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I, Shahin Tasharrofi, hereby submit this original work as part of the requirements for the degree of Doctor of Philosophy in Criminal Justice.

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Beyond Reducing Recidivism: Highlighting the Health Status and Needs of Juveniles in a Residential Facility

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Beyond Reducing Recidivism:
Highlighting the Health Status and Needs of Juveniles in a Residential Facility

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By

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Abstract

Residential facilities are commonly used for treatment of serious juvenile offenders. However, the costs associated with housing youth in these facilities, along with the weak and inconsistent evidence to support their effectiveness, have raised questions about their utility. To date, much of the literature has focused on whether residential placement reduces recidivism. Yet, a growing body of literature has focused on the health status and the health needs of youth in these facilities. Understanding these aspects and how they might affect youths' treatment outcomes served as the primary motivation for the current study, which was conducted in a juvenile residential treatment facility located in Cincinnati, Ohio. Data were collected from the residents' archived files covering 2017 to 2019 ($N = 99$). The results suggested most youth entered this facility with pre-existing health conditions, including mental, sexual, and physical health challenges. Many youths also presented with an extensive record of risky sexual behaviors and adverse childhood experiences. The results also shed light on availability and utilization of health services, such that some youth refused to take advantage of health services they were offered at the facility. Substance use disorder and ADHD were the most prevalent mental health diagnoses, followed by anxiety and depression. The symptoms associated with these conditions, along with treatment interventions the residents received, appeared to affect youths' successful participation in the program.

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The greatest achievements are often interpreted as one's hard work and dedication but any triumph involves support and trust in one's potential. Mine has been no exception. The completion of this milestone is a product of support and inspiration from a collection of people who have trusted in me and my abilities throughout my academic career and beyond. They helped me along this journey and made my dreams become a reality. I would like to use this opportunity to thank them.

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proving that you are “always there” for me. You have done so much for me that I am running out of room to thank you for directing my dissertation. I can count with one hand the number of people that have inspired me as much as you have with their personality, knowledge, and yet humbleness.

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close this note by thanking Sophie for putting a smile on my face, and Oreo, for teaching me the value of curiosity and joy of discovery.

A Final Note

I am writing this piece (it is a big one) during one of the strangest times in human history—the COVID-19 pandemic. In the United States, the unemployment rate has increased dramatically, the stock market has crashed, and social interactions have been altered in an unprecedented way. The consequent quarantine and social distancing have shown how we, as humans, rely on meaningful interactions with others and how isolation can affect our health and well-being. It has been only about four months since the first COVID-19 case was detected in the United States. Yet, hundreds of studies have already been published on how isolation and social distancing, despite unlimited access to the internet and virtual space, have affected the mental health of the general public. These discussions are relevant here, because the present study was conducted in a residential facility that houses juvenile offenders. The pandemic highlighted the importance of health, but also reminded that restraining freedom and restricting opportunities could be consequential for health and well-being. The uncertainty of "what is next" has affected millions across the globe and billions of dollars have failed to restore the health damages done to those affected by the pandemic. It is my hope that the current study (and similar efforts) be a step, even if small, toward understanding the basic needs of vulnerable populations that come into the contact with the justice system.

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Chapter 1: Introduction

Despite a decline in delinquency cases processed in the United States over the past two decades, dealing with serious and chronic juvenile offenders remains a challenge for the juvenile justice system. This population accounts for roughly nine percent of all cases that come to the attention of the juvenile justice system. Of the 818,900 delinquency cases handled by juvenile courts in 2017 (a 51% decline in the number of cases compared to 2005), about 69,700 received placement and 3,800 were waived to adult courts (Hockenberry, 2019). Most of these youths are serious and violent offenders that have had repeated contacts with the justice system (Baglivio et al., 2014).

Above and beyond repeated offending that jeopardizes public safety, youth involved in chronic offending are often exposed to risk factors (e.g. parental incarceration or neighborhood violence) that negatively affect their physical (Teplin et al., 2014; Turney, 2015) and mental health (Dannerbeck, 2005; Shufelt & Cocozza, 2006). Thus, many youth who enter the juvenile justice system have needs that extend beyond behavioral rehabilitation. This raises several foundational questions: 1) what are the health needs of youth in the juvenile justice system; 2) are those health needs impacted by the incarceration experience; and 3) do those needs impact behavioral treatment outcomes? Providing insight and preliminary answers to these questions is the primary aim of this dissertation.

