and opportunities to contribute meaningfully to their communities and society” (p. 95). Positive reinforcement serves to help achieve these goals particularly in regard to learning marketable and socially acceptable skills, which ideally begin to develop during a juvenile’s confinement, and have often been lacking in their life trajectories to this point.

Praise. Among the many interventions that are available to all students or youth and identified as “universal” programs within the PBIS structure is the delivery of praise. Praise, both verbal and non-verbal, for specific student behaviors has been advocated for years though research indicates it continues to be underutilized despite its acknowledgement as an EBP (Chalk & Bizo, 2004; Landrum & Sweigart, 2014). Using the ideal target ratio of 4:1 positive to negative comments (Larson & Turner, 2002), Reinke et al. (2013) examined 33 elementary classrooms, determining that teachers were
typically falling short of that goal. Those that reported high rates of praise, however, displayed more effective classroom management than their counterparts.

The type of praise has been probed in several studies. Reinke et al. (2013), for example, found general verbal praise was three times more likely to be delivered to students than specific praise. Rather than a negative outcome, general verbal praise or ambiguous praise, produced higher levels of motivation and increased effort on tasks according to study findings of 95, 5- to 6-year-old children (Morris & Zentall, 2014). Morris and Zentall also discovered non-verbal gestures, such as a high-five, generated the strongest positive responses by participants. The results of praise studies suggest that educators and correctional officials have an opportunity to avail themselves of positive reinforcement options that are inexpensive yet effective.

The use of praise to measure the success of behavioral interventions has been examined repeatedly. For example, praise was measured on a pre- and post-year basis by Split, Leflot, Onghena, and Colpin (2016) who observed a decrease in aggressive and hyperactivity behavior in the classroom. Some have called for more refined operational definitions of praise to enhance the measurements of behavior. Blaze, Olmi, Mercer, Dufrene, and Tingstom (2014) modeled the use of clear definitions by examining the differential effect between loud (i.e., heard by entire classroom) and quiet praise (i.e., heard only by the individual student) on secondary student behavior. No measurable statistical difference was noted and measurability and clear operational definitions were not a concern due, in part, to the clear description of each independent variable. At MVJRC this concern has been addressed through the facilities’ program manual, which
enumerates pro-social behaviors that will receive praise from staff (Miami Valley Juvenile Rehabilitation Center, 2015).

**Token economy.** Across traditional and correctional settings, token economies have become a very common, evidence-based approach to providing universal-level, Tier 1, positive reinforcement under the PBIS framework (Becraft & Rolider, 2015; Clarida, 2006). Token economies find their roots in applied behavior analysis where the manipulation of consequences is one component of the behavior modification process (Alberto & Troutman, 2013; Alstot, 2015).

Its appropriateness as a measure for developing pro-social behavior is inherent in its very definition which Maggin et al. (2011) termed “a contingency management system that allows participants to earn tokens for presenting specific, positive behaviors that are later exchanged for predetermined backup reinforcement” (p. 530). As with praise, the specificity of target behaviors is key to strengthening its use as a measure. The distribution of tokens creates an effective quantitative source of measurability. Tokens, themselves, can take the form of intangible points, teacher-provided tickets, or tokens such as poker chips (Alberto & Troutman, 2013). Numerous behaviors have been addressed through token economy interventions including classroom comportment (Zlomke & Zlomke, 2003), impulsivity, hyperactivity, disobedience, and verbal aggression (Coelho et al., 2015).

A major component of the token economy is the backup reinforcers for which tokens can be redeemed. The correct selection of backup reinforcers has proven to be a potent asset for a successful token economy. Becraft and Rolider (2015) investigated the
use of backup reinforcers for a 13-year-old female with intellectual disabilities. The participant was offered a favorite edible reward or a token that she could redeem for various edible items, including one that was dissimilar to the favorite reward. Their findings suggested that tokens with backup reinforcers were more effective increasing the rate of task completion than the favorite edible. At MVJRC, a token exchange system is also employed with backup reinforcers. Youth can exchange tokens for a variety of items including snacks and writing material in the “point store” (MVJRC Program Manual, 2017). The use of praise and tokens at MVJRC are not an end in themselves but a method to “identify, acknowledge and reward desired behaviors in order to increase pro-social behavior” (MVJRC Program Manual, 2017, p. 22).

**Use in traditional settings.** The use of token economies as an intervention has been found effective in both traditional school environments and restrictive settings. A Chicago public high school was the setting for Bohanon et al.’s (2006) case study highlighting the implementation of a PBIS system, which included a Tier 1 framework utilizing a token economy. “Cool tickets” served as the basis of a token economy and served as the primary positive reinforcer. Similar to other ticket systems, cool tickets were distributed by faculty and staff to deserving students who behaved in accordance with school policies. In this case, each ticket was assigned a monetary value of $0.25 each. Tickets could be redeemed during the lunch hour at the school cantina for various tangle items. Group contingencies were also initiated with a school-wide dance admission available for $2.00 or 2 cool tickets. One thousand ninety-eight cool tickets were redeemed for the event while only $29.00 in actual admission fees were paid,
providing the school staff with an indication of the students’ acceptance of the token economy initiative.

Office disciplinary reports (ODRs) also provided a behavioral measure for Bohanon et al.’s (2006) program analysis of a token economy. Though ODRs are typically a measure of negative behavior that results in an office referral, the rate reduction of ODRs can evidence an improvement in pro-social behavior and the effectiveness of a behavioral intervention such as a token economy. Student outcomes were encouraging with ODR rates dropping from a baseline of 1.93 per 100 students (adjusted for average daily enrollment) to 1.54 per 100 students in the first full year of PBIS activity. Reductions in dress code violations were particularly noticeable with rates decreasing to 8.39 per 100 students during the intervention year from a baseline of 36.63. Also encouraging was the improvement in serious disobedience of authority, which fell from 1.64 per 100 students to 0.05 per 100 students. Though these measures are negative in nature, their reduction reflects an increase in appropriate behavior as a result of the program’s token economy. The outcomes associated with replacing negative behaviors with positive alternatives include an increased ability to focus on education, along with a general improvement in teacher morale (Warren et al., 2006).

Warren et al. (2006) examined the replacement of negative behaviors with positive and desired behaviors from their case study of an inner-city middle school of approximately 700 students. After the implementation of a PBIS framed behavior program, substantial changes in schoolwide conduct was observed. Specifically, time on task opportunities were increased as evidenced by a 20% reduction of in-school
conferences over behavioral concerns, a 23% drop in time-outs, a 5% decline for in-school suspensions, and a 57% decrease in short-term suspensions of 1–5 days. Though total time savings were not calculated, there is no doubt that the elimination of administrative involvement and an increase in time available for educational endeavors improved the participating school’s overall programming and reveals potential savings to correctional facilities as well.

**Use in restrictive settings.** With the success of token economies in traditional environments, several studies have implemented and examined effects in alternative settings. In a psychiatric facility, a token economy of credits provided access to tangible items, as well as off-campus passes and shopping trips for patients exhibiting targeted behaviors (LePage et al., 2003). Outcomes were measured by the number of injuries due to assaultive behavior within the facility, as well as hours of employee time lost due to injuries. After the collection of 12 months of baseline data, the token economy was implemented and 24 months of intervention data reviewed. Strong correlative results revealed a 33% decrease in overall injuries with patient-to-patient injuries dropping 48%, a sizable positive outcome for both the facility as a whole and for individual staff members. Though pro-social behaviors were not directly targeted in this study, the reduction in injuries and lost time was a positive outcome.

Mixed outcomes have been reported by other studies of token economies within alternative settings. Holmqvist, Hill, and Lang (2009), for instance, compared effects of a token economy coupled with aggression replacement therapy (ART; A. Goldstein & Glick, 1994) on the behavior of youthful offenders at a residential treatment facility.
Their findings revealed no statistically significant differences between the control and experimental groups. Though the improvement in pro-social behavior was not directly studied, there was a slight increase in positive results for youth with less consciousness of guilt as found in recidivism rates. Holmqvist et al. (2009) suggested the weak results may be due to a lack of fidelity to ART protocols.

Students with diagnosed disabilities in alternative educational facilities have also responded favorably to these interventions (Petscher & Bailey, 2006). Farkas et al. (2012) investigated the results of Tier I, universal supports in an alternative school for students with emotional and behavioral disorders (EBD) and other health impairments (OHI). Students were issued tickets from staff for pro-social behavior and avoidance of negative behavior. Points could be redeemed for items at a school store and special, staff-led activities such as ice skating. Farkas et al. saw daily ODRs decrease from a baseline of approximately 0.095% of students to 0.03% at the conclusion of program implementation. Reports of broad success across student populations should be an encouragement to correctional authorities as they develop behavioral strategies based upon the at-risk patterns generated by this study.

**Use in correctional settings.** Under the PBIS framework, Tier 1 universal support interventions such as token economies are preventative in nature and have been shown to have a significant impact on incarcerated juveniles (Nelson et al., 2008). As Sugai and Horner (2002) noted, interventions should focus on valuable social and learning outcomes that would include transitioning successfully back into the community (T. M. Scott, Nelson, et al., 2002). The universal quality of Tier 1 typically impacts the
behavior of 80% to 90% of students (Sugai et al., 1999; Sugai & Horner, 2006) though Nelson and Quinn (2007) found response rates to be lower in correctional settings (as cited in Gagnon et al., 2008). Nonetheless, the broad application has shown potential for widespread positive effects on students, even those in a correctional facility.

Tier 1 token economies have recently been adopted on a statewide basis by Georgia’s Department of Juvenile Justice (DJJ). Reflecting the challenge of a token economy immersed in a correctional environment, Fernandez and McClain (2014) described DJJ’s pre-2014 condition as emphasizing negative consequences rather than positive reinforcement. Relying on a token economy to drive the system, juveniles would earn points that could be cashed for snacks and hygiene items. Though intended to motivate appropriate behavior, juveniles began to hoard the rewards, which became the economic engine for a gambling explosion within the facilities. In addition, the point tracking system was difficult to control and was often artificially engineered by the youths.

A data driven decision was made to adjust the token economy from tangible rewards to activity-based incentives such as extra phone calls, visits, and extra-curricular activities. Staff were originally skeptical that the youth would accept this transformation and were pleasantly surprised when the juveniles readily bought into the conversion. A new data collection program, “data dashboard,” now provides an analysis of behavior trends allowing for team leaders to adjust their procedures as behavioral patterns change within each facility thereby improving the measurement capabilities of token economies.
No statistical results have been published but the DJJ expressed optimism regarding future positive outcomes (Fernandez & McClain, 2014).

The Illinois Youth Center—Harrisburg (IYCH), where the facility reports approximately 50% of the student body being diagnosed with a disability, provided more encouraging outcomes related to token economies (Clarida, 2006). The reinforcement strategy included naturally occurring reinforcers such as verbal or written praise, extrinsic rewards like increased activity time, or tangible items such as stationary and food. During the development stage, IYCH collected baseline data for future comparison. Though MVJRC has not systematically analyzed token economy outcomes, both facilities have applied similar procedures in regard to the implementation of the token economy.

Findings at IYCH after one year of PBIS with a Tier 1 token economy structure revealed a decrease in total infractions. Minor infractions revealed nearly 650 incidents during baseline with a reduction to 60 infractions during the second full year of programming. Major infractions showed similar improvement though baseline numbers identified only 220 violations with behavior reports diminishing by approximately 50% for each of the next two years. The positive approach to behavior management and favorable results from the intervention counters those who may discount the ability of positive reinforcement through a token economy to be viable in correctional settings.

Juvenile correctional facilities are often naturally suited for positive reinforcement where many of the juveniles have traveled a life course with numerous infusions of interrelated negative demographic and organic factors. The observable and measurable
quality of praise and token economies makes them desirable as interventions and data resources. The challenge for the juvenile justice system is to adopt the philosophical viewpoint that positive interventions produce outcomes of pro-social behavior appropriate for transitioning back to school, community, or employment (Reed, 2015). This study makes use of these quantifiable measures to examine whether risk factor patterns can be generated to predict pro-social behavior, institutional misconduct, and length of stay. The examination of the pro-social behavior is particularly important given its effect on misconduct and length of stay.

Summary

The juvenile justice system and juvenile correctional facilities, in particular, find themselves managing delinquent behavior across a wide range of demographic and organic factors. A number of patterns affect rates of incarceration as well as treatment success. Minority status, for instance, is overrepresented in the juvenile justice system (Sickmund & Puzzanchera, 2014). Males make up a large majority of incarcerated youth though the female population has grown slightly in recent years (Sickmund et al., 2017). The most recent data from the Office of Juvenile Justice and Delinquency Prevention finds 27.9% of incarcerated juveniles are age 17 representing the largest age segment though 16-year-olds follow closely behind at 26.1% (Sickmund et al., 2017).

In addition to the demographic variances, organic factors including mental health concerns affect a sizeable portion of the incarcerated population. Some studies, in fact, have discovered more than 40% of incoming juveniles had previously received psychiatric treatment while approximately 30% had been administered psychotropic
medication prior to admission (Krezmien et al., 2008). Furthermore, students with disabilities reported higher rates of psychiatric treatment than their non-disabled peers (Krezmien et al., 2008). Among the mental health issues evidenced by incarcerated youth are conduct disorders, cognitive distortions, antisocial behaviors, and mood disorders (DeFoe et al., 2013; N. E. Goldstein et al., 2007; Helmund et al., 2012).

A significant number of juveniles have been diagnosed with a disability prior to or during their term of confinement (Cruise et al., 2011; Ohio Department of Youth Services, 2017; M. Quinn et al., 2005). Represented disabilities include emotional and behavioral disorders, specific learning disabilities and intellectual disabilities, as well as smaller numbers of other disability categories (Gagnon et al., 2009). None of the aforementioned characteristics are independent of each other such that multiple factors may be present within any one incarcerated juvenile. The co-morbid presentation of these characteristics across their early life course factors importantly during the delinquency phase and challenges the juvenile justice system to identify and implement interventions and treatments leading to pro-social behaviors that will improve outcomes for these residents and potentially break their delinquent trajectory.

In the past, correctional systems have attempted to meet behavioral challenges through punitive consequences. As previously noted, these efforts have generated minimal success and do not present opportunities to learn more appropriate behavioral and affective strategies at self-management. However, punitive methodology now regularly gives way to evidence-based, positive reinforcement techniques (Fernandez & McClain, 2014; Houchins, Jolivette, Wessendorf, McGlynn, & Nelson, 2005) whose use
is increasingly mandated by IDEA due to the high proportion of youth with disabilities. Positive reinforcement, then, has the potential to reduce misconduct and length of stays.

This study utilized the characteristics of incarcerated juveniles statistically compiled to predict behavior in the correctional environment. The study utilized intake data obtained through prior interviews and screening assessments of incoming juveniles to identify mental health traits, as well as disability status, and static demographic features of race, age, and sex. These will be the predictors to examine the effects of institutional behaviors measured through pro-social points, write-ups for institutional misconduct, and length of stay. This investigation sought to ascertain whether these characteristics can be used to identify relationships and patterns that can be applied to differentiate, establish, and refine interventions and policies to improve the outcomes of youth progressing through the program. In doing so, a correctional facility may be able to more effectively change the negative path of a juvenile’s life course trajectory and see youth exit confinement on a pathway towards a productive adult life free from recidivist risk. The study addresses a current gap in the research literature with its concurrent use of the two previously described screening assessments. In addition, the quantitative analysis is unique in its attempt use predictive assessment tools across a range of positive and negative institutional behaviors as a means to better understand contributing factors and, ultimately, enhance the development of effective treatments.
CHAPTER III

METHODOLOGY

Juvenile corrections is a unique environment replete with a variety of challenges that can be viewed through the lens of a criminological trajectory models such as the administrative and life course models discussed previously. As mentioned previously, the life course of many youth who enter a facility has taken them through previous contact with the juvenile justice system. Along with demographic characteristics such as race and prior criminal history, an adjudicated adolescent’s life course during confinement often imports a history of mental health disorders, and, disabilities (Martin et al., 2008; Sedlak & Bruce, 2010; Vacca, 2004).

As a life course, influenced by static and dynamic risk factors, progresses through adolescence, the risk of delinquency and incarceration rises. Within this nexus of incarceration comes the possibility of institutional misconduct. Just as events and characteristics are injected along the life course leading to and through the delinquency phase, so too are demographic and organic factors imported into correctional facilities via individual juveniles. The result of this transition is the possibility of institutional misconduct. Several models of institutional misconduct have been noted within this review, which have been useful in identifying critical variables that contribute to patterns of pro-social behavior, institutional misconduct, and length of stay that these youths experience.