Because research on serious juvenile offenders has mainly focused on recidivism as an outcome, studies that explore the health needs of this population remain relatively uncommon (but see, Aalsma et al., 2012; Barnert et al., 2019; Barnert, Perry, & Morris, 2016; Bolin & Jones, 2006; Brown, Davis, & Shlafer, 2020; Forrest et al., 2000; Golzari, Hunt, & Anoshiravani, 2006). Research into the health and well-being of incarcerated juveniles is needed to fill that gap.

But more than filling a gap, this line of research is needed because it may illuminate avenues by which the juvenile justice system could be improved. Because youths are undergoing developmental changes that impact physical, mental, and behavioral domains, research that focuses on their health status and needs will be critical to the juvenile justice system's mission of acting in the best interest of the "whole child".

Research that explores the childhood roots to health disparities suggests providing carefully designed, health-focused interventions is substantially more effective when delivered to children and adolescents than adults (Shonkoff, Boyce, & McEwen, 2009). A similar argument has been made in the criminology literature, suggesting early intervention to thwart future criminal behavior is a more effective treatment strategy than attempting the same in adulthood (Farrington & Welsh, 2008). Yet, the juvenile justice system has not fully recognized the unique opportunity it has to promote health and prevent future public health problems (Teplin et al., 2014). The health needs of serious and chronic adolescent offenders, although well-recognized, may not be receiving appropriate attention by the system (Brown, Davis, & Shlafer, 2020). It may even be the case that the juvenile justice system has contributed to the poor health of youth by placing them in a restrictive environment without taking precautions about how incarceration might interact with individual characteristics in producing poor health (Connor et al., 2002; Rowe et al., 2004). This suggests that, relative to treatments that focus on reducing recidivism, the juvenile justice system has initiated far less health-focused interventions.

This is problematic for at least three reasons. First, the poor health of juvenile offenders could contribute to a decline in public health. For example, because risky sexual behaviors are common among juvenile offenders (Golzari, Hunt, & Anoshiravani, 2006; Pack et al., 2000;

Kelly et al., 2000), they could compromise the health of their partners by spreading infectious diseases, such as a sexually transmitted diseases (Massoglia & Pridemore, 2015).

The second reason it is problematic that the juvenile justice system has not focused on health centers around children and adolescents' flexibility and response to health-focused interventions (Heckman, Pinto, & Savelyev, 2013). Recent evidence has linked exposure to stressful childhood events to chronic diseases later in life (Miller, Chen, & Parker, 2011), including, for example, autoimmune conditions (Dube et al., 2009). Studies published in the pediatrics literature revealed the odds of developing chronic diseases could be significantly reduced if the treatments are delivered early in life. In contrast, leaving them untreated can impact health across the remainder of the life course (Shonkoff et al., 2012). This point is particularly salient because the public generally believes addressing the health needs of vulnerable youth is a matter of justice, equity, and productivity across the life course (Heckman & Masterov, 2007). However, investing in the health and wellness of today's youth is an investment in tomorrow's society.

The third reason why addressing health should be a focal point for the juvenile justice system centers on the possibility that poor health might contribute to delinquency. The health-based model of desistance demonstrates how poor health could contribute to further engagement in crime through pathways that had not been previously explored (Link, Ward, & Stansfield, 2019). Building on theories of desistance (Sampson & Laub, 1995), one study found that poor mental and physical health contributed to increased recidivism risk by limiting access to employment and financial stability and/or interrupting family ties (Link, Ward, & Stansfield, 2019). Because empirical evidence has repeatedly highlighted the role of employment and family bonds for successful reintegration of offenders into society (e.g. Berg & Huebner, 2011; Laub &

Sampson, 1993; Uggen, 2000), evidence of a link between health and financial opportunities and family bonds raises the possibility that the relationship between health and crime may be stronger than has previously been acknowledged (e.g. Andrews & Bonta, 2014; Bonta, Blais, & Wilson, 2014). That is, poor health might not directly promote offending, but it could introduce barriers that lead to adverse consequences for reentry and desistance.

Unfortunately, studies that explore the consequences of poor health on offending and treatment outcomes remain scant. Consequently, our understanding about how poor health in serious juvenile offenders might interfere with their treatment goals (i.e., behavioral change) is limited, leaving a sizable gap in knowledge about how to properly address their health needs and allocate resources to enhance treatment efficiency.

Of studies that focused on juvenile offenders' health, the vast majority has focused on the prevalence of health conditions. This line of research is valuable because it is first necessary to establish an understanding of the health status and health needs of the population of focus. The next question is why such conditions and disparities exist and how they might affect treatment outcomes. As will be explained shortly, prevalence studies have repeatedly highlighted the health disparity between institutionalized juvenile offenders and youths in the general population. However, little attention has been paid to exploring the factors that might contribute to poor health among juvenile offenders. It also remains an empirical question how poor health might be consequential for the juvenile justice system's outcomes. Indeed, the theoretical reasonings reviewed in later chapters (chapters 3 to 5) suggest mental health might affect treatment outcomes of youths in residential facilities. Thus, the current study attempts to explore this possibility.

The Current Study

Generally, there are two type of studies in the literature that have explored the health aspects of serious juvenile offenders. The first often uses a large sample to provide a snapshot of health risk and needs of youths in residential facilities or how their health needs are addressed across treatment facilities (e.g. Gallagher & Dobrin, 2006; Sedlak & McPherson, 2010; Shufelt & Cocozza, 2006). This type of research is useful in providing an overview of residential facilities and gaining a general picture of youths' health risk and needs in these programs (and sometimes, whether they are being addressed in these facilities). However, these studies provide little insight into the individual differences that might affect health and treatment outcomes. They also fail to identify specific program features that might negatively or positively contribute to health.

The second type of study focuses on a smaller number of residential facilities (typically only one) and attempts to gain an in-depth understanding about the characteristics of those facilities and/or youths residing in them. Often, the goal is to identify specific features of the program or particular characteristics of the residents that might contribute to a positive or negative treatment progress or outcome (e.g. Hooper et al., 2000; Connor et al., 2002; Wise, Cuffe, & Fischer, 2001). This type of research often utilizes a small sample because in-depth understanding about a phenomenon requires gathering detailed data, which increases the time and resources necessary to conduct the study.

The current study was designed like this second type—an in-depth focus on the health status and needs of youth at a single facility. Two overarching goals guided the current study. The first goal was to understand the health status and needs of the residents by reviewing their archived case files. The second mission was to explore whether pre-existing mental health

conditions interfere with youths' treatment outcome. This will be achieved by investigating the youth's discharge status (graduation, completion, or failure) upon being released from the program.

Theoretical Framework

Multiple theoretical frameworks will be interwoven and used to inform the current study. Besides reviewing the literature on serious juvenile offenders and treatments they receive in residential facilities, this study will draw on foundational work from the inmate adaptation literature (e.g. Armour, 2012; Durcan, 2008; Thomas, 1977) and will weave in insights gleaned from research into the link between mental and physical health conditions and treatment success. Other theoretical frameworks are borrowed from research that links adverse childhood events to health and developmental trajectories during adolescence and adulthood (Belsky et al., 2010; Brown & Shillington, 2017; Moffitt, Lynam, & Silva, 1994; Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012).

Much of the work on inmate adaptation has been devoted to understanding the factors that contribute to inmates' misconduct during incarceration. Scholars have found that inmate experiences during incarceration, such as lack of freedom and limited access to goods, could have an impact on their psychological well-being and behavior. This argument, which has come to be known as the deprivation model, points to the "pains of imprisonment" as a key factor in explaining misconduct (Sykes, 1958).

The counterargument, referred to as the importation model, suggests that the behavioral and emotional problems among the incarcerated population are not the product of the prison experience. Rather, the importation model argues that individual differences and experiences

prior to imprisonment—such as exposure to street culture and community violence—shape misconduct during incarceration (Mears et al., 2013).

Relatedly, a few studies have investigated how traumatic experiences affect inmates' mental health (Armour, 2012; Durcan, 2008). Consistent with prior research, this line of work supports both importation and deprivation models in explaining poor mental health among inmates. However, these theoretical frameworks have been exclusively applied to adult inmates. In other words, the applicability of these models has not been fully explored for youth in residential facilities.

The current study will not attempt to adjudicate between the deprivation and importation models. Instead, the aim is to adapt and extend these two models by focusing on health status of serious juvenile offenders. The present study proposes that the health status of incarcerated juveniles can be understood through deprivation and importation *health* models, such that poor health could be a product of the incarceration experience itself (deprivation health model) or a result of pre-existing health conditions (importation health model).