It is within this delinquency and incarceration phase of a life course framework that this study examines the effect of imported characteristics on the rate of pro-social
behaviors and institutional misconduct, both of which are used to determine length of stay. Replacing institutional misconduct with pro-social behaviors is essential to successful reintegration of juveniles into society and a departure from a delinquent life course (Reid et al., 2004; T. M. Scott, Nelson, et al., 2002; Trulson, 2007). This transformative process can occur with appropriate pharmacological, therapeutic, and instructional interventions. Early identification of at-risk juveniles during intake, utilizing a predictive analysis incorporating organic risk factors, demographic characteristics of race, sex, and age, can suggest malleable factors that improve and refine the implementation of suitable treatment protocols. The present study attempts to examine patterns of predictor variables useful for application by juvenile correctional personnel in optimizing their programming. The study hypothesizes that institutional behavior (e.g., pro-social and misconduct) and length of stay can be predicted by intake procedures that screen for mental health concerns and disability status while also examining the impact of demographic factors.

**Setting and Participants**

The Miami Valley Juvenile Rehabilitation Center (MVJRC) is one of Ohio’s 12 Community Correctional Facilities (CCF). MVJRC serves the residential needs of juveniles primarily from 10 counties in southwest Ohio. Though regional in nature, the facility is funded by the Ohio Department of Youth Services (DYS), which maintains ultimate oversight of the programming with the local juvenile court judge providing supervision for day-to-day operations. The center was established to provide a cognitive-behavioral program intended to meet the health, academic, emotional, and
spiritual needs of its residents. Furthermore, its emphasis on praise and utilization of a token economy promote the reduction in negative environmental effects commonly associated with incarceration. To provide these services, approximately 25 full-time staff provide security, schooling, and psycho-social services through on-line educational software, character development courses, and behavioral interventions. The center, launched in 2000, is part of a larger juvenile campus that includes a short-term detention center, juvenile court, and long-term treatment center.

MVJRC is a secure facility with average stays of approximately 150 days with sex offenders generally confined for the lengthiest period of time. No data were available to the researcher pertaining to the offense of any participant, including what percentage of sex offenders are incarcerated due to a status offense (e.g., statutory rape). At any one time, MVJRC can house up to 30 juveniles assigned to secure, single-individual quarters during their stay. Common areas provide room for socializing, classrooms for education, and a full size gym for recreational activities. The center houses both male and female youth though male residents make up the majority of the population. Juveniles are admitted at a rate of approximately 1–2 per week. Admission is based on a dispositional referral from a participating juvenile court after a juvenile has been adjudicated delinquent for a variety of felonies including sex offenses. Though MVJRC is considered a repository for high-risk offenders, adjudicated delinquents with the most serious offenses would be remanded to Ohio’s Department of Youth Services (DYS). Juveniles are placed at MVJRC under a suspended commitment. A term of the suspended commitment requires successful completion of the MVJRC program. Failure to
successfully complete the program may result in the re-imposition of the suspended
commitment and a remanding to a DYS facility.\footnote{See \textit{In re J.F.}, 121 Ohio St.3d 76, 2009-Ohio-318 for a description of the use and re-imposition of a suspended commitment.}

The researcher has maintained a partnership with MVJRC in his role as an
assistant professor of special education at a local university, limited to the placement of
education majors in various field experiences at the facility. However, there has never
been a financial relationship between the researcher and MVJRC nor any other
collaborative efforts creating a conflict of interest. An IRB application was approved by
Kent State University to review and analyze existing data.

**Data Collection**

Existing data were obtained from a 65 youth housed at MVJRC, using a
numbering system to identify participants in order to maintain confidentiality. All of the
participants ranged from 14 to 19 years of age including a cross section of sexes, racial
backgrounds, and disabilities. A letter of support was obtained from presiding juvenile
court judge. The researcher did not have personal contact with the participants. A data
collection form ensured all pertinent scores from assessment instruments, as well as
behavioral and disciplinary records were collected systematically. Data were then coded
and transferred for analysis to SPSS software.

**Dependent Variables**

To measure behavioral success or failure, data were obtained from a daily
behavior chart, attached as Appendix A, which each juvenile is required to carry with him
or her throughout the day. The daily behavior chart includes counts of both pro-social behavior and institutional misconduct both of which serve as dependent variables.

**Pro-Social Behaviors**

Youth at MVJRC are encouraged to display target behaviors that include: accepting limits, self-control, and respecting others. As these appropriate behaviors are observed, staff records the behavior by entering their initials on the daily behavior chart. These positive behaviors are tallied daily and calculated by behavior category on the youth’s final report. Unlike misconducts, target behaviors are not computed as monthly totals on the final report.

A token economy is one of two positive reinforcement systems employed by MVJRC. The first is a short-term system that is based on daily behavior and includes the token economy. Verbal praise is also provided and documented for achieving universal behaviors such as self-control and respect for others. The MVJRC program manual (2014) described the positive reinforcement system as follows.

Each instance of verbal praise recorded via staff initials on the MVJRC Behavior Chart translates into a “Point.” Points are cumulative and are tallied daily towards a running “Point Balance.” Juveniles, who do not receive a write-up that day, receive “Bonus Points” that contribute to the point balance. Youth in the Belonging/Mastery phases receive 3 bonus points, Independence/Generosity receives 2 bonus points and Graduates receive 1 bonus point daily for absence of write-ups. The accumulation of points represents a “token economy” that can be
cashed in weekly for tangible items and materials at the MVJRC Point Store. (p. 22)

A long-term rating system has also been developed to promote socially desirable behaviors such as attentiveness, participation, and patience. As appropriate behaviors are monitored over a period of weeks, transition meetings are conducted to determine if the youth is eligible to move levels on a graduated privilege schedule. Four stages are available to each juvenile: belonging, mastery, independence, and generosity. Included in each stage is a series of graduated privileges providing expanded opportunities for independence within and without the facility. The privilege schedule defines the progress each juvenile is making in the program (MVJRC program manual, 2014). Juveniles are generally released only when they have reached the final stage of the program. For purposes of this study, only token economy results were utilized, with information on stages not included.

**Office Discipline Referrals for Misconducts**

The MVJRC rule violation system is comparable to a traditional school’s office referral system. MVJRC terms institutional misconduct as a youth exhibiting “problem behaviors.” Problem behaviors are classified as Minor, Serious I (opposition and disrespect), or Serious II (peer conflict, lying, damaging property, stealing or cheating, and self-abuse). Self-abuse is described by MVJRC as “willfully or knowingly hurting yourself or putting marks on your body, i.e., any form of self mutilation” (MVJRC program manual, 2014, p. 31). As staff observe problem behaviors, they are written in a brief narrative form (e.g., “Youth Smith told youth leader Jones to leave him alone”) and
subsequently transferred to a progress report worksheet where it is converted into administratively established categories of behavior and inserted on the daily behavior chart along with their record of positive behaviors. The offending youth is given a verbal warning, notation, intervention, or empowerment (a learning activity) depending on the privilege status of the offending youth (Appendix B). These rule violations are compiled in the youth’s record and reported in the juvenile’s final report and subsequently submitted to the presiding juvenile court judge.

Administrative categories of misconduct are based upon the severity of the offense: problem behaviors (PB), serious problem behaviors (SPB), and major rule violations (MRV). Staff are provided with a program manual listing examples of each category though the list is not exhaustive and can include other related behaviors. MRVs are typically referred to the local police or the court system and are not considered in this study due to their low numbers.

For purposes of a youth’s final report, specific SPBs (e.g., defiance and insulting) are classified further by their psychosocial nature and consist of three categories entitled: impulsive, oppositional, and authority/disrespect. The remaining SPB infractions are identified by the program manual descriptors: PB, SPB, or MRV. The final report contains total misconducts by category, as well as monthly tallies. The director of MVJRC makes all categorization determinations and maintains the progress report worksheets in the juvenile’s permanent file. Individual violations may result in loss of daily privileges while cumulative violations are used to evaluate each juvenile for
promotion through MVJRC’s graduated privilege system, a form of positive behavior supports.

The use of office discipline referrals (ODRs) as a behavioral assessment tool is a common method of evaluating the behavior of individual students, the climate of entire schools, or the impact of school-wide interventions including those categorized as positive behavioral interventions and supports (PBIS; Clonan, McDougal, Clark, & Davison, 2007; Spaulding et al., 2010). As noted previously, ODRs are reports of inappropriate behavior. However, the reduction in ODR rates can serve as a measure of pro-social behavioral improvement. Irvin, Tobin, Sprague, Sugai, and Vincent (2004) reviewed a series of empirical studies utilizing ODRs with the express purpose of determining their viability as indices of the behavior on school-wide basis. Adding potency to the ODRs’ validity as a measurement was the correlation noted between ODRs and teachers’ perceptions of school-wide behavior, GPAs, and delinquency (e.g., Tobin & Sugai, 1999). Furthermore, ODRs have provided schools with the ability to appraise the success or failure of school-wide behavioral programs. Discipline referrals have even been used to track infractions occurring on school buses and assist in the improvement of management practices involving school transportation (Hirsch, Lewis-Palmer, Sugai, & Schnacker, 2004).

The value of ODRs is evident by its flexibility across multiple environments and contexts. Clonan et al. (2007) noted ODRs can be distributed and analyzed by time, event (e.g., recess), and location. As a result, their use is particularly suitable for focusing or adjusting behavioral interventions within a PBIS framework, especially given
their nearly uniform availability in local schools (Sugai et al., 2000). Its value as a screening and predictive source has been more limited particularly for violent or aggressive behavior. Morrison, Peterson, O’Farrell, and Redding (2004) concluded that ODRs are predominantly attached to milder forms of behavior and, thus, are a better fit for predicting general disruptive behavior in a school or classroom rather than violent outbursts which may be disciplined under a separate administrative process. MVJRC reports major rules violations to law enforcement as noted previously. As a result, the Morrison et al. ODR usage is pertinent to this study. Despite its inherent usefulness, Sugai et al. (2000) cautioned that imposition of ODRs be accomplished in a consistent manner for an evaluation to be considered valid, particularly when assessing its value across schools. The application of ODRs is not limited to the traditional K–12 environment. The correctional system has also utilized ODRs where its viability as a measure is acknowledged (McReynolds & Wasserman, 2008). Generalizing the use of ODRs from schools to correctional facilities should also bring the same cautions noted by Sugai et al. (2000).

Empirical studies using ODRs as dependent variables have articulated a range of outcomes including a moderate relationship to struggling academic achievement, future disruptive behavior and classroom disorderliness, and clinical impairment (Pas, Bradshaw, & Mitchell, 2011). Research has linked their value to the juvenile justice system where Sprague et al. (2001) examined the relationship between ODRs and delinquency adjudications. Participants were enlisted from three distinct schools. All participating students had at least one offense with the local juvenile justice system
(DYS), though those identified as seriously emotionally disturbed (SED) were excluded due to an ongoing concurrent study. Correlations were calculated between ODRs and each of the following: the frequency of DYS contacts, the severity of the adjudicated offense, and a composite score of the two (juvenile crime data). A variety of findings emerged including a low correlation ($\rho = .10$) when all factors were contained in the analysis and when only frequency of contact and ODRs were compared ($r = 0.014$). However, when the severity of the offense was isolated as a variable, a moderate correlation was observed ($r = .53$). The findings provide significant support for the use of ODRs as a measure for behavioral concerns common in corrections.

**Length of Stay**

Terms of incarceration vary significantly based upon the type of facility in which the juvenile resides. Though sometimes erroneously used interchangeably with the term correctional or commitment facility, secure detention facilities are designed to hold juveniles during the pendency of their cases but before their adjudication or while they await placement at a commitment facility (Austin, Johnson, & Weitzer, 2005; Koyama, 2012). In addition, detention centers regularly confine far more juveniles accused of technical offenses, such as probation violations, than a correctional facility (Snyder & Sickmund, 2006). As a result, detention centers are designed for short term stays with most confinements consisting of 15 days or less (Bartollas & Miller, 2008; Jolivette & Nelson, 2010). Despite the short stays, educational services must still be provided to detainees (Katsiyannis & Murry, 2000).
Correctional or commitment facilities, on the other hand, are intended to confine adjudicated juveniles on a long term basis—several months to multiple year terms (Jolivette & Nelson, 2010). Commitment to a juvenile correctional facility is largely reserved for violent offenses or chronic offenders. Some correctional facilities may have a more focused mission such as those designed for drug rehabilitation or sexual offender treatment. Once committed, the length of stay can vary depending on the behavior of the juvenile confined (Englebrecht, Peterson, Scherer, & Naccarato, 2008; Stohr et al., 2013).

Length of stay has been a factor in several published studies including its use as a controlling variable. For example, Kaba et al. (2014) used it to examine relationships between self-harm and solitary confinement. Length of stay has also served as a dependent variable in several research contexts including the relationship between length of stay and post-release mortality rates (Patterson, 2013), as well as its link to the co-occurrence of substance abuse and mental illness among inmates (Kubiak, Essenmacher, Hanna, & Zeoli, 2011).

MVJRC is a secure, rehabilitation center with the average commitment lasting 168 days. This is a reduction from the 222-day average length of stay during fiscal year 2003, a decrease attributed to the adoption of Cognitive Behavioral Therapy (CBT) as the primary, psychiatric treatment intervention (MVJRC FY 2015 annual report, 2015). As stated previously, cognitive-behavioral therapy seeks to systematically adjust thinking patterns negatively affected by cognitive distortions (Lipsey et al., 2001). The therapy protocols are not expected to influence the data analysis as all resident youth receive
CBT, thus its impact is assumed to be equal for all study participants. Length of stay is calculated from date of admission until release.

**Measurement Instruments for Independent and Mediating Variables**

The Miami Valley Juvenile Rehabilitation Center (MVJRC) selected two assessments to administer to each incoming juvenile. Data for this study were drawn from the results of these assessments.

**Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2)**

The Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2; Grisso et al., 2001) is a prevalent self-reporting assessment tool for children and adolescents with a primary purpose of screening incoming youth for the potential of severe mental health disorders (Butler et al., 2007). The MAYSI-2 serves to:

- Screen current symptoms of mental and emotional distress or disturbances for 12- to 17-year-olds entering the juvenile justice system.
- Developed to be brief and cost effective, applicable to a wide range of adolescents, and simple to administer, score, and interpret. (Archer et al., 2010, p. 337)

The measurement consists of 52 items, arranged in seven scales and designed for ease of administration within the juvenile correctional system (Archer et al., 2010). Each scale contains 5 to 9 questions with a value of one assigned to an affirmative answer and a value of zero assigned to a negative answer. Caution cut-off levels have been established for each scale and are reflected in Table 1. Caution levels indicate that results that could have possible clinical significance. Warning levels are more severe, identifying and signifying a youth scoring in the 90th percentile. Their usefulness as a red
flag to test administrators is apparent. Otherwise, the warning level values are
established arbitrarily and have no diagnostic importance (Shulman, 2006). In the
present study, however, the analysis utilized the full scale of numerical scores to aid in
the statistical use of multiple regression analyses based on correlations among the
variables, to identify and evaluate predictive factors.

Table 1

*MAYSI-2 Classifications and Scores*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Caution Cut-off Score (Possible points)</th>
<th>Description of Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol/Drug Use</td>
<td>4 (8)</td>
<td>-Frequent use of alcohol/drugs or reaction to lack to those substances</td>
</tr>
<tr>
<td>Angry-Irritable</td>
<td>5 (9)</td>
<td>-Experiences frustration, lasting anger, moodiness with potential of aggressive behavior</td>
</tr>
<tr>
<td>Depressed-Anxious</td>
<td>3 (9)</td>
<td>-Experiences depressed and anxious feelings and potential of lowered motivation and increased need for treatment</td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>3 (6)</td>
<td>-Experiences physical pain linked to psychological distress and potential of psychological distress</td>
</tr>
<tr>
<td>Suicide Ideation</td>
<td>2 (5)</td>
<td>-Potential of self-injurious and suicidal behavior</td>
</tr>
<tr>
<td>Thought Disturbance</td>
<td>1 (6)</td>
<td>-Unusual beliefs and perceptions</td>
</tr>
<tr>
<td>(Males only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traumatic Experiences</td>
<td>3 (5)</td>
<td>-Lifetime exposure to trauma such as abuse or observed violence with a potential of instability in emotions</td>
</tr>
<tr>
<td>(Gender specific)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Shulman (2006)

Positive and valid results as a psychiatric screening instrument have been reported
nationally and internationally, though some hesitation has been noted in its use with
ethnic minorities (Archer et al., 2010; Ford et al., 2008; Stathis et al., 2008). Nearly 10 years of MAYSI-2 research were reviewed by Grisso et al. (2012). Included in Grisso et al.’s findings was a strong level of reliability with alpha coefficients among individual scales ranging from .54 to .90 and most scales exceeding .70. Archer et al. recorded test-retest correlations in the moderate to high range (r = .60 to .82) with an average of 15 days between testing sessions. Furthermore, Wasserman et al. (2004) and Hayes et al. (2005) determined that when MAYSI-2 scales are used together, they are capable of identifying youth who will typically be diagnosed with a psychiatric disorder. Furthermore, Grisso et al. (2012) concluded that “studies have found substantial relations between MAYSI-2 scales and validated tools measuring similar constructs” (p. 14).