When these two health models are juxtaposed, it raises the possibility of a third model—what we will call the *exportation health model*. This model would predict individuals who had been exposed to official interventions would be presented with health symptoms that manifest later in life. Although the current study will not be able to empirically address hypotheses derived from the exportation health model, deriving expectations from this model will be informative when contextualizing the findings from the analysis.

To summarize, prior studies suggest health needs and risks are significantly more prevalent among justice-involved youths compared to youths in the general population and health conditions are even more pronounced among serious juvenile offenders (Aalsma et al.,

2017; Boesky, 2002; Brown, Davis, & Shlafer, 2020; Teplin et al., 2002). The question then arises whether these youths enter residential facilities with health conditions (importation health model) or they develop them during incarceration (deprivation health model). A review of the literature on health of youth in residential facilities, which will be described in the subsequent chapters, reveals that evidence favoring the importation health model is stronger than that for the deprivation health model. With that as a backdrop, the importation health model is the focus of the current study and informs the analytical approaches discussed in chapter 6.

The next four chapters review the philosophies and principles that underlie the juvenile justice system's practices (chapter 2), the literature on health aspects of juvenile offenders (chapter 3 and chapter 4), as well as the literature on residential treatment facilities (chapter 5). These discussions are followed by a detailed overview of the focal site, which is a residential treatment facility at which the data for this study were collected. These discussions are presented at the end of chapter 5, where I cover topics such as the focal site's structure, organizational philosophy, treatment programs, as well as what it is like to be a resident there. Chapter 6 explains the data and measures that will be used to address the research aims. Chapter 7 presents the study results, and the final chapter, chapter 8, concludes this dissertation by contextualizing the findings in the broader perspective of the juvenile justice system. Future directions and limitations are also discussed in that chapter.

Chapter 2: The Juvenile Justice System

This chapter reviews the literature on the juvenile justice system. It reviews the origins of the juvenile justice system and the philosophical principles that underlie the system's operations. In doing so, I will consider how those philosophical principles have changed over time.

Philosophical Principles

Since its inception, the juvenile justice system has been the subject of debate and criticism. Change seems to be a common theme. Minor changes such as identifying and implementing more effective interventions based on juvenile offenders' needs have taken place as well as large-scale shifts in the principles and organizations of the system. Some changes have been characterized by significant policy adjustments in an attempt to balance the tension between enforcing harsh (i.e. punishment and retribution) and lenient (i.e. rehabilitation and treatment) practices. Advocates of the former perceive violent juvenile offenders as a younger version of criminals who are not amenable to rehabilitation and deserve to pay for their crimes, while the latter group believes these youths are victims of unfortunate circumstances in which they have lived or grown (Bernard & Kurlychek, 2010). This section reviews how swinging between these two perspectives has influenced the juvenile justice system's practices that are enforced today.

Background

In the United States, the first institution to confine and formally face juvenile problems was the New York House of Refuge, which was established in 1825. The purpose of the House of Refuge was to remove the youth from the dysfunctional family and disadvantaged neighborhood and place them in a program to help overcome behavioral and moral weaknesses. Therefore, the idea was to help the troublesome youth who, in an absence of proper interventions, would manifest problematic behaviors (Bernard & Kurlychek, 2010).

The House of Refuge was not a part of the justice system. Rather, its goal was simply to help and save the youth from becoming a delinquent and to prevent other problems in society. In other words, the state's good intention to act as *parens patriae* was simply to remove the youth from a dysfunctional family or community and save him/her from a life of crime. In fact, it was not even required for a youth to commit a delinquent act to be referred to the House of Refuge—this institution would house youths that were believed to be in danger of becoming "paupers." Paupers were poor, lazy, rude, brutal, often drunk and wasteful. These characteristics were perceived as driving forces of their criminality and causing other social problems (Bernard & Kurlychek, 2010).

Even the first juvenile court, which was established in 1899 in Cook county, Illinois, was a social welfare agency, meaning that punishment was virtually excluded from its objectives. In fact, the main reason for the establishment of the juvenile court was due to the recognition that juveniles, because of their limited reasoning ability, cannot be held fully responsible for their actions (Grisso & Schwartz, 2000; Moffitt, 1993). Thus, they should not be processed in a criminal court, because the purpose is not to punish them (Bernard & Kurlychek, 2010). Rather, the goal should be to address their needs and the focus should be to "act in their best interest" to overcome potential developmental and social challenges that might interfere with becoming a productive citizen. This was not to suggest that children deserve a more lenient punishment, despite committing serious crimes, just because they were incapable of fully considering the consequences of their action. Rather, the reformers at the time believed that delinquents would eventually contribute to further social problems that would threaten the interest of the elite and powerful. In other words, they realized that delinquents were a small portion of a bigger problem

that if left untreated, would endanger their political and social positions. This might include a high crime rate or a decline in public health.