Individual subscales have also been explored for their impact within juvenile corrections. Of the seven subscales comprising the MAYSI-2, Butler et al. (2007) found only the angry-irritable subscale was significantly associated with a juvenile’s serious institutional misconduct, a result supported by DeLisi, Caudill, et al. (2010). Differing from Butler et al., DeLisi et al. found the traumatic experiences subscale as an effective predictor of institutional sexual misconduct (i.e., any sexual contact with wards or staff; coefficient = .76, z = 1.98), suicidal tendencies (coefficient = .66, z = 1.90), and total infraction counts (coefficient = .21, z = 1.89) when the juvenile had scored high for exposure to early life trauma. Risk for misconduct within a correctional facility was actually found to be lower in juveniles who reported elevated scores for anxiety, affective disorder, disruptive behavior, or substance use on the DISC assessment (McReynolds & Wasserman, 2008).
The MAYSI-2 has also been examined for statistical integrity related to cultural and racial components. Grisso et al. (2012), for example, conducted a meta-analysis on MAYSI-2 use, examining 56 different studies fitting their search criteria. The Grisso et al. evaluation focused on the screening utility of the assessment and not, specifically, the predictive nature of the measure. Nonetheless, Grisso et al.’s observations regarding demographic interactions addressed the equity of the MAYSI-2 administration.

Grisso et al. (2012) began by identifying the demographics of the test takers, finding racial compositions across the studies at 33% Black, 31% White, and 18% Hispanic. The remainder were unreported or from categories statistically insignificant. Only 10 studies reported racial comparisons. Because the reported racial categories varied, Grisso et al. examined only the Black and White samples for statistical simplicity. Grisso et al.’s review looked at the individual subscales, including the angry-irritable (AI) subscale that proved statistically significant in the present study. When comparing mean AI scores, the only studies exhibiting a statistically significant difference between races (2 studies) found white youth reporting higher scores than black juveniles.

Vincent, Grisso, Terry, and Banks (2008) produced a meta-analysis from MAYSI-2 results across more than 200 administrative sites. They discovered that, “counter to existing evidence, race-related differences [across MAYSI-2 subscales] were generally small or nonexistent” (p. 282). Only the Alcohol-Drug Use subscale showed a medium effect size between White and Black variables, with Whites more likely to score above the clinical cutoff.
How I Think (HIT) Questionnaire

The How I Think Questionnaire (HIT; Barriga et al., 2001) is designed to assess cognitive distortions or the ability of the test-taker to give accurate interpretations to life experiences. Barriga et al. described several theoretical rationales for examining and identifying cognitive distortions, concluding that regardless of the rationale “self-serving cognitive distortion has played a central role in explanations of antisocial behavior” (p. 1). Cognitive distortions have been defined as inaccurate or biased attitudes, thoughts, or beliefs associated with the onset of inappropriate emotional and behavioral responses to personal experiences (Plante et al., 2012). Among the behaviors evaluated by the questionnaire are aggression, anxiety, and depression. Test items are classified in four distortion categories, namely self-centered, blaming others, minimizing/mislabeling, and assuming the worst. In addition, four behavioral referents are measured as opposition-defiance, physical aggression, lying, and stealing. Each category is scored by the test-taker on a four-point scale.

The questionnaire contains 54 items, 39 directly related to cognitive distortions, written at a fourth-grade reading level designed to be completed in 5 to 15 minutes (Barriga et al., 2001). Each category produces a summary score of non-clinical, border-line clinical, or clinical levels of cognitive distortions. Cut-off scores are identified in Table 2. As with MAYS1-2, the full numerical scale was utilized in the statistical analysis to strengthen its ability to identify distinct groups of juveniles.

The measure has been investigated in several studies and found to be valid and reliable (Gini & Pozzoli, 2013; Nas et al., 2008). Included in the review of HIT
psychometric properties are alpha coefficients from the Overt and Covert scales and individual subscales. As noted below, the Overt scale merges the Opposition-Defiance and Physical Aggression subscales into one value while the Covert scale includes the Lying and Stealing subscales. Alpha coefficients across scales and subscales ranged from .63 to .94. In addition, overall scores provided high internal consistency rates between .92 and .96 (Gebart-Eaglmont, 2003).

Table 2

_HIT Classifications and Scores_

<table>
<thead>
<tr>
<th>Scale</th>
<th>Clinical Cut-off Score (Borderline Clinical)</th>
<th>Description of Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overt</td>
<td>3.10 (2.86)</td>
<td>- Opposition-Defiance and Physical Aggression subscales</td>
</tr>
<tr>
<td>Covert</td>
<td>3.03 (2.74)</td>
<td>- Lying and Stealing subscales</td>
</tr>
<tr>
<td>Self-Centered</td>
<td>3.2 (2.89)</td>
<td>- Viewpoints of others are scarcely considered or disregarded</td>
</tr>
<tr>
<td>Blaming Others</td>
<td>3.15 (2.85)</td>
<td>- Misattributing blame to outside sources</td>
</tr>
<tr>
<td>Minimizing/Mislabeling</td>
<td>3.00 (2.74)</td>
<td>- Depicting antisocial behavior as acceptable or belittling or dehumanizing others</td>
</tr>
<tr>
<td>Assuming the Worst</td>
<td>3.00 (2.70)</td>
<td>- Attributing hostile intentions to others or assuming improvement of in your own or other’s behavior</td>
</tr>
<tr>
<td>Opposition-Defiance</td>
<td>3.26 (2.95)</td>
<td>a</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>3.07 (2.80)</td>
<td>a</td>
</tr>
<tr>
<td>Lying</td>
<td>3.46 (3.13)</td>
<td>a</td>
</tr>
<tr>
<td>Stealing</td>
<td>2.61 (2.36)</td>
<td>a</td>
</tr>
</tbody>
</table>
“This item refers to one or another of four categories of antisocial behavior derived from the Conduct Disorder and Oppositional Defiant Disorder syndromes listed in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994): disrespect for rules, laws, or authorities (i.e., Opposition-Defiance); Physical Aggression; Lying; and Stealing. These four behavioral referent categories were judged to be generic and comprehensive while excluding specific behaviors that apply only to a relatively small proportion of antisocial youth (e.g., fire-setting, cruelty to animals)” (Barriga et al., 2001, p. 4).

Source: Barriga et al. (2001)

Traditionally used in juvenile populations to evaluate the effectiveness of interventions (Plante et al., 2012), the use of HIT has expanded to the prediction of recidivism of adult offenders (Stadler, Morris, Sperber, & Smith, 2009).

Both measurement instruments, the MAYSI-2 and HIT, assess mental health risks of incoming juveniles. Across subtests, the assessments address each of the organic mental health risk factors in the life course model (Figure 1). The test results, then, should produce data representative of the major mental health concerns found along the delinquency trajectory. Testing these data with disability and demographic characteristics will enhance the multiple regression analyses featured in this study as correlations are sought with behavioral outcomes and length of stay. Though cut-off scores are noted in Tables 1 and 2, the numerical value rather than categorical values was utilized.

Mental health variables used in this study have been intentionally selected based upon their identification as correlates to delinquent behavior as noted in literature. As discussed previously, the MAYSI-2 subscales of angry-irritable and traumatic experiences have both been statistically associated with institutional misconduct and are the only two MAYSI-2 subscales utilized in this study (DeLisi, Caudill, et al., 2010; DeLisi, Drury, et al., 2010). How I Think (HIT) Questionnaire subscales have their roots
in the *DSM-5*, which combines elements of cognitive distortions noted in the HIT Questionnaire into definitions of personality disorders. Moreover, the Overt and Covert subscales are a reflection of conduct disorder and oppositional defiant disorder diagnoses in the *DSM-5* (American Psychiatric Association, 2013), both characteristics under anti-social behavior. As a result, their application as predictor variables was expected to produce a robust analysis of pro-social behavior, institutional misconduct, and length of stay risk factors. Only the HIT composite score is used in this study due to sample size limitations and a lack of research identifying subscales predictive of institutional behavior or length of stay.

**Data Analysis**

This study used a multiple regression analysis as the primary statistical test for identifying correlations between independent and dependent variables. The results of demographic variables along with mean and percentage values of various variables were examined through the descriptive data. Independent, dependent, and demographic variables selected for the present study are listed in Table 3. All of these statistical calculations have been used as analytical techniques within juvenile justice research.

Table 3

*Study Variables*

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAYSI-2 subscale:</td>
<td></td>
</tr>
<tr>
<td>Traumatic Experiences</td>
<td>Mean, range, and standard deviations for each gender (Gender specific)</td>
</tr>
</tbody>
</table>
Demographic data lends itself to multiple forms of analyses as both a controlling and dependent variable. In the present study, these data functioned as variables that influence the effects of predictor variables (e.g., organic risk factors) of incarcerated youth.

The flexibility of descriptive data was illustrated by Dunlap et al. (2010) who relied on a descriptive analysis of demographic data for their study of the behavioral outcomes. Since participants presented with a wide range of behavioral concerns and diagnoses, 16 different measurements were administered to collect data for analysis and were categorized as either measures of problem behavior, PBIS implementation, or quality of life. In order to establish a common barometer of measurement, rating scales were used to summarize behavior variations during the course of the multi-year study. Results were presented in a series of tables and figures, which provided core findings of the research using these descriptive techniques. Among the tables was a synopsis of
participant demographics, a description of measurement tools, an explanation of rating scale scoring, and mean behavior changes for each participant. The authors were able to investigate changes in problem behavior across 21 participants using multiple measures and spanning multiple years while relying exclusively on a descriptive analysis to present their findings.

This study had access to 65 sets of participant data. Descriptive statistics allowed for a robust analysis and were utilized in a number of ways. The analysis examined rates and mean of misconduct write-ups, pro-social points, length of confinement, and demographic features of the participants. Included among the demographic data were disability status, age, sex, and race. Along with the demographic characteristics were mental health data related to the MAYSI-2 and HIT scores described previously. Finally, the data identified those juveniles who have been previously diagnosed with a disability and placed on an IEP. The descriptive data were also examined through a correlation matrix to identify relationships, prior to the use of multiple regression analysis.

Regression Analysis

A multiple regression analysis was selected as the primary statistical analysis in the study. Chatterjee and Hadi (2015) recognized regression analysis as a simple method for determining functional relationships between variables. It is on that basis many researchers have used regression models to ascertain the predictive worth of risk factors, including their correlation to juvenile offending (Ang & Goh, 2013). In fact, its use interweaves with prediction research that Chatterjee and Hadi noted the independent variable is sometimes referred to as the predictor variable.
Numerous studies have utilized regression models, including those predicting institutional misconduct. In their examination of the predictive nature of conviction offenses on prisoner behavior, Sorensen and Cunningham (2010) employed a multivariate regression model to control for potential factors, such as gang membership and security level that could confound the relationship between conviction and misconduct. Drury and DeLisi (2011) made full use of a series of regression analyses in their examination of the impact street gang history and homicides have on misconduct within an adult prison. A total of six dependent variables of various facility violations were identified, incorporating two summary variables. Twelve covariates in the form of interaction terms (e.g., gangkill and homicide) were used as predictive risk factors, along with five demographic controls (e.g., age, sex, and 3 dummy terms for race). Since the dependent variables were count data, bound by zero and positively skewed, the researchers chose to utilize a series of negative binomial regressions, an approach common in correctional literature. Results revealed that the severity of the offense had no discernible impact on institutional misconduct. In fact, inmates confined for murder typically behaved better than those serving sentences for non-violent offenses.

Blackburn and Trulson (2010) used negative binomial regressions in an attempt to fill the void of literature pertaining to incarcerated females. The study probed the prevalence and causes of institutional misconduct among a cohort of females ($n = 139$). The participants included those incarcerated for violent offenses under blended sentences, a form of sentencing combining juvenile and adult time. Dependent variables were created from two summary measures termed major and minor misconduct, as well as staff
and juvenile assaults. Independent variables included demographics, delinquent history, offense type, and social background. A series of negative binomial regression models examined each of the four dependent variables. Contrary to much correctional literature, Blackburn and Trulson found age to be of minimal effect while mental health was the most consistent determinant of staff and juvenile assaults. These studies show that regression analyses have been used in a variety of ways to examine relationships similar to those identified as the focus of this study.

The underlying rationale for the present study was to evaluate the usefulness of intake data in predicting positive and negative behavior and length of stay during confinement using a multiple regression analysis suitable as a statistical test. Furthermore, a multiple regression analysis has the power to ascertain the strength of relationships between independent and dependent variables for evaluating their usefulness in differentiating treatment for this population.

**Summary**

Since the purpose of the study is to identify the relationship between the characteristics of incarcerated youth and behavioral variables, a statistical test was selected enabling the relationship to be identified and evaluated. As discussed above, a multiple regression analysis was the choice for the statistical analysis. The benefits of this test lie in its capacity to predict the independent variable effects on dependent variables. In addition to the regression analysis, demographic data was also presented.

The analysis used data obtained during the intake process at MVJRC and the youths’ performance during their commitment. Independent variables include the
demographic intake data of age, sex, and race. Along with the demographic information, continuous data results from the MAYSII-2 and HIT were part of the statistical pool utilized by the analysis. Dependent variables consist of conduct incidents including points for pro-social behavior and disciplinary write-ups for misconduct. A multiple regression analysis was applied to the data yielding varying degrees of statistically significant predictors of institutional conduct (positive and negative) and length of stay.

Institutional misconduct has been described as a primary and consistent indicator in the life course through delinquency (Trulson, DeLisi, et al., 2011). Nevertheless, a relatively limited body of literature exists examining institutional misconduct and pro-social behavior, particularly the role psycho-social factors play in these behaviors (McDougall et al., 2013). In addition, predictive studies using intake data has been limited to misconduct. The present study combined misconduct and pro-social behaviors as dependent behavioral variables, as well as a final measure of response to incarceration, length of stay. The ability to compare the predictability of both variables, as well as length of stay, using identical intake data adds a distinctiveness to the study.

Results of the analysis can assist facilities in understanding the relationships that can lead to preparing differentiated and effective treatment. For example, do certain subpopulations respond more favorably to a token economy incorporating praise as a positive behavioral support? Conversely, are there groups of juveniles engaging in higher rates of misconduct with longer terms of incarceration? If so, facilities can target these subpopulations with specific interventions building upon their knowledge of behavioral tendencies drawn from the predictive analysis.
CHAPTER IV
RESULTS

As described in the first three chapters, the purpose of this exploratory study is to identify patterns of behavior using demographic characteristics and organic risk factors of incarcerated juveniles that may be useful for predicting pro-social behavior and institutional misconduct and the resulting length of stay while in a secure, long-term, juvenile rehabilitation facility. A series of statistical tests were conducted on data obtained from the Miami Valley Juvenile Rehabilitation Center (MVJRC) in accordance with the previously described methodology of Chapter 3. In this chapter, the results of the aforementioned analysis are presented. Initially, descriptive statistics are displayed to describe participant characteristics. The descriptive statistics are followed by the results of a hierarchical linear regression analysis, which are presented in order of their associated research question.

Pre-Analysis Data Cleaning Procedures

The dataset consisted of 65 youths confined at MVJRC. The data were preliminarily assessed for missing cases and outliers. There were no missing cases though one extreme high outlier for length of stay was noted. This outlier was assessed using Tabachnick and Fidell’s (2013) procedure, where standardized values are created and examined for values beyond ±3.29 standard deviations from the mean. However, as the outlier was not multivariate (i.e., appearing on more than one variable), and did not appear to be from incorrect data entry or sampling from an unintended population, the information was retained (S. Burke, 2001). As such, the full sample was utilized.
Descriptive Statistics

Of the 65 participants, 60% were White, 26.2% were Black, and 13.8% were categorized as “Other.” In order to more fully explore the relationship between race and behavior, and in light of the limited participants in the study, Black and “Other” were merged into one distinct racial category identified as “Non-White.” This two-category analysis was conducted, in large part, due to the relatively low numbers in both Black and “Other” categories. In addition, the two racial classifications may provide more statistically robust results across variables possibly revealing differential treatment based upon race.

The youths’ ages ranged from 13.00 to 19.00, with a mean age of 15.97 years ($SD = 1.31$). The sample was mostly male (63.1%), with the majority not having an Individualized Education Program (IEP; 76.9%). The participants stayed at the facility from 95.00 to 325.00 days, for an average of 168.11 days ($SD = 42.65$). The youth had, on average, 0.15 institutional misconduct write-ups per day ($SD = 0.11$), and 1.10 pro-social behavior points per day ($SD = 0.67$). The juveniles were administered the Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2) and had an average angry-irritable subscale score of 4.23 ($SD = 2.61$) along with an average traumatic experience subscale score of 2.09 ($SD = 1.47$). Results from the How I Think Questionnaire (HIT) showed average Overall Pre-scores of 2.41 ($SD = 0.79$). Table 4 presents all frequencies and percentages and Table 5 presents all ranges, means, and standard deviations of the variables of interest.
Table 4

*Frequencies and Percentages of Demographic Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>39</td>
<td>60.0</td>
</tr>
<tr>
<td>Black</td>
<td>17</td>
<td>26.2</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>13.8</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>36.9</td>
</tr>
<tr>
<td>Male</td>
<td>41</td>
<td>63.1</td>
</tr>
<tr>
<td>IEP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No IEP</td>
<td>50</td>
<td>76.9</td>
</tr>
<tr>
<td>IEP</td>
<td>15</td>
<td>23.1</td>
</tr>
</tbody>
</table>

Table 5

*Means and Standard Deviations of Variables of Interest*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>13.00</td>
<td>19.00</td>
<td>15.97</td>
<td>1.31</td>
</tr>
<tr>
<td>HIT Overall Pre-</td>
<td>1.00</td>
<td>5.00</td>
<td>2.41</td>
<td>0.79</td>
</tr>
<tr>
<td>Institutional Misconduct (Gross)</td>
<td>0.00</td>
<td>90.00</td>
<td>25.66</td>
<td>21.83</td>
</tr>
<tr>
<td>Institutional Misconduct/Day</td>
<td>0.00</td>
<td>0.38</td>
<td>0.15</td>
<td>0.11</td>
</tr>
<tr>
<td>Pro-social Behaviors (Gross)</td>
<td>43.00</td>
<td>445.00</td>
<td>178.03</td>
<td>98.39</td>
</tr>
<tr>
<td>Pro-social Behaviors/Day</td>
<td>0.36</td>
<td>3.97</td>
<td>1.10</td>
<td>0.67</td>
</tr>
<tr>
<td>Angry-Irritable</td>
<td>0.00</td>
<td>9.00</td>
<td>4.23</td>
<td>2.62</td>
</tr>
<tr>
<td>Traumatic Experience</td>
<td>0.00</td>
<td>5.00</td>
<td>2.09</td>
<td>1.47</td>
</tr>
<tr>
<td>Length of Stay (Days)</td>
<td>95.00</td>
<td>325.00</td>
<td>168.11</td>
<td>42.65</td>
</tr>
</tbody>
</table>

A correlational analysis between the continuous study variables of interest was conducted. Values can range from -1.00 to 1.00, with values nearer to -1.00 or 1.00 indicating a stronger relationship (Field, 2013). Positive values indicate a positive relationship, where both values increase; negative values indicate a negative or inverse relationship, where one value increases as the other decreases (Field, 2013). Based on the $p$-values in Table 6, there is strong evidence to suggest a significant positive
correlation between HIT scores and institutional misconduct write-ups and HIT overall pre-scores and angry-irritable scores. In addition, a significant positive correlation was noted between angry-irritable scores and institutional misconduct write-ups, as well as angry-irritable scores and traumatic experience scores. Conversely, a significant negative correlation existed between length of stay and pro-social behaviors. Table 6 presents the full results of this correlational analysis in a matrix format. Table 7 provides the correlations for categorical variables of sex and IEP status versus continuous variables of interest.

Table 6

**Correlation Matrix for Variables of Interest**

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HIT Overall Pre</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Institutional Misconduct/Day</td>
<td>.34*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Pro-social Behaviors/Day</td>
<td>-.10</td>
<td>.12</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Angry-Irritable</td>
<td>.38**</td>
<td>.60**</td>
<td>.03</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Traumatic Experience</td>
<td>.08</td>
<td>-.06</td>
<td>.01</td>
<td>.26*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Length of Stay (Days)</td>
<td>.05</td>
<td>.18</td>
<td>-.25*</td>
<td>0.16</td>
<td>-.05</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7. Age</td>
<td>-.08</td>
<td>-.01</td>
<td>.14</td>
<td>-.03</td>
<td>-.01</td>
<td>-.22</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. * Correlation is significant at the .05 level. ** Correlation is significant at the .01 level.

Based on the P-values in Table 7, there is strong evidence to suggest there is a significant correlation between sex and HIT overall pre-. Since males are coded as 1 and females are coded as 2, this negative correlation indicates that females tend to have lower HIT scores. Figure 2 boxplot visually depicts this correlation. No other significant correlations were detected.
Table 7

*Correlation Matrix for Categorical Categories of Sex and IEP Status*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sex</th>
<th>IEP Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HIT Overall Pre-</td>
<td>-.25*</td>
<td>.16</td>
</tr>
<tr>
<td>2. Institutional Misconduct Write-Ups</td>
<td>-.09</td>
<td>.03</td>
</tr>
<tr>
<td>3. Pro-social Behaviors</td>
<td>.11</td>
<td>-.11</td>
</tr>
<tr>
<td>4. Angry-Irritable</td>
<td>.09</td>
<td>.03</td>
</tr>
<tr>
<td>5. Traumatic Experience</td>
<td>.17</td>
<td>.12</td>
</tr>
<tr>
<td>6. Length of Stay (Days)</td>
<td>.14</td>
<td>.02</td>
</tr>
<tr>
<td>7. Age</td>
<td>-.03</td>
<td>-.16</td>
</tr>
</tbody>
</table>

Note. * Correlation is significant at the .05 level.

*Figure 2.* Boxplots for HIT overall pre- by sex.

Table 8 provides the correlations for the categorical variable of race versus continuous variables of interest.
Table 8

*Correlation Matrix for Categorical Categories "White” Versus “Non-White”*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HIT Overall Pre-</td>
<td>.15</td>
</tr>
<tr>
<td>2. Institutional Misconduct Write-Ups</td>
<td>.48**</td>
</tr>
<tr>
<td>3. Pro-social Behaviors</td>
<td>.35**</td>
</tr>
<tr>
<td>4. Angry-Irritable</td>
<td>.31**</td>
</tr>
<tr>
<td>5. Traumatic Experience</td>
<td>-.01</td>
</tr>
<tr>
<td>6. Length of Stay (Days)</td>
<td>-.19</td>
</tr>
<tr>
<td>7. Age</td>
<td>.19</td>
</tr>
</tbody>
</table>

*Note.* **Correlation is significant at the .01 level.*

Based on the p-values in Table 8, there was evidence to suggest significant positive correlations between Race and Write-ups per Day, Pro-Social Behaviors per Day, and Angry-Irritable ($P = < 0.001, 0.005, 0.01$, respectively). Since these are positive correlations, and White was coded as “1” and Non-White as “2”, all three of these variables tend to be higher for minority youth. No other significant correlations were detected. The boxplots of Figures 3–6 visually depict racial correlations noted in Table 8.
Figure 3. Boxplots for pro-social behaviors per day.
Figure 4. Boxplots for write-ups per day.
Figure 5. Boxplots for angry-irritable.
Main Analysis

Each research question was assessed using a hierarchical linear regression. The hierarchical linear regression is the appropriate analysis to perform when assessing the relationship between a set of continuous or categorical predictors and a continuous dependent variable in subsequent steps (Tabachnick & Fidell, 2013). The separation of the predictors into separate steps allows for the assessment of the predictive effect that each group of variables has on the dependent variable (Field, 2013). In each regression, the predictor variables entered into the regression model in the first step were race, age, and sex. As race, sex, and IEP status were categorical variables, dummy coding was
necessary. Dummy coding resulted in two variables (White and Non-White) with White as the reference category. The predictor variables entered into the second step were IEP (i.e., whether or not the youth had an IEP), HIT overall pre-score, angry-irritable score, and traumatic experience score.

Prior to each analysis, the assumptions of the linear regression are assessed. These assumptions include normality, homoscedasticity, and absence of multicollinearity. Normality was assessed using a normal P-P plot. If the data points generally follow the diagonal normality line, normality can be assumed (Stevens, 2009). Homoscedasticity was assessed using a scatterplot of the residuals. If the data points assume a randomly-distributed, block-shaped pattern, homoscedasticity can be assumed (Tabachnick & Fidell, 2013). Absence of multicollinearity was assessed using the previously presented correlational matrix (see Table 6) as well as variance inflation factor (VIF) values. If predictor variables are not too highly correlated with each other, VIF values will be below 10 and correlations will be below .80 (Stevens, 2009) and provide assurance that each is a unique predictor.

**Research Question 1**

What are the strongest predictors of pro-social behavior among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

The dependent variable of this regression model was pro-social behavior rate per day, which was calculated in order to control for variability in length of stay. A normal P-P plot was created (see Figure 7) showing only slight deviation from the normality line. Normality was assumed. A scatterplot of the residuals was created (see Figure 8)
showing a generally random, block-shaped pattern. Homoscedasticity was assumed. No predictor variable was highly collinear, as correlation coefficients were below .80 and VIF values were below 10 (see Table 6).

Figure 7. Normal P-P plot for the regression predicting pro-social behavior rate.
Figure 8. Scatterplot of the residuals for the regression predicting pro-social behavior rate.

The results of the first step of the regression were significant, $F(3, 61) = 3.51$, $p = .020$, $R^2 = .11$. This indicates that the demographic covariates, as a combined set, significantly predict pro-social behavior rate. The coefficient of determination ($R^2$) indicates that approximately 11% of the variance in pro-social behavior rate is predicted by demographic covariates collectively. At this step, race was an individually significant predictor, $B = 0.16$, $p = .006$.

The results of step two were not significant, $F(7, 57) = 0.38$, $p = .833$. This indicates that the addition of the independent variables of interest (IEP, HIT, angry-irritable, traumatic experience) to the model did not significantly predict pro-social behavior rate. The independent variables of interest were not individually significant predictors. After controlling for the independent variables of interest, race remained a significant predictor of pro-social behavior rate in this model, $B = 0.18$, $p = .005$ indicating higher scores for minority youth. Table 9 presents the full results of this particular analysis.

A post-hoc power analysis was conducted using the G*Power statistical program (Faul, Erdfelder, Buchner, & Lang, 2009). Setting the alpha value at .05, the analysis calculated a power of .138.
Table 9

Results of the Regression Predicting Pro-Social Behavior Rate

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>T</th>
<th>p</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Race (ref: White)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>0.16</td>
<td>0.06</td>
<td>0.35</td>
<td>2.86</td>
<td>.006</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.04</td>
<td>0.06</td>
<td>0.08</td>
<td>0.65</td>
<td>.516</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>Sex (ref: female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>-0.21</td>
<td>0.17</td>
<td>0.15</td>
<td>1.26</td>
<td>.21</td>
<td>1.01</td>
</tr>
<tr>
<td>2</td>
<td>Race (ref: White)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>0.18</td>
<td>0.06</td>
<td>0.39</td>
<td>2.91</td>
<td>.005</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.03</td>
<td>0.07</td>
<td>0.05</td>
<td>0.42</td>
<td>.67</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Sex (ref: female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>0.19</td>
<td>0.18</td>
<td>0.13</td>
<td>1.04</td>
<td>.31</td>
<td>1.16</td>
</tr>
<tr>
<td></td>
<td>IEP</td>
<td>-0.10</td>
<td>0.20</td>
<td>-0.06</td>
<td>-0.47</td>
<td>.64</td>
<td>1.07</td>
</tr>
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<td></td>
<td>HIT</td>
<td>-0.08</td>
<td>0.12</td>
<td>-0.09</td>
<td>-0.64</td>
<td>.526</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>Angry-Irritable</td>
<td>-0.02</td>
<td>0.04</td>
<td>-0.08</td>
<td>-0.53</td>
<td>.60</td>
<td>1.43</td>
</tr>
<tr>
<td></td>
<td>Traumatic Experience</td>
<td>0.01</td>
<td>0.07</td>
<td>0.03</td>
<td>0.22</td>
<td>.83</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Research Question 2

What are the strongest predictors of institutional misconduct among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

The dependent variable of this regression model was institutional misconduct write-up rate per day, calculated in order to control for higher totals that would result from an extended length of stay. A normal P-P plot (see Figure 9) showed only slight deviation from the normality line, and as such, normality was assumed. A scatterplot of the residuals (see Figure 10) did not show evidence of heteroscedasticity, indicating that homoscedasticity can be assumed. Absence of multicollinearity was assumed, as correlation coefficients were below .80 and VIF values were below 10. (See Table 10.)
Figure 9. Normal P-P plot for the regression predicting institutional misconduct write-up rate.

Figure 10. Scatterplot of the residuals for the regression predicting institutional misconduct write-up rate.
The results of the first step of the regression were significant, $F(3, 61) = 6.66, p = .001$, $R^2 = .25$, suggesting that the demographic variables had a significant collective predictive effect for institutional misconduct write-up rate, predicting up to 25% of the variability in that dependent variable. Race was the only individually significant predictor in this step of this model, $B = 0.04, p < .001$.

The second step of this model was also significant, $F(7, 57) = 7.66, p < .001$, $R^2 = .26$. The addition of IEP, HIT, angry-irritable, and traumatic experience predicts an additional 26% of the variability in institutional misconduct write-ups. When controlling for all other variables, angry-irritable, $B = 0.02, p < .001$, traumatic experience, $B = -0.02, p = .049$, and race, $B = 0.02, p = .003$, were individually significant variables. The full results of this analysis are presented in Table 10.

Table 10

*Results of the Regression Predicting Institutional Misconduct Write-Ups*

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>T</th>
<th>P</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Race (ref: White)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>0.04</td>
<td>0.01</td>
<td>0.50</td>
<td>-4.40</td>
<td>.001</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.12</td>
<td>-1.00</td>
<td>.32</td>
<td>1.02</td>
</tr>
<tr>
<td></td>
<td>Sex (ref: female)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>0.01</td>
<td>0.03</td>
<td>0.05</td>
<td>0.41</td>
<td>.68</td>
<td>1.01</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>0.02</td>
<td>0.01</td>
<td>0.31</td>
<td>3.08</td>
<td>.003</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.07</td>
<td>-0.68</td>
<td>.50</td>
<td>1.09</td>
</tr>
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<td>Sex (ref: female)</td>
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<td>0.56</td>
<td>.58</td>
<td>1.16</td>
</tr>
<tr>
<td></td>
<td>IEP</td>
<td>0.01</td>
<td>0.03</td>
<td>0.03</td>
<td>0.30</td>
<td>.76</td>
<td>1.07</td>
</tr>
<tr>
<td></td>
<td>HIT</td>
<td>0.01</td>
<td>0.02</td>
<td>0.09</td>
<td>0.82</td>
<td>.42</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>Angry-Irritable</td>
<td>0.02</td>
<td>0.01</td>
<td>0.52</td>
<td>4.70</td>
<td>.000</td>
<td>1.43</td>
</tr>
<tr>
<td></td>
<td>Traumatic Experience</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.20</td>
<td>-2.02</td>
<td>.05</td>
<td>1.12</td>
</tr>
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</table>
A post-hoc power analysis was conducted using the G*Power statistical program. Setting the alpha value at .05, the analysis calculated a power of .998.

**Research Question 3**

What are the strongest predictors of length of stay among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

The dependent variable of this regression model was length of stay. A normal P-P plot (see Figure 1) showed deviation from the normality line, and as such, normality cannot be assumed. However, in regards to the normality assumption, the F statistic is robust to violations (Howell, 2013; Pallant, 2013; Stevens, 2009). The analysis was continued. A scatterplot of the residuals (see Figure 12) showed that the assumption of homoscedasticity cannot be assumed. Stevens (2009) and Tabachnick and Fidell (2013) indicated that for ungrouped (i.e., continuous) data, heteroscedasticity merely weakens the analysis rather than unduly influencing results. However, some data used in this regression (e.g., race) were grouped. Levene’s test was used to test the homoscedasticity of these grouped data to provide a statistical justification for continuing with the analysis. In order for the assumption to be met, Levene’s test should not be significant (Field, 2013). Levene’s test was not significant for IEP (\(p = .744\)), or sex (\(p = .143\)), indicating that the assumption is met for these variables. The assumption was not met for race (\(p = .022\)). Absence of multicollinearity was assumed, as correlation coefficients were below .80 and VIF values were below 10 (see Table 11). While experts (Howell, 2013; Pallant, 2013) stated that assumptions of normality do not unduly affect the analysis, and violations of homoscedasticity merely weaken the power of the analysis, the multiple
violations in conjunction indicate that results should be treated with caution. The analysis was continued in an exploratory manner.

Figure 11. Normal P-P plot for the regression predicting length of stay.

Figure 12. Scatterplot of the residuals for the regression predicting length of stay.
The results of the first step of the regression were not significant, $F(3, 61) = 1.83, p = .15$, suggesting that the demographic variables did not have a significant collective predictive effect for length of stay. The second step of this model was similarly not significant, $F(7, 57) = 1.38, p = .23$. The addition of IEP, HIT, angry-irritable, and traumatic experience did not significantly improve the model; no variables were significant predictors of length of stay. The full results of this analysis are presented in Table 11.