As will be explained shortly, addressing the behavioral and mental health concerns early in life is an important step in improving public health. Although the juvenile justice system claims that providing treatment to the youth has always been its primary focus (Bernard & Kurlychek, 2010), it remains unclear how this goal has been accomplished and how its interventions may have benefited those youth. In fact, history suggests over time the state's role as *parens patriae* has been gradually replaced by a desire for retribution and public protection. This is in contrast to the original intention for which the juvenile justice system was established (Mears, Pickett, & Mancini, 2015). In short, states' responsibility as *parens patriae* appears to have eroded over time, which could be costly for the public health and society on a large scale.

By the mid-1900s, the juvenile justice system's focus was centered on protecting the community and punishing youths for their crimes. These practices soon became a national problem, to the extent that in the 1960s the Supreme Court found it necessary to review some of the cases to ensure that the constitutional rights of the youths were protected. The result was that, for the first time, due process was introduced in juvenile cases (Sullivan, 2019). The U.S. Supreme Court's intervention and the need for enforcing due process in juvenile cases suggested that the juvenile justice system's practices were leaning toward punishment (Bernard & Kurlychek, 2010). Much like adults in the criminal justice courts, delinquents now needed constitutional protections. Although the Supreme Court intention was to protect the youth and ensure that states do not abuse their power, this intervention laid the foundation for further introduction of juvenile cases in the U.S. Supreme Court, which over time, made the practices of the juvenile court closer to those exercised by the criminal court (Bernard & Kurlychek, 2010).

Perhaps most importantly, the introduction of due process meant that the juvenile courts needed to spend more money on formal case processing, leaving fewer resources to be allocated on youths and their needs (Cohen & Piquero, 2009), including their health.

The Beginning of the "Tough on Crime" Era

The shift to a more punishment-focused justice system initiated with attacks on rehabilitation in early 1970s, when offenders' treatment as a guiding philosophy became a subject of criticism. The political climate in 1950s through 1980s, which was characterized by historical and social events such as the Civil Right Movements, the Vietnam War, the shootings in Kent State and Attica, and increases in the crime rate, had a negative impact on people's trust in government in addressing social disorders (Cullen & Jonson, 2016). Around that same time, Robert Martinson published a study that evaluated the effectiveness of correctional interventions in reducing recidivism (Martinson, 1974). Martinson's work, which was later referred to as the "nothing works" doctrine, generally concluded that correctional treatment had no appreciable impact on recidivism. Given the social and political climates at the time, Martinson's work had a significant impact on shifting the guiding philosophy of the justice system from rehabilitation to deterrence and retribution. This was the beginning of the "tough on crime" era (Cullen & Jonson, 2016). Although most of the national conversation seemed to be directed toward the adult justice system, the introduction of harsh sentences and practices spilled over to the juvenile justice system (Butts & Mears, 2001), and the desire for rehabilitation and treatment of youths was replaced by retribution and community protection.

Inevitably, this policy change shifted the purpose, process, outcome, and jurisdiction of the juvenile courts and increasingly widened the gap between its good intention and actual practices (Bernard & Kurlychek, 2010; Mears, Pickett, & Mancini, 2015). The initial purpose of

establishing the juvenile court was simple: youths cannot be processed like adults, and thus another sector in the justice system is required to protect them and address their needs to become competent citizens. But as the two courts began to mirror one another, the need for a separate system of justice to handle juvenile offenders began to fade (Feld, 1997; Kupchik, 2006). This is because the criminalization of the juvenile court was in contrast with the philosophical foundation of the juvenile justice system discussed earlier (Mears, Pickett, & Mancini, 2015).

The change in purpose reflected on how juvenile cases were processed and handled as well. Instead of holding the youth accountable for their actions, many states made sure that violent juvenile offenders paid for their crimes. Specifically, almost all states made it easier to process juvenile offenders in criminal courts (Butts & Mears, 2001). Despite the harmful consequences of placing youths in adult facilities that has been highlighted in the literature (e.g. Redding, 1999), there was a sharp increase in the number of youths held in adult jails from 1983 to 1999 (Snyder & Sickmund, 2006).