Table 11

Results of the Regression Predicting Length of Stay

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t</th>
<th>p</th>
<th>VIF</th>
</tr>
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<tr>
<td>1</td>
<td>Race (ref: White)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>-6.46</td>
<td>3.86</td>
<td>-0.22</td>
<td>-1.68</td>
<td>.10</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>Age</td>
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<td>4.18</td>
<td>-0.18</td>
<td>-1.46</td>
<td>.149</td>
<td>1.04</td>
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<tr>
<td></td>
<td>Sex (ref: female)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>10.47</td>
<td>11.59</td>
<td>.12</td>
<td>.90</td>
<td>.37</td>
<td>1.16</td>
</tr>
<tr>
<td>2</td>
<td>Race (ref: White)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-White</td>
<td>-6.46</td>
<td>3.86</td>
<td>-.22</td>
<td>-1.68</td>
<td>.10</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-5.83</td>
<td>4.26</td>
<td>-.18</td>
<td>-1.37</td>
<td>.18</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Sex (ref: female)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
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<td>11.67</td>
<td>-.12</td>
<td>-0.92</td>
<td>.362</td>
<td>1.16</td>
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<td>IEP</td>
<td>-2.60</td>
<td>12.76</td>
<td>-.03</td>
<td>-.20</td>
<td>.84</td>
<td>1.08</td>
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<tr>
<td></td>
<td>HIT</td>
<td>.99</td>
<td>7.65</td>
<td>.012</td>
<td>.13</td>
<td>.90</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>Angry-Irritable</td>
<td>4.08</td>
<td>2.39</td>
<td>.25</td>
<td>1.71</td>
<td>.09</td>
<td>1.43</td>
</tr>
<tr>
<td></td>
<td>Traumatic Experience</td>
<td>-4.41</td>
<td>3.77</td>
<td>-.15</td>
<td>-1.17</td>
<td>.25</td>
<td></td>
</tr>
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</table>

A post-hoc power analysis was conducted using the G*Power statistical program. Setting the alpha value at .05, the analysis calculated a power of .351. Care should be
taken in assigning significance to this finding due the violation of assumptions of linear regression noted above.

**Summary**

To summarize, the results of the analysis answering research question one indicated that race was statistically significant with non-white youth reporting a higher rate of pro-social points, though these results should be examined through the 11% variance lens of the entire grouping. The results of the analysis answering research question two revealed a model where demographic variables predicted 25% of the variance. Furthermore, results suggested that when assessing demographic variables, white youths were predicted to have fewer institutional misconduct write-ups when compared to non-white youths. When the independent variables of interest were added to the model, an additional 26% of the variance was explained. The individual statistically significant variables increased to include angry-irritable, traumatic experience, as well as race. In the analysis of research question three, no predictor was found to be significantly predictive of length of stay. These results are discussed within the context of the relevant literature in the following chapter. The strengths and limitations of the study are also subsequently discussed. Finally, future direction for further research in this area is provided.
CHAPTER V
DISCUSSION

This exploratory study examined the efficacy of organic risk factors and demographic characteristics as predictors of behavior at a secure, long-term, juvenile rehabilitation center. Specifically, demographic intake data and assessment scores were utilized to predict pro-social behaviors, institutional misconduct write-ups, and length of stay. As noted in Chapter 4, a hierarchical linear regression analysis was performed on both continuous and categorical data to ascertain whether patterns of conduct during confinement could be identified and predicted.

This chapter provides a summary of the analytical findings for each of the three research questions, as well as the correlational results between pertinent variables. Findings will be reconciled with germane literature in the field. The discussion concludes with an identification of limitations with the study, along with implications for researchers and suggestions for future inquiries within this area of the discipline.

Summary of Findings

The literature base in juvenile corrections includes a small body of work investigating the feasibility of predicting confinement conduct with intake assessment data (Fazel et al., 2008). Generally, the assessments employed for behavior prediction were not designed for that specific purpose. As a result, some caution is advised when evaluating outcomes of predictive studies using screening assessments. However, prior studies in this area have used such measurement tools for predictive purposes with considerable success. For instance, the Massachusetts Youth Screening Instrument—
Version 2 (MAYSI-2) was created as a screening instrument identifying potentially severe mental health disorders among incoming youth but has presented positive results when used as a predictive measure (Butler et al., 2007).

It should be noted that both measures rely on self-reporting data by juveniles entering the facility. Self-reporting information is, by its nature, reliant on the test-taker properly interpreting and answering the questions. In addition, both questions and answers are viewed through a personal, experiential lens. This may affect, for instance, the traumatic experiences subscale results, which revealed minorities scored significantly higher than white youth. Despite these apparent limitations, the use of intake data for both screening and predictive functions has been previously found as an efficient and effective use of intake data (Butler et al., 2007; McReynolds & Wasserman, 2008).

Though the MAYSI-2 and HIT have been utilized regularly within the juvenile correctional system, describing them as efficient and effective does not guarantee they are not without some bias. The findings by Grisso et al. (2012) and Vincent et al. (2008) described in Chapter 3 do not ensure an unbiased assessment but they do provide some evidence that the assessments are generally racially neutral in their outcomes. In order to explore the racial component in more detail, an item analysis of the MAYSI-2 may be appropriate. In particular, the vocabulary and cultural nuances of the assessment should be examined for any potential bias. It is possible that assessment references to certain emotional behaviors or responses to examples are cultural in nature and may influence scoring.
The results of the present study support some outcomes documented in earlier studies. For example, both Butler et al. (2007) and DeLisi, Caudill, et al. (2010) found the angry-irritable subscale of the MAYSI-2 predictive of institutional misconduct whereas DeLisi, Drury, et al. (2010) discovered the traumatic experience subscale was also predictive of misconduct. The present study produced outcomes suggesting the same subscales could serve as a predictor of misconduct during confinement.

Furthermore, demographic characteristics were found to be correlates across several variables in the study, bolstering the conclusion of many researchers that demographic attributes are associated with institutional misbehavior, including criminality (Piquero et al., 2010).

This study’s uniqueness included the examination of two intake assessments into the analysis. Prior research had utilized one assessment in its predictive formulation. The present study included data from both the MAYSI-2 and HIT. Though each were separate independent variables, the study produced correlation results suggesting a connection between the two. In addition, dependent variables included both pro-social and institutional misconduct data contrasting from other studies, which commonly employed one or the other. These generalized results are articulated in more detail as the individual research questions are discussed.

**Descriptive Statistics**

Demographically, the participants represent a relatively typical population within juvenile corrections. Twenty-six percent of the youth in the study self-identified as Black whereas 60% were White. In addition, approximately 14% of the participants have been
classified as “Other.” Within the “Other” classification could be Hispanic youth or juveniles of mixed race bringing with them a variety of cultural experiences that may hinder generalization of results. Though that figure nearly doubles the U.S. black population as a whole (U.S. Census Bureau, 2017), both racial categories are comparable to statistics within juvenile corrections, though some variance will be noted between MVJRC and the more restrictive correctional facilities (Sickmund et al., 2017). Though these numbers are framed in a simplistic, statistical sense, the implications of overrepresentation have been hotly debated for years and remain largely unresolved. There is little doubt that black youth are overrepresented in the juvenile justice system even after controlling for racial differences in offending (Evangelist, Ryan, Victor, Moore, & Perron, 2017). This has led some commenters to condemn the juvenile justice system as inherently prejudicial in both its due process construct, as well as its application (Sterling, 2013). Others have pointed out that a variety of sociological factors play a part in the imbalance, including an acknowledgment that parental criminal history is a major risk factor for intergenerational offending along with its aversive impact on the life course of children who are more likely to become delinquent (Calley, 2012; Piquero et al., 2004; Rakt, Murray, & Nieuwbeerta, 2012). The results from the present study do not support any rationale for the imbalance but do reflect the typical nature of the MVJRC racial make-up in the context of national averages. Furthermore, some caution should be exercised in generalizing study results given the limited sample size, including only 17 black youth.
From a sex standpoint, males comprised 63% of the participants. This number is high in comparison to the general population of U.S. youth. However, within juvenile corrections the percentage of males in the study is relatively low as, nationally, males make up 84% of incarcerated youth (Puzzanchera et al., 2016). This contrast may be explained by the seriousness of offenses for which MVJRC residents have been confined. MVJRC youth are incarcerated for misdemeanor or low-level felony offenses whereas national incarceration rates would include more serious felonies, disproportionately committed by males, including a 93% rate in the State of Ohio (Ohio Department of Youth Services, 2017). Though female offending rates are increasing as a whole, males are still adjudicated delinquent far more frequently, making the MVJRC numbers unremarkable (Ravoira, Graziano, & Lydi, 2012).

The average age of youth committed for felony offenses in Ohio is 17.8 years. The mean for participants in this study is 15.97 years. Since offenses tend to start with relatively minor infractions at young ages and progress in seriousness, older youth at statewide facilities is to be expected (Cunningham & Sorensen, 2007). The range for study participants was 13 to 19 years of age. However, the standard deviation is 1.31 years indicating that few 18 or 19 year olds were confined during the data collection period. As a result, interventions, strategies, or services suggested in this study would primarily affect the adolescent offender.

This pattern also conforms to the life course trajectory framework of Figure 1 where demographic characteristics and organic risk factors impact childhood behavior and continue to influence the life course as individuals enter adolescent and adulthood.
phases. It should be noted that delinquency, as a legal matter, ceases upon the adolescent reaching the age of 18. Therefore, when references are made to a delinquent life course, it is a technical reference denoting the adolescent phase of a life course. However, life course in general cannot be discussed in context without considering the time frames before and after adolescence. Uninterrupted, trajectories of incarcerated youths often progress from oppositional defiance disorders to conduct disorder, and ultimate contact with the juvenile justice system (Hirschfield et al., 2006). Given the younger ages of MVJRC juveniles and behavioral malleability, the opportunity appears ripe to teach pro-social behaviors within the context of facility intervention planning and avert continued trajectories toward future inappropriate behavior. Nonetheless, there would be some intervention limitations simply due to the relatively short period of time juvenile incarceration, the mean for MVJRC being 168 days.

Approximately 23% of MVJRC residents entered the facility with an Individualized Education Program (IEP). Percentage wise, this number falls between the general K–12 student population rate of 13.8% (U.S. Department of Education, 2012) and nationwide juvenile incarceration rate of 39.8% (Cruise et al., 2011). Like sex, some variation in reported prevalence rates may be attributed to the classification level of the juveniles at MVJRC. In addition, the disparity may be explained by the general subjectivity that regularly injects itself in state and local statistical reporting, which has produced disability prevalence rates between 9% and 77% across states (M. Quinn et al., 2005). From a purely numerical standpoint, the 23% equates to only 15 youth across 13 potential IDEA categories. Given these low numbers and lack of specific disability data
available from MVJRC, any functional differences and generalizations are difficult to substantiate.

Thus far, demographic statistics have been viewed in isolation. As with most conversations pertaining to life course, however, individual factors do not remain in isolation but often exist concurrently and therefore, are examined within a multi-faceted framework. As the discussion proceeds through the study’s three research questions, particularly during the delinquent phase of a life course, demographic characteristics were examined in light of each set of analytical results, including the development of specific outcome patterns.

**Research Question 1**

What are the strongest predictors of pro-social behavior among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

This exploratory study identified several predictors of pro-social behaviors. As an initial matter, results from the analysis of research question one recognized demographic characteristics as predictive of pro-social behavior rates. On an individual basis, race was a significant predictor ($B = 0.16, p = .006$). As a whole, demographic characteristics accounted for 11% of the variance in pro-social behaviors. These findings tend to support relevant literature connecting institutional behavior and demographics (Drury & DeLisi, 2011; Pflugradt & Allen, 2014). Yet this also indicates that the majority of the variation in pro-social behaviors was not predicted by study variables. This could be due to the low power of the analysis or that multiple other factors are in fact, more important and predictive.
In the present study, pro-social behavior rates displayed a unique pattern when considering race. Non-white youth had higher pro-social rates than white juveniles. This is somewhat perplexing given the higher rates of institutional misconduct noted in Figure 3 in comparison with their lower rates of pro-social behavior—an unexpected, disparity. Viewed in isolation, these results may lack the specificity to influence programming or intervention decisions. However, significant inferences can be drawn from data derived from the correlational analysis. Merged with the overall figures obtained from the analysis of research question one, race may play a role in the prediction of pro-social behaviors. This appears to be particularly true when comparing White versus minority rates.

The finding is interesting in several ways. First, historical trends have seen the racial disparity in disciplinary rates for adolescents grow substantially since the 1990s (Wallace, Goodkind, Wallace, & Bachman, 2008). Though the present study identifies higher rates of misconduct within the minority population, high rates of pro-social behavior by minorities imply the disciplinary gap may be contextual or that race influences rates of behavior regardless of their positive or negative outcomes.

Second, the current study counters prior literature finding lower rates of pro-social behavior among minority students when compared to their white classmates (Wentzel, Filisetti, & Looney, 2007). As noted previously, the multifarious nature of behavior can be difficult to explain. As a result, some have advised caution when interpreting behavior statistics, remarking that social and economic factors can vary dramatically between predominantly minority populated settings and their largely white equivalents (Orfield &
Lee, 2005). As evidence for this premise, Voight, Geller, and Nation (2014) discovered the pro-social behavior gap between Black and White decreased as the percentage of black students to overall enrollment increased, and indicated that environmental conditions can affect behavior rates.

The interaction of demographics with pro-social behavior continues in Table 3. As race is inserted as a categorical variable some correlational significance emerges. This suggests that some linkage exists between this dependent variable and minority youth as a class, supporting the Voight et al. (2014) conclusions regarding behavior gap reductions and demographics. The notion that diversity may sway behavior patterns was also investigated by Burns (2012) who found that, in the context of trust, as racial diversity increased in a school, pro-social interactions between students increased.

At MVJRC, there is significant racial diversity, with the proportion of black youth higher than the national average, although the overall number is small (n=17). The relatively high level of racial diversity at MVJRC would seem to support the hypothesis that racial diversity can improve behavior gaps and improve pro-social conduct. Conversely, there seems to be a contradiction when surveying the MAYSI-2 results in the context of racial comparisons. The analysis identified minority youth as having higher scores on the angry-irritable subscale (Table 5), producing a seemingly unusual result when pro-social behavior rates for minorities are higher than their white counterparts. It is possible that an examination of scores on a pre- and post- basis may better reflect the potential effects of pro-social behavior points which occur during incarceration.
Race was not the only variable demonstrating a correlational association with pro-social behavior rates. Length of stay displayed a significant negative correlation with pro-social behavior. This outcome is to be expected. A stay at Miami Valley Juvenile Rehabilitation Center (MVJRC) is not a fixed period of time as evidenced by the length of stay rates. Youth who exhibit positive behavior should progress through the four levels of the graduated privilege schedule at an accelerated pace resulting in a shorter term of incarceration (Program Manual, 2017). Therefore, it is a reasonable inference that as an individual increases the number of pro-social behavior points received on a daily basis their length of stay will shorten proportionally.

The absence of statistical significance between assessment subscales and pro-social behavior is unexpected. However, the correlations may be explained by the measures from which the predictor variables were derived. As noted in Chapter 3, the MAYSI-2 screens for severe mental health disorders (Butler et al., 2007) whereas the HIT measures cognitive distortions such as inaccurate or biased attitudes, thoughts, or beliefs (Plante et al., 2012). Both mental health disorders and cognitive distortions relate to inappropriate behavioral patterns rather than appropriate conduct. However, the obvious hypothesis would assume that the measures of mental health issues or cognitive distortions should interact with pro-social rates in an inverse manner. As scores on these measures decrease, pro-social behavior should show an increase (Marshall & Caldwell, 2007). Such was not indicated in the present analysis, as the two assessments did not interact statistically with pro-social behaviors. Given the equitable nature of MVJRC
behavior rates, this appears to be more a reflection of the character of the assessments rather than any overriding psychosocial cause or low statistical power.

Overall, the results produced limited answers to research question one. Among the results were demographic characteristics, on a composite basis, displaying a relatively low ability to predict a significant proportion of the variance in pro-social behavior rates. These analytical results supported prior research finding a connection between race, generally, and pro-social behavior during confinement. The statistical relationship found in the present study, however, displays an inverse relationship from other studies identifying lower rates of pro-social behavior for minority youth. Furthermore, correlations were evident between racial groups and pro-social behavior as non-white youth received significantly more pro-social points. A larger participant pool would have increased the statistical power of the analyses and may have produced a stronger predictive relationship between the variables. Despite limited findings, the negative correlation between pro-social behaviors and length of stay serves to validate the data by producing an entirely expected result. Had the outcomes been reversed, there may be some question as to the accuracy of the data. Despite some thought provoking results, however, no single variable was found to be significantly predictive of pro-social behavior.

**Research Question 2**

What are the strongest predictors of institutional misconduct among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?
Institutional misconduct is a frequent variable in predictive studies related to intake assessments in juvenile corrections. For example, Butler (2007) used the angry-irritable subscale of the Massachusetts Youth Screening Instrument—Version 2 (MAYSI-2) as an independent variable in a study examining its value as a predictor of serious institutional misconduct during confinement. In addition, DeLisi, Caudill, et al. (2010) used institutional misconduct as a dependent variable while conducting a regression analysis using MAYSI-2 scores. Research question two builds on this research base by examining the impact of selected variables of interest on institutional misconduct within MVJRC.

Demographics provided some interesting results in the analysis including their accounting for 25% of the variance in institutional misconduct. While minority youth at MVJRC followed national trends in terms of high misconduct rates, the rates of prosocial points for minority juveniles suggest that MVJRC behavior strategies are generally equitable across races. This somewhat counterintuitive result emphasizes the multifarious nature of behavior which can be difficult to explain. Nonetheless, results from the present study fail to support a consistent behavior gap between minority and white youth when assessing both prosocial behavior and misconduct in tandem.

The present study also produced results supporting and expanding on conclusions reached by prior research regarding institutional misconduct and intake assessments. Specifically, the analysis determined that the angry-irritable subscale score was predictive of institutional misconduct rates ($B = 0.02, p < .001$), a finding similar to that reached by DeLisi, Drury, et al. (2010) and Butler (2007). The comparable results of this
portion of the analysis with prior studies strengthen the validity of the present study as a whole. In addition, the application of this statistical relationship indicates that a one-unit increase in the angry-irritable subscale score may correlate to a 2% percent increase in the individual’s misconduct rate.

The angry-irritable subscale was only one component of a larger grouping of variables predicting institutional misconduct within the three racial category analysis. As noted in Chapter 4, a cluster of four variables, namely IEP status, high HIT scores, and elevated angry-irritable, and traumatic experience subscale scores, predicted approximately 26% of the variability in institutional misconduct rates. Though the number of participants in the study did not permit a latent class analysis, the identification of a statistically influential grouping variable provides insight into what set of variables may drive misconduct rates.

Though the variables of interest accounted for 51% of the variance for institutional misconduct, his means that 49% of the variance remains unexplained and could include characteristics of the institution (e.g., regional, secure), its management and staff, or the facility culture that may better explain these results. For example, are there any policies or patterns indicating undue attention, either positive or negative, directed at residents of color? Reamer (1990), in his work on ethics in social service fields, suggested the importance of considering contextual variables in addition to empirical data, a concept that could be effectively applied to the results of this study.

Examining the four demographic variables noted in the prior paragraphs buttresses previous research into institutional misconduct. It has been previously noted
that the angry-irritable subscale was useful in predicting misconduct. Additionally, the traumatic experience subscale of MAYSI-2 has been found as predictive of institutional misconduct (DeLisi, Drury, et al., 2010). Specifically, the traumatic experience subscale evidenced statistical significance (B = -0.02, p = .05) in the second step of the regression.

An examination of the traumatic experience boxplots provides an intriguing overview of the range of scores across racial categories. Though scores for minority races are higher, the spread of scores is noticeably smaller than for white youth. This may indicate that white juveniles import a diverse set of experiences that may or may not be traumatic from their standpoint. Furthermore, minorities may have somewhat similar history regarding traumatic events, at least in terms of their self-reporting of the experiences, possibly explaining the tight spread of scores, all a subject of further inquiry. From an intervention perspective, it would be incumbent on the facility to investigate the breadth of trauma exposure and possible racial differences, then tailor strategies and therapies to combat the ramifications of those findings. For example, do racial groups define trauma differently or are there diverse responses to trauma?

Results also appear to suggest that race remains an important consideration in the analytical calculations as evidenced by its statistical significance (B = .02, p = .003) as a predictor variable. Thus, one can surmise that minorities may be importing more trauma into the correctional setting than white youth. As the percentage of minority participants increases, the role of traumatic experiences on institutional misconduct rates rises along with its predictive value. These findings pertaining to trauma puts the present study in line with the DeLisi, Drury, et al. (2010) analysis in terms of statistical significance and
comports with what some researchers term the “cycle of violence hypothesis” in which “wards with . . . greater lifetime exposure to traumatic events . . . were more noncompliant behind bars” (DeLisi, Drury, et al., 2010, p. 116).

The present study outcomes indicated a relationship between two subscale scores (angry-irritable and traumatic experience). Specifically, the relationship between angry-irritable and traumatic experience subscales revealed a significant positive correlation (r = .26, p < .05). These results, along with the DeLisi, Drury, et al. (2010) and DeLisi, Caudill, et al. (2010) findings, suggest the variables have qualities, which combined, display a predictive ability allowing MVJRC to identify youth displaying this quantitative pattern and plan for appropriate interventions.

For example, the inclusion of the traumatic experiences subscale also suggest a strand of life course trajectory into the results, particularly during the delinquency phase. Traumatic experiences are, by definition, events occurring in the past. Furthermore, individuals bring in a range of traumatic experiences which could impact any racial variability in subscale scores. The MAYSI-2 is administered upon admission to the facility with the expectation that traumatic experiences to have been imported into the facility environment. Their impact on a juvenile’s life is reflected in the scores of the traumatic experience subscale. As a result, these pre-incarceration, traumatic experiences influence affecting the life of the particular juvenile with elevated subscale scores. Given the presence of the subscale into a composite variable group accounting for a percentage of variability in prediction of institutional write-ups may lend credence to the role life course and importation theories play in confinement behavior.
It is also important to note that the scores utilized in the study, where obtained during administration of the measures at intake. Behavior data, however, was accumulated throughout the entire term of incarceration. This may suggest that ongoing tracking of misconduct may be a more sensitive measure of change. In addition, an evaluation of scores on a pre- and post- basis may strengthen the analysis.

Though neither measure specifically scored anxiety as an organic characteristic, traumatic experiences regularly emerge interwoven with anxiety due to their common experiential origins (Hensley-Maloney & Varela, 2009). Within the context of trauma and related anxiety, researchers have observed that trauma and anxiety arise from multiple factors rather than singular events (Caldwell et al., 2006). As a result, examining anxiety as a predictive factor of misconduct may serve as a significant area of future research.

Anger has also been identified as commonly arising from negative stimuli such as a traumatic experience, a position adopted by Agnew (1992, 2001) in his seminal works on general strain theory. Stressful and traumatic experiences along with the related mental health concerns, including anger, arising from these events can coalesce as risk factors contributing to a negative life course (Figure 1; Kramer & Zimmerman, 2009). Addressing these multiple influences during periods of incarceration can certainly be challenging. However, the ability to recognize these compounding factors upon admission to a correctional facility can be foundational to long-term treatment success.

Institutional misconduct also found correlated to HIT overall pre- scores. In fact, the analysis produced a significant positive correlation between the HIT scores and
misconduct write-up rates \( (r = .34, p < .05) \). Though significant from a correllational standpoint, the statistical relationship did not reveal the singular power to predict write-ups as with the angry-irritable subscale \( (r = .60, p < .01) \). Various HIT subscales, not utilized in this study, may individually predict institutional behaviors while the composite score does not. Even so, the analytical results in this instance do suggest that HIT scores may have similar statistical qualities as the angry-irritable subscale, given a population of sufficient size. Operationalizing the statistical results suggests both mental health disorders and cognitive distortions, as organic risk factors, negatively affect the life course of adolescents, a finding supported by prior studies (Helmund et al., 2012; Schubert et al., 2011). Larger participant pools may be able to identify a range of significant correlations between individual HIT subscale scores and rates of misconduct.

It is intriguing to note that two of the four variables in the composite failed to exhibit a significant, individual correlation with institutional misconduct rates. In fact, IEP status \( (r = .03) \) and traumatic experiences subscale scores \( (r = -.06) \) showed little association to behavioral misconduct individually. The implications of this anomaly are difficult to ascertain though it does speak to how risk factors can influence the incarceration phase of a life course from multi-faceted perspective, a paradigm similar in nature to the socio-ecological model encouraged by the Center for Disease Control (CDC; The social-ecological model: A framework for prevention, 2015). The framework views risk factors holistically, as well as individually, by emphasizing the impact of factors an individual’s overall health. This broader perspective of life course influence does not eliminate the importance of individual factors but presents an alternate analytical
option. Though the sample size in this study precluded its use, including the potential variability within the IEP disability category, some statistical tests inherently acknowledge a holistic analytical approach. For instance, latent class or growth mixture modeling employ a grouping feature that draws together the influence of multiple variables drawn from a data set (Oberski, 2016; Park et. al., 2008). Thus, the individual IEP variable may not be a robust statistical variable in the present analysis but could be found to have significant effects in other analyses.

One explanation for the lack of significance due to IEP status could be the low numbers of participants entering the facility with an IEP \( (n = 15) \). There also could be some lost variance due to the categorical labeling of an IEP. Ideally, the data would include individual disability categories; however, that information was not contained in the overall data set, which combined 13 different disability categories. As a result, the discussion on these particular results remains limited although the presence of a documented disability has been shown as an important factor influencing aspects of institutional behaviors (DeLisi, Caudill, et al., 2010; McDougall et al., 2013). However, results do suggest that having an IEP in conjunction with elevated scores on the assessment measures warrants further research and, potentially, additional intervention support.

Building on the findings of research question one and aligning with the confinement phase of a life course trajectory of Figure 1, demographic characteristics continue to leave their imprint on confinement behavior as the study’s analysis expands to research question two. Whereas, demographic characteristics explained 11% of
pro-social behavior rates, those same characteristics had roughly twice the predictive power when it came to institutional misconduct. These results suggest a relationship between race and institutional misconduct that is supported by the life course literature discussed in Chapters I & II. Piquero et al. (2004), for instance, notes a life course association between racial variables and criminal conduct in general. Figure 1 visually depicts the infusion of race into the life course trajectory that leads to institutional misconduct. The infusion of prior experiences, including racially related interactions, as well as institutional relationships, may well influence institutional behavior. Thus, the differential effects of race on the dependent variables of this study are not completely surprising in light of prior findings but may leave portions of the explanation unresolved.

The boxplot related to race and institutional misconduct (Figure 4) provides insight into misconduct rates at MVJRC. Particularly noteworthy is the statistical spread of misconduct rates among the study participants. The spread was considerably larger for non-white than white youth—in some cases double. One can posit that the difference is due to statistical outliers, though this would likely account only for a higher mean. Notwithstanding outliers, the standard deviation was sizable and could have influenced this finding.

On the other hand, it could suggest that there exist a number of racial subgroups within MVJRC displaying dramatically divergent patterns of misbehavior. These subpopulations may be more prevalent in minority rather than white populations and may evidence what some have seen as a cultural influence on misconduct (Lee, Becker, & Ousey, 2014). If, in fact, multiple layers of cultural misconduct norms exist within the
juvenile population, facilities should be precise in crafting racially sensitive behavioral strategies that acknowledge those micro-level differences to include increasing numbers of multi-racial identities among any particular population.

Differing from pro-social rates, however, one racial category did emerge from the demographic grouping as a significant predictor of institutional misconduct. Specifically, the regression analysis revealed white youths were statistically more likely to receive fewer write-ups than their minority counterparts, as well as fewer pro-social behaviors. Data set forth in the descriptive statistics of Table 5, complement the relationship between racial categories and institutional misconduct found in the regression outcomes. Figure 4 displays the distribution of misconduct rates across racial groupings, including the lower rate of write-ups for white juveniles when compared to their minority counterparts. The findings parallel other literature in the field of confinement behavior finding minority classes engaging in higher rates of misconduct (Steiner & Wooldredge, 2009). The spread of misconduct rates is significantly higher for minority participants. This finding leaves unanswered whether there may be a differential response to behavior by staff on the basis of race.

Another noteworthy finding from the analysis was the relationship between the rates of pro-social and misconduct rates. Chapter 2 discussed the importance of praise within the context of positive reinforcement and explained the target rate of positive to negative reinforcement as 4:1 (Reinke et al., 2013). The results of the present study did not limit the acknowledgment of pro-social behavior to verbal praise. Nevertheless, the comparison of the two rates adds some analytical worthiness to the investigation.
Specifically, the rate of pro-social behavior points was 1.10 per day while the rate of institutional misconduct write-ups was .15. Converting these two figures produces a ratio of 2.2:0.3 (pro-social to misconduct write-ups) or more than 7:1, a substantial increase over the target rate of 4:1 encouraged by Reinke et al. and established as a goal by MVJRC (Program Manual, 2017). To be answered is the extent to which rate of praise and positive reinforcement impacted behavior, both pro-social and misconduct, across confined youth. Nonetheless, the strong positive to negative ratio suggests that results were not skewed by an overuse of aversive consequences, though the data did reveal an unequal distribution of pro-social points in general.

The praise/misconduct relationship may also have an impact on the various portions of the analysis. The praise to write-up ratio is noteworthy in light of the somewhat unexpected outcome related to pro-social rates where minority youth received pro-social points at a rate higher than white juveniles. If one presupposes that minorities will be subjected to bias during terms of incarceration, then lower rates of pro-social recognition should be expected. However, at MVJRC, non-white juveniles received these points at rates that were higher than for their white peers.

Though various explanations could be proffered, including randomness or inaccurate reporting, the fact that MVJRC has publicly published their praise to write-up target ratio indicates that a systematic process is in place. The study results may indicate that as schools or facilities structurally improve their praise to misconduct ratios, pro-social behavioral outcomes may improve accordingly. Furthermore, the benefits of praise goals can be far reaching for juvenile facilities as at least one study found
pro-social self-efficacy generates higher pro-social aspirations in future endeavors (Cuevas, Wolff, & Baglivio, 2017), a result that may impact areas such as recidivism rates.

Nonetheless, MVJRC’s intentional pursuit of high praise to write-up ratios may alter the statistical findings. If pro-social points were randomly issued without a target ratio, the data and resulting analysis may have shown consistency with prior literature identifying lower pro-social rates for minorities. Thus, the purposeful distribution of pro-social points, in the interests of positive reinforcement, may have unintentionally skewed the data.

Taken in its entirety, the findings associated with research question two provide some potentially useful results that can be added to the research base of institutional conduct prediction. Not only were the MAYSI-2 angry-irritable and traumatic experience subscales predictive of institutional misconduct but demographic characteristics reflected varying degrees of misconduct predictive strength with the composite group (IEP status, high HIT scores, and elevated angry-irritable and traumatic subscale scores) accounting for 26% of the variance. Furthermore, HIT scores and MAYSI-2 traumatic experience subscale scores produced moderate correlations with institutional misconduct. This suggests a potential relationship representing a subpopulation, within the context of various traumatic experiences, meriting further investigation.
**Research Question 3**

What are the strongest predictors of length of stay among incarcerated youth from among the identified organic risk factors while controlling for race, age, and sex?

Length of stay has been utilized as both a controlling and dependent variable in previous studies within correctional settings (Kaba et al., 2014; Patterson, 2013). One of the unique features of this exploratory study, however, is the use of length of stay as a dependent variable in relationship to intake assessment scores. The review of literature found no studies examining this particular association. As a result, length of stay as a dependent variable in the study has few comparisons. One reason for the absence of length of stay as a dependent variable is likely the nature of juvenile disposition and adult sentencing procedures. As discussed in Chapter 2, confinement stays are highly controlled by the court leaving little room for variance within a correctional facility. However, MVJRC, with its graduated privilege schedule, closely aligns length of stay with behavior. This functional relationship improves the ability of length of stay to serve as a viable dependent variable.

The discussion of research question one recognized the correlational relationship between length of stay and pro-social behavior. Though caution was advised in the use of results related to research question three, the previously noted association of length of stay and pro-social behavior gives credence to the utility of length of stay as a variable in the study as a whole. Despite violations of selected assumptions of linear regressions, correlational portions of the data are still statistically viable.
Explanations for length of stay and behavior variable relationships can, nonetheless, produce viable theories. At MVJRC, rates of pro-social behavior and misconduct should influence length of stay. However, the direction of behavior to length of stay influences has been focus of research. Some studies have conjectured that length of stay produces worsening behavior, including findings by Kaba et al. (2014) that inmates with solitary confinement stretches committed 50% of self-harm incidents, though accounting for only 7% of the prison population. Juvenile offenders and length of stay have been examined on several occasions, particularly in the area of recidivism. Several studies have failed to uncover any general relationship between lengthier stays in a restricted setting and rates of recidivism with the exception of male offenders released from high risk facilities (Loughran et al., 2009; Winokur, Smith, Bontrager, & Blankenship, 2008). Given the mixed results, these studies fail to provide clear connections between length of stay and misconduct, as measured by recidivism, nor do they provide any particular guidance in regard to findings in the present study.

This study did provide clear evidence that a link exists between length of stay and pro-social behavior with the reporting of a significant, negative correlation between the two. This finding has been previously mentioned as an expected result since length of confinement, contingent on proper conduct, would likely lead to shorter stays by well-behaving juveniles. Such a conclusion has found support among several studies addressing the issue. For instance, Memel (2012) and Cuevas et al. (2017) both found negative correlations between positive conduct and length of stay.
Demographic variables did not reveal any direct statistical relationships in the analysis. Though race did not evidence predictive power in the regression portion of the analysis, it did have an indirect connection on length of stay. Table 5 suggests race may not be significant in this area though the higher rate of misconduct by minority youth would generally produce lengthier stays under MVJRC behavior reinforcement plan (Program Manual, 2017).

Theorizing beyond this basic correlation, however, becomes problematic when explaining relationships involving racial disparity. Certainly, more pro-social behavior points and fewer misconduct write-ups while at MVJRC should reduce length of stays regardless of race. The debate among criminologists and others includes whether racially influenced interactions impact length of stays beyond surface statistics, including the extent to which contextual variables may influence stays. At MVJRC, behavioral indicators were used to calculate length of stay. Correctional literature, however, has investigated length of stay on several levels. When examining adult sentencing, many have pointed to sharp racial disparities when comparing terms of incarceration, intimating that prejudice drives the outcomes (Brennan & Spohn, 2008; Spohn & Holleran, 2000). Other researchers have criticized these statistical interpretations as conclusions based upon “crude measures of offense severity and prior record,” further opining that when a “comprehensive list of common law offenses, with adequate sample size” are utilized in the analysis, the impact of race is marginal (Kramer & Steffensmeir, 1993, p. 357). Some recent studies have also suggested that sentencing guidelines have helped to alleviate the racial imbalance (Wang, Mears, Spohn, & Dario, 2013).
Though lengths of stay in juvenile corrections have been connected to least restrictive settings, which Dempsey and Blessinger (2011) contended reduced lengths of stay, many more studies have associated stays with recidivism rates. Because of the indefinite nature of dispositions within the juvenile system, recidivism rates are commonly employed as a measure when examining the impact of length of stay. The analysis typically queries whether shorter lengths of stay correlate with reduced recidivism rates. For example, Calley (2012) conducted a detailed examination of pertinent studies related to the prediction of recidivism. Calley’s review explored the interaction of numerous independent variables on recidivism and length of stay.

It is worth noting that the HIT has been used to predict risks of recidivism, both at MVJRC (Higgins, personal communication, April 15, 2016), juvenile facilities generally and adult prisons (Sperber & Smith, 2009). Despite its apparent predictive value in regard to recidivism, no statistical relationship was evident in this study between the HIT and length of stay leading one to question to what extent length of stay and recidivism can be examined on a parallel basis or whether similarities preclude the identification of statistical differences between them when utilizing the HIT as the sole measure. The absence of analytical connections between length of stay and other study variables makes a determination regarding the relationship between race and length of stay difficult. Any such conclusions from the study must rely on the descriptive statistics and negative correlations between length of stay, race, and institutional conduct.

Of the three research questions proffered in this study, research question three provided the most limited results. However, the data did provide results that were
completely unambiguous and expected—when rates of pro-social behavior increased, length of stay decreased. As MVJRC staff review the results of the study, they should find satisfaction in knowing that their youth are suitably rewarded for pro-social behavior through a reduction of confinement length according to their level of positive behavior. Furthermore, given the exploratory nature of the study, the negative correlation between pro-social behavior and length of stay indicates that interventions geared toward the improvement of pro-social conduct are essential to reducing length of stays across correctional facilities.

**Limitations**

As with most studies, there are limitations connected with facets of the research. This study is no different with the following discussion detailing those limitations.

**Sample Size**

The most obvious limitation in the study is the sample size. In this study, a total of 65 participant data sets were examined. When assessing the utility of the sample size it is important to note that the uniqueness of this specific data makes larger sample sizes difficult to obtain. Correctional facilities fluctuate greatly in the behavior program employed and the resulting data that may or may not be collected. For example, facilities may categorize or calculate pro-social behaviors differently. Consequently, it would be problematic to assess data across institutions as each may have their own unique procedures, a conclusion supported by DeLisi, Drury, et al. (2010) whose study used 813 participants across multiple institutions. This constraint would generally place a ceiling on available data sets for any study in this area. In addition, changes in the data
collection process and/or positive reinforcement strategies make longitudinal studies difficult within MVJRC. Though substantive results were obtained from the analysis despite the relatively low number of participants, the smaller sample size should be considered a limitation of the study.

Recommended levels of study participants vary according to statistical experts. Walker and Almond (2010), for instance, recommended approximately 100 participants in a multiple regression study. However, they acknowledge that individual sample sizes depend on the “nature of the research question . . . the type and distribution of the dependent (outcome) variable . . . and the complexity of the analysis” (p. 97).

Knofczynski and Mundfrom (2007) noted subject to predictor variable ratios have ranged from 10:1 to 30:1 in academic journals. The present study employed four independent variables for a predictor variable ratio of 16.25:1. This ratio places the sample size on the lower end of appropriate ratio ranges. As a result, some statistical relationships may not have been notable. Identifying those areas, however, is difficult though examples could include longitudinal studies of the data collection process and/or positive reinforcement strategies at MVJRC.

Sample size may be particularly noticeable when examining racial differences within the context of each research question. The percentage of minorities at MVJRC was higher than census numbers nationwide, an expected result given the general overrepresentation of minorities within the juvenile justice system. Nonetheless, it did not reach the levels seen across all residential placements, including juvenile correctional facilities where the more serious offenders are housed. Sickmund and Puzzanchera
(2014) reported that, nationwide, black youth make up 41% of the juvenile population while minorities, as a whole, account for 68%. Those numbers are significantly higher than at MVJRC where white youth are in the majority. Within the context of limitations, a data pool more statistically comparable to national averages from a racial standpoint may produce different results.

The sample size may also have limited the statistical power of the analysis. Two related articles have been cited frequently in this study, namely DeLisi, Drury, et al. (2010) and DeLisi, Caudill, et al. (2010). Each used the MAYSI-2 as a predictor variable related to institutional misconduct. Both of the DeLisi et al. studies examined 813 incarcerated juveniles within the California Youth Authority (CYA) system. DeLisi, Drury, et al. (2010) noted this as a possible limitation to their study. In the present study, 65 participants comprised the sample population and all were from one institution. It is possible that drawing the sample from one institution may aid the analysis. However, the results did not reveal any particular benefit. Thus, from a statistical standpoint, the difference in population sizes could create an analytical limitation.

A post-hoc power analysis was conducted using the G*Power statistical program. Setting the alpha value at .05, the analysis calculated a power of .138 (pro-social behavior), .998 (institutional misconduct), and .351 (length of stay). The calculations suggest that pro-social and length of stay results may not be as robust as expected. This may be a result of the sample size or predictor variable ratio. Further investigation is warranted.
Behavioral Variables

The use of a token economy as the core of pro-social behavior points presents another potential limitation to the study. Though token economies are considered an evidence based strategy (Becraft & Rolider, 2015; Clarida, 2006), the definition of behaviors within each economy and the rewards given in response to behaviors are site specific. It is crucial that targeted behaviors are clearly described in measurable and observable terms allowing for a high level of reliability.

At MVJRC, the token economy is described in detail including the type of rewards that are available to the youth. In addition, “socially desirable behaviors” are delineated in measureable and observable terms (Program Manual, 2017, p. 22). For example, attentiveness is one of the five enunciated behaviors in the rating system and described as “sitting up straight, facing forward, eye contact, awake and alert” (p. 22).

Nevertheless, the issuance of pro-social points to individual juveniles can be somewhat subjective. Several statistical details, however, suggest that the reliability of point dissemination across participants was general reliable. For instance, the MVJRC program manual did set a positive to negative reinforcement ratio goal of 4:1, a level surpassed in this study. Furthermore, the rate of misconduct write-ups and its association with both the angry-irritable and traumatic experience subscale scores parallel findings in existing literature. However, MVJRC staff did not conduct an interrater reliability test pertaining to the distribution of points nor was the researcher able to insist on such a process. Hence, there is no formal data to either support or reject reliability in general. This would include such contextual factors such as point distribution related to time of
day or staff habits. Therefore, the process should be considered a limitation particularly if used to select primary interventions calculated to affect the incarceration phase of a life course trajectory. Ironically, it could be the 4:1 policy goal that skews the issuance of pro-social points. For instance, staff may feel compelled to issue points to minorities even when the youth have not been deserving of their receipt. Nonetheless, the topic is worthy of more study.

The statistical difficulties inherent in the inclusion of the multiple conduct categories included within the MVJRC behavior reinforcement plan may have been limiting from an outcome standpoint. For example, MVJRC identifies misconduct as minor, Serious I and Serious II. Minor infractions included behavior such as an untidy room. A deliberate decision was made to exclude minor matters as research in the field did not typically address these issues. In addition, statistical limitations would likely arise with the multiple categories of misconduct which would reduce the data points in each category. As a result, all remaining misconducts were blended into one classification of “write-ups.” Pro-social behavior was also separated under the MVJRC reporting system into categories such as accepting limits and self-control. The decision to exclude subsections of pro-social behavior was made, not only due to the potential overlap of behavioral definitions, but chiefly due to the statistical hindrances that the sundry variables could trigger, most notably the predictor variable ratio.

The exclusion of behavioral sub-categories does present potential limitations. For instance, there could have been a comparison of various types of inappropriate behaviors reflected in the multiple classifications such as aggressive conduct, property offenses, or
defiance. Conversely, the assorted pro-social categories may have pinpointed areas of
trength in relation to pro-social conduct that would permit a more targeted intervention
strategy. Furthermore, the inclusion of all available behavioral categories may have
permitted a more statistically discerning exploration of responses across demographic
variables that the unified, pro-social and misconduct classifications did not.

The omission of the sub-categories may also hinder the conversion of findings
into meaningful services available in juvenile correctional facilities. Certainly, if tidiness
was determined to be a significant problem in corrections, programming could be adapted
to address those concerns. More likely would be a statistical discovery that aggression
posed a serious risk to facility operations. Knowing this information could provide
correctional officials with focused suggestions of future behavioral strategies.

Measures

The two assessment tools utilized in this study may be, in fact, a limitation when
evaluating pro-social behavior. As stated previously, their primary application is to
screen for mental health problems and cognitive distortions. Those areas of
concentration may not be suitable for the prediction of pro-social behavior. In addition,
the pro-social and misconduct variables may change over individual lengths of stay. As a
result, they may not be static in nature making a statistical relationship more difficult to
identify. Though appropriate measures likely exist for these purposes, their
unavailability for the study makes the MAYSI-2 and HIT a potential limitation.

Further assessment limitations may be related to contextual characteristics of the
assessments. Luther and Cockroft (2017) emphasized that “ensuring that psychological
assessments are appropriate and fair for clients from diverse cultures is challenging for most practitioners” (p. 115). Though the validity process described in Chapter 3 indicates racial balance in assessment results, the issue of developing a culturally neutral assessment, particularly in assessing behavioral and emotional responses, is difficult. This is reflected in the historic challenges to standardized testing alleging a discriminatory set of results, often based upon cultural or disability status (Stevenson, Reed, & Tighe, 2016). A more thorough analysis of these areas of inquiry may be warranted.

**Future Research**

Correlational relationships that were not the primary target of any particular research question are potential future research topics. For instance, the MAYSI-2 angry-irritable subscale displayed a positive correlation with HIT scores suggesting that as the MAYSI-2 related scores increase, the HIT scores also rise. However, HIT scores did not individually predict institutional misconduct even when the angry-irritable subscale did so. The question left to researchers is why the HIT score did not predict institutional misconduct. It is possible that the different focuses impact their predictive ability. Thus, the serious mental health disorders screened by MAYSI-2 may play a larger and more significant role in patterns of institutional misconduct than the cognitive distortions identified by the HIT. The results of this study highlight differences in the two measures as future research converges on their individual utility as predictors of misconduct and allows correctional officials to determine where to place their intervention energies depending on the outcomes they desire.
Despite the lack of a predictive capacity, the HIT did display a statistical relationship to the MAYSI-2 angry-irritable subscale that, in itself, may be valuable for correctional officials. Study results suggest that cognitive distortions reflected in the HIT score may contain the same dispositional elements as those found in the angry-irritable subscale. From an intervention and programming standpoint, a reduction in cognitive distortions may diminish the severity or frequency of anger outbursts that, in turn, would decrease misconduct write-ups and the engagement in positive behaviors that are further encouraged through differential treatments. Consequently, there still exists a value in administering the HIT upon admission to a facility. These findings also reinforce the notion that an understanding of the life course, including a delinquency phase (Figure 1), cannot be examined through a narrow set of factors but should be viewed through models employing a broad range of components (e.g., socioecological model).

Though the HIT results provide some benefit to the study, the sample size limited the analysis to the one overall HIT scale. As stated in Chapter 3, the HIT is not limited to one scale. In this study, only the HIT composite score was utilized as a variable due to sample size limitations. However, Table 2 lists the 10 subscales that comprise the HIT assessment. The research base does not contain a study in which HIT alone is investigated for its effectiveness in predicting behavior during confinement. Future research should attempt to isolate each of the subscales and analyze them for predictive properties.

At MVJRC, the HIT and MAYSI-2 are both administered on a pre- and post-confinement basis. This allows for calculations establishing a per day or per stay
increase or decrease in assessment scores. The resulting data could then be analyzed for statistical relationships to pro-social and misconduct rates. For example, pre- and post-confinement scores would enable the researcher to explore whether score differentials have a relationship to the gross number of pro-social points or misconduct write-ups or the ratio of points to write-ups. The scope of this study did not include post-assessment scores. Nonetheless, these findings could be used as a metric evaluating the effectiveness of on-going, interventions, therapies, and positive reinforcement strategies.

Examining these “book-end” measures may permit a more intensive look at the value of incarceration, particularly in the juvenile confinement stage, where rehabilitation and societal re-integration are considered paramount (Troutman, 2018). For example, are we seeing a measurable reduction in behavioral problems during terms of incarceration? These could then be linked to current practices within a facility in an attempt to establish a functional relationship between interventions and outcomes. The institutionally based outcomes could then be examined in conjunction with recidivism rates to form a more complete picture of the role of confinement specific outcomes and their influence on a delinquent phase of the life course.

Another avenue of inquiry generated by study findings relate to cultural behavior patterns and pro-social and misconduct rates, particularly racial differences discussed in this study. Since a limited percentage of the variance in the present study was explained by race, there exists a range of future inquiries available in this area. There has been some research on the cultural variances in behavior and social interaction. Harrison, Long, Tommet, and Jones (2017), for example, reviewed a range of studies identifying
cultural differences with eye contact, facial expression, and facial recognition. Harrison et al. even discovered a variance in type of play with unrestrained play viewed more positively in the black culture. Aggression and violent behavior have also been found culturally influenced. Lee et al. (2014) noted that “over time, community-level structural deterioration compromises the ability of age linked institutions of social control to supply people with pro-social strategies of action” (p. 340). In addition, Simons et al. (2003) noted that black youth are more likely to inappropriately convey anger than white adolescents.

These cultural components of behavior bear investigation within the context of this study. Study results revealed minorities at MVJRC had higher rates of both pro-social points and misconduct write-ups. Do cultural factors influence the issuance of pro-social points or misconduct write-ups? One view of the discrepancy would contend that the issuer was biased or prejudicial when recording behavior. Conversely, an argument could be made that cultural factors encourage minority youth to behave in more overt manners than their white counterparts. Given the equally higher rates of both pro-social and misconduct behaviors by minority juveniles, it is difficult to claim that prejudicial considerations by staff drove higher rates. Nonetheless, cultural dynamics may affect actual behavior during confinement or the behavior reinforcement system utilized by facilities. Further inquiry in this area is necessary to reach clear conclusions on the subject.

From a cultural standpoint, the angry-irritable subscale creates appealing avenues of inquiry. The angry-irritable subscale score, drawn from a validated MAYS1-2
assessment, has shown anger and irritability levels higher for minority youth. This raises the question as to the reason for the elevated scores and whether they may be influenced by cultural factors including biases. Though assumptions can be made regarding the reliability of the score, given the self-reporting nature of the measurement tool, cultural stimuli may still guide answers provided by youth being administered the assessment, a fascinating research path to explore.

The practical application of the composite variables from research question three, also presents a potential for further research. For instance, a facility could develop a risk matrix of individual variables from the composite. As the matrix is reviewed, services and interventions could be inserted into a juvenile’s program based upon the risks exposed by the matrix variables. Employing a matrix based intervention program, would inhibit a focus on individual factors such as race. This kind of application will require additional research into the interaction between variables and/or selected interventions.

Combining the composite variables, IEP status, HIT scores, angry-irritable subscale scores, and traumatic experience subscale scores, with demographic status may provide statistical indicators for more effective behavioral interventions. Potential areas of inquiry would include the creation of a composite variable score and an analysis of the impact that demographic status may have on those scores. Recommended treatment options should also be examined from a cultural perspective for any response variances between ethnic or racial groups or a determination of the effectiveness the strategies by culture groups. Furthermore, the injection of recidivism into the behavioral model would add an attractive dimension to the analysis. For example, would the composite variable
scores decrease the rate of recidivism? Each of these research opportunities would add
depth to the literature base.

Conclusion

The life course trajectory, with an emphasis on the delinquency phase (Figure 1),
framed this exploratory study. The analysis focused on the role and possible outcomes
during periods of incarceration, both positive and negative. The research questions
examined whether demographic characteristics and organic risk factors, imported into a
juvenile rehabilitation center, could serve as predictors of pro-social behavior,
institutional misconduct, or length of stay. Results indicated that these variables could,
indeed, provide assistance with predicting behavioral patterns during a period of
confinement.

The analysis produced outcomes that suggest possible relationships in a limited
population of incarcerated juveniles which may identify distinct patterns of delinquent
youth and their anticipated behavior during incarceration. First, study results confirmed
that demographic characteristics could play a role in behavior prediction leading to
possible treatment options based upon those factors. Among the three demographic
categories, minorities had higher pro-social and misconduct write-up rates than their
counterparts. This finding may support treatment options that stress a more universal
approach to interventions rather than race specific. Second, organic characteristics were
associated with institutional misconduct prediction. Levels of anger and irritability were
again shown to be predictive of institutional misconduct. Traumatic experiences during a
juvenile’s life can also be instrumental in forecasting institutional misconduct as
evidenced by the correlational relationships exhibited in the study results. In addition, cognitive distortions were correlated with misconduct rates. Finally, IEP status provided a limited capacity for misconduct prediction. These results describe an incarcerated youth, most at-risk for institutional misconduct, as angry and irritable with a history of trauma and whose thinking patterns may be biased by cognitive distortions.

Developing a treatment protocol for these characteristics will be challenging. Though static factors cannot be altered, culturally responsive interventions can be designed to address inappropriate behavior within diverse, cultural subgroups while considering the role that institutional culture itself may contribute to the picture. Culturally sensitive group mentoring strategies are one such example that can alter life course trajectories in a positive direction. Washington, Barnes, and Watts (2014), for instance, developed “pyramid mentoring” which they define as a culturally centered, multigenerational group mentoring process. The base of the pyramid framework finds junior (e.g., undergrads) and senior adult males (“Elders”) bracketed with at-risk black males. The goal of each team is to create an environment in which the black Elders mentor the youth through “weekly activities designed to develop thinking and behavior patterns that are healthy responses to their developmental challenges and upsetting thoughts and emotions” (p. 652). Identifying minority youth suitable for a mentoring program could be accomplished through the culturally responsive interventions determined through data from this study. Outcomes can be assessed through length of stay, pro-social points, misconduct write-ups, positive to negative reinforcement ratios, angry-irritable subscale scores, or other measures described in the study. The outcomes
could be unpackaged in a comprehensive sense by a more detailed examination of how, when, and by whom pro-social points were awarded, thereby establishing a cultural context in which the earning of points can be explored. Such an examination could assist in strengthening the overall token economy system. Any improvement in these measures would, arguably, interrupt the negative life course trajectory and move the graduating juveniles away from delinquent behavior onto a more positive path.

On an individual basis, the sum of demographic and organic risk factors identified in Figure 1 were not statistically significant. Nonetheless, the study detected several composite factor groupings providing predictive insight into institutional conduct. The existence of statistical variable groupings influencing the life course trajectory suggests additional factors, outside the purview of this study, may be also be significant. Looking beyond traditional demographic features, factors such as family dysfunction attributes (e.g., single parent homes, domestic violence) and prior arrest or confinement histories are logical choices for composite components. The identification of predictive or correlative factors, including variable groups, should only be the starting point in the utilization of data. The data should then be evaluated for its usefulness in establishing differentiated interventions. The advantage of data driven, predictive patterns is their ability to advance individualized behavioral strategies and treatments and avoid “cookie cutter” interventions. Such tailored behavior plans are commonly seen on Individualized Education Programs (IEPs) and should be a goal for institutions caring for all confined juveniles who seek to avoid further pitfalls in their personal life course. The tactical approach to improved positive interventions could also be aided by additional intake
assessments or procedures designed to measure the cultural context each juvenile may be importing.

This study suggests that patterns of institutional behavior can be predicted to a degree. It now becomes incumbent upon correctional officials to adopt a systematic strategy for behavior prediction, including the use of intake assessments as a prediction tool. With a forward thinking, data driven approach to behavior management, the juvenile justice system may see outcomes improve for incarcerated juveniles.
APPENDIX A

MIAMI VALLEY JUVENILE REHABILITATION CENTER DAILY BEHAVIOR CHART
## Appendix A

**Miami Valley Juvenile Rehabilitation Center Daily Behavior Chart**

<table>
<thead>
<tr>
<th>Fri</th>
<th>Accepting Limits</th>
<th>Self Control</th>
<th>Respect for others</th>
<th>Goal #1</th>
<th>Goal #2</th>
<th>Ratings</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 7</td>
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<td>3 - 4</td>
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<td>6 - 7</td>
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<td>7 - 8</td>
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<td>8 - 9</td>
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</tbody>
</table>

**Weekly Rating Average (sum of daily rating averages divided by number of days 7):**

- **Accepting Limits**: accepting consequences, accepting "no", dealing with contradictory messages.
- **Self Control**: ignoring distractions, dealing with anger, dealing with feelings.
- **Respect for Others**: sportsmanship, cooperation, helping others.

**Low-Level Behaviors**: Count towards ratings (0 = poor, 1 = fair, 2 = good, 3 = excellent).
- **Respectfulness**: sitting up straight, facing forward, eye contact, aware and alert.
- **Participation**: contributing to discussion, asking questions, making an effort.
- **Patience**: taking turns, raising hand before speaking, tolerant with peers.
- **Time Management**: accomplishing tasks timely or as directed.
- **Personal Organization**: tidiness, managing personal items and appearance, remembering.

**Target Behaviors established with Counselor (Treatment Goals, Progress Review Goals).**
APPENDIX B

MAIMI VALLEY JUVENILE REHABILITATION CENTER BEHAVIOR REINFORCEMENT PLAN
Appendix B

Miami Valley Juvenile Rehabilitation Center Behavior Reinforcement Plan

BEHAVIOR REINFORCEMENT PLAN

MVJRC shall implement a behavior reinforcement system to identify, acknowledge and reward desired behaviors in order to increase pro-social behavior.

Points System:

1. Standard Target Behaviors: Standard Target Behaviors target socially desirable behaviors. Standard Target Behaviors are identified on the MVJRC Behavior Chart as follows:
   a. Accepting Limits: Targets desired behavior in contrast to oppositional behavior.
   b. Using Self-Control: Targets desired behavior in contrast to impulsive behavior.
   c. Respect for Others: Targets desired behavior in contrast to disrespectful behavior.

2. Specialized Target Behaviors: Specialized Target Behaviors target socially desirable behavior. Specialized Target Behaviors are identified on the MVJRC Behavior Chart as follows:
   a. Goal #1/Goal #2: Targets desired behavior specific to Personal Program Plan. These goals are identified weekly as needed by the Juvenile pursuant to weekly collaboration with the MVJRC Mental Health Therapist. Said goals are documented at the top of the MVJRC Behavior Chart with each weekly issuance.

3. Social Reinforcement: Staff shall reward demonstration of Standard and Specialized Target Behaviors for each Juvenile with verbal praise. Each instance of verbal praise shall be recorded via staff initials on the MVJRC Behavior Chart.

4. Primary Reinforcement: Each instance of verbal praise recorded via staff initials on the MVJRC Behavior Chart translates into a “Point”. Points are cumulative and are tallied daily towards a running “Point Balance”. Juveniles, who do not receive a write-up that day, receive “Bonus Points” that contribute to the point balance. Youth in the Belonging/Mastery phases receive 3 bonus points, Independence/Generosity receives 2 bonus points and Graduates receive 1 bonus point daily for absence of write-ups. The accumulation of points represents a “token economy” that can be cashed in weekly for tangible items and materials at the MVJRC Point Store.

5. Point Store: Juveniles shall have an opportunity during Privilege Time one or two times weekly to cash in points to purchase items/materials from the Point Store. Juveniles may purchase one item per Privilege Session pursuant to Point Balance. Staff indicates purchase by documenting amount of purchase in “Minus Point Store Purchase” on the MVJRC Behavior Chart. Point Store purchases are not allowed if a Juvenile is not present in Privilege Session due to write up.

Rating System:

6. Low-Level Behaviors: The rating system is applied concurrently with the points system and targets socially desirable behaviors indicative of personal organization and overall attitude. Low-level behaviors are identified on the MVJRC Behavior Charts as follows:
   a. Attentional: Examples include sitting up straight, facing forward, eye contact, awake and alert.
   b. Participation: Examples include contributing to discussion, asking questions, making an effort.
   c. Patience: Examples include taking turns, raising hand before speaking, tolerant with peers.
   d. Time Management: Examples include accomplishing tasks timely or as directed.
   e. Personal Organization: Examples include tidiness, managing personal items and appearance, remembering items/tasks.

7. Secondary Reinforcement: Staff may reward long-term demonstration of excellence regarding Low-level Behaviors at specific stages of program advancement. Juveniles do not use points but may be eligible for special program privileges or extension of existing program privileges. This is accomplished by Program Supervisor or designee via Petition for Stage Transition Form. Said form is signed by staff and Juvenile. Staff document most recent Rating Balance from Behavior Chart. If Juvenile qualifies for extended privileges, this is indicated by checking which privilege on the menu is desired. Petition for Stage Transition is submitted to Director or designee for review. The schedule for secondary reinforcement is as follows:
a. Transition to Mastery/Rating Balance 2.92 – 3.00
   (1) Extended phone call time (5 minutes extra)

b. Transition to Independence/Rating Balance 2.95 – 3.00
   (1) Extended phone call time (1 extra call).
   (2) Temporary Release – 4 hour visitation.

c. Transition to Generosity/Rating Average 2.97 – 3.00.
   (1) Extended phone call time (2 extra calls).
   (2) Temporary Release – 4 hours visitation.
   (3) Bonus = 15 points added to point balance.

d. Transition to Graduate and all Graduate Transition in repeat phases/Rating Balance 2.98 – 3.00.
   (1) Extended phone call time (3 extra calls).
   (2) Temporary Release – 4 hour visitation.
   (3) Bonus = 30 points added to point balance.

   a. Hourly:
      (1) Juveniles carry Behavior Chart with them to each activity.
      (2) Staff collects Behavior Charts from juveniles at transition end point.
      (3) Staff recognizes instances of Target Behaviors; provide praise and initial Behavior Chart.
      (4) At end of activity, staff provides a rating pursuant to demonstration of Low-level Behaviors.
      (5) Staff returns Behavior Chart to juveniles at transition beginning point to next activity.
      (6) If Juvenile forgets to bring Behavior Chart to activity, points and rating may not be tallied for that period of time.

b. Daily:
   (1) Staff collects Behavior Charts from youth at bed-time.
   (2) Staff returns Behavior Charts with clothing/linen issue.

c. Weekly:
   (1) Staff collects week-old Behavior Charts from youth on Sunday at bed-time.
   (2) Staff return new Behavior Charts with clothing/linen issue.
   (3) Youth review Specialized Target Behaviors with Mental Health Therapist weekly during therapy session. Changes may be made to Specialized Target Behaviors under the therapist’s direction as evidenced by Therapist and youth signature. Changes may be high-lighted on Behavior Chart by Therapist to alert staff of updated goals.

WORK SESSIONS

Youth will be responsible for maintaining common areas of the facility in addition to caring for rooms, dayrooms, bathrooms, clothing, supplies and materials. See Appendix #6 for outline of cleaning responsibilities.
## GRADUATED PRIVILEGE SCHEDULE

<table>
<thead>
<tr>
<th>Category</th>
<th>Belonging</th>
<th>Mastery</th>
<th>Independence</th>
<th>Generosity/Graduate</th>
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<tbody>
<tr>
<td>Personal Hygiene</td>
<td>MVIRC</td>
<td>Personal</td>
<td>Personal</td>
<td>Personal</td>
</tr>
<tr>
<td>Clothes</td>
<td>MVIRC</td>
<td>MVIRC</td>
<td>Personal</td>
<td>Personal</td>
</tr>
<tr>
<td>Music</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>AM/FM Radio/Headphones</td>
</tr>
<tr>
<td>Peer Mentors</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>In-Take Introduction Day and Night Circle Support (as graduates)</td>
</tr>
<tr>
<td>Transition Release</td>
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<td></td>
<td>8 Hours Possible 2 day</td>
<td>2 Day, 3 Day, 5 Day, Additional 2 Day</td>
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<tr>
<td>GED</td>
<td>NovaNet</td>
<td>NovaNet</td>
<td>GED</td>
<td>GED</td>
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<tr>
<td>Temporary Release</td>
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<td>Staff</td>
<td>Parent</td>
<td>Parent</td>
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<td>Reading Materials</td>
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<td>4</td>
</tr>
<tr>
<td>Pen/Journal</td>
<td>As determined by Therapist</td>
<td>As determined by Therapist</td>
<td>As determined by Therapist</td>
<td>As determined by Therapist</td>
</tr>
<tr>
<td>Field Trips</td>
<td>---</td>
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<td>---</td>
<td>Off Site</td>
</tr>
<tr>
<td>Community Service</td>
<td>On Site</td>
<td>On Site</td>
<td>Off Site</td>
<td>Off Site</td>
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<tr>
<td>Ping Pong</td>
<td>Living Area</td>
<td>Living Area</td>
<td>Living Area</td>
<td>Living Area</td>
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<tr>
<td>Game Books</td>
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<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Letter Writing</td>
<td>Privilege Time</td>
<td>In Room</td>
<td>In Room</td>
<td>In Room</td>
</tr>
</tbody>
</table>
GRADUATED PRIVILEGE POLICIES

AM/FM RADIO POLICY
✓ Youth are permitted to have an AM/FM radio in Generosity.
✓ Headphones must be used with the radio at all times.
✓ Radios can be played in your room only and must be played at a reasonable volume.
✓ Radios must be AM/FM radios only. No CD players, MP3 players or any other such listening device.

PING-PONG POLICY
✓ All youth are permitted to play.
✓ If you receive a Serious Problem Behavior, you will not be permitted to play Ping Pong for one week.
✓ Youths that are Empowered may not play Ping Pong.
✓ Do not ask to play Ping Pong. Asking may forfeit the privilege of playing.

FIELD TRIP CRITERIA
✓ Youth must be in Stage of Generosity or a Graduate.
✓ Youth must not be currently Empowered.
✓ Youth must not have received a Serious Problem Behavior since the last field trip.
✓ Youth must not be deemed a security risk.

GAME BOOK
Residents who have earned the privilege of pen and journal may also have in their rooms 2 of the following (Once in the stage of Mastery):
✓ Crossword Puzzle book.
✓ Word Search book.
✓ Sudoku book.

Said books must be free of staples. Youth may use blue pen in said books. Blue pen is not to be used in any other material outside of these books and journals. Staff may remove said books and/or journal and pen indefinitely if abuse of this privilege is discovered or suspected.

LETTER WRITING
✓ Youth who are in Mastery, may have writing privileges in their rooms. Youth in Belonging or who have had suspended pen privileges will be issued envelopes and paper by MVJRC during privilege session. Indigent youth shall be provided 2 metered envelopes and paper per week. Parents may provide stamps to all youth for further communication.
✓ Youth in Mastery may be provided 1 box (not to exceed 100 sheets) of paper, by parents to be kept in youth rooms. Packaging may not contain sharp plastic, metal, staples or spirals.
✓ Youth may write the letters in their room using blue pen (after entering the stage of Mastery). Envelopes need to be addressed in their rooms as well. Letter is to be folded and placed in unsealed envelope to present to staff at the beginning of Privilege Time on "C" shift.
✓ Pen is to be used for journaling, crossword puzzles, therapy and letter writing only. There shall be no blue link on paper or envelopes not intended to send out. Drawing is to occur in journal not on letter writing materials. If the pen is used beyond its described uses for any reason, it may be removed for 14 days for a first offense and 30 days for subsequent offenses.
✓ Materials in room must be kept tidy. Nothing should be placed in empty envelopes.
REFERENCES
REFERENCES


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