When a youth is waived to an adult court, s/he is more likely to be convicted and receive harsher sentences than if s/he was an adult with the same charges and convictions (Kurlychek & Johnson, 2004). This means not only the justice system failed to protect delinquents, in some cases they treated them harsher than adults. As such, by late 1990s the rehabilitative approaches to juvenile delinquency were largely replaced by harsh punishment-focused responses to crime (Cullen & Jonson, 2016).

The Cease of the "Tough on Crime" Era

The "tough on crime" era revealed that the criminal justice system's practices and philosophical perspectives are also influential for the juvenile justice system. The adaptation of retributive philosophy and utilization of harsh practices were costly and ineffective for both

systems, but perhaps more so for juveniles (Feld, 1997). This once again opened doors for the introduction of cost-effective practices in 1990s (Butts & Mears, 2001). As a result, the American correction system witnessed significant changes in the last two decades of the twentieth century, which continue to influence current practices of the juvenile justice system.

With the emergence of meta-analytic approaches, research on offender rehabilitation was rejuvenated. Meta-analysis is a systematic way of summarizing the results of several studies. It allows researchers to estimate the average effect size of "treatments" across all relevant studies. Thus, by relying on a large sample of studies, the effect size is more stable and meaningful, making meta-analysis a powerful statistical tool that can be used to summarize findings of the literature, which are also less influenced by opinion and personal judgments compared to traditional reviews (Walker, Hernandez, & Kattan, 2008).

Garrett (1985) was among the first in utilizing a meta-analytic approach in support of offender rehabilitation. The study demonstrated that behavioral interventions, such as cognitive behavioral and family therapies, are effective in the treatment of juvenile offenders in both community and residential settings. Later studies conducted by Andrews, Bonta, Hoge, and colleagues were also influential in reversing the "tough of crime" trend. These scholars believed that rehabilitation worked, but its effectiveness was conditioned on certain program features and individual factors. Meta-analysis allowed them to highlight those program characteristics, which later became the guiding principles of effective interventions (see, for example, Andrews, Bonta, & Hoge, 1990).

This line of research—also known as the risk-need-responsivity (RNR) model—was important for two interrelated reasons. First, these scholars used meta-analytic studies to identify treatment elements that have shown to be effective in reducing recidivism across studies.

Second, this new scientific approach to the study of correctional intervention provided evidence that was in a sharp contrast with Martinson's (1974) "nothing works" doctrine. As discussed earlier, Martinson's work not only initiated the "tough on crime" era, but also had a significant impact on the political environment and public opinion about crime and delinquency in the 1980s and early 1990s (Howell, Lipsey, & Wilson, 2014). Thus, the emergence of this new evidence, along with the work of other scholars that identified flaws in Martinson's work (e.g. Palmer, 1975), reawakened rehabilitation and suggested that treatment approaches are worth investing in (Cullen & Jonson, 2016).

Public Opinion

Public opinion also played a significant role in re-embracing rehabilitation. During the "tough on crime" era, the public generally believed that if a youth is capable of committing serious crimes, s/he is also mature enough to be processed in an adult court (Zimring, 2000). In other words, due to the political and social climates at the time, the public was supportive of punitive approaches taken by the juvenile justice system in response to serious and violent youth. However, unlike during the "tough on crime" era, studies in the early 2000s suggested that the public preferred rehabilitation and treatment over punishment (Cullen et al., 2002; Nagin et al., 2006). This sentiment remains today (Mears, Pickett, & Mancini, 2015; Thielo et al., 2016).

The shift in public opinion has reflected on how the juvenile justice system processes cases. Today, more youths receive probation, but fewer receive residential placements or other forms of sanctions that are considered harsh (Hockenberry, 2019). But whether juvenile offenders receive fair treatments based on their individual needs remains an empirical question (Sullivan, 2019). In other words, does the juvenile justice system serve its social welfare role in dealing with the most-in-need and vulnerable youth?

The Future of Juvenile Justice

These discussions suggest social and political climates, scientific studies, and public opinion are all affecting the juvenile justice system's philosophies and practices in some ways, but historical events also play their part in shaping those practices (see, generally, Burstein, 2003). Although recent studies suggest Americans are now less supportive of punitive approaches for juveniles compared to the "tough on crime" era (Mears, Pickett, & Mancini, 2015), the juvenile justice system's practices are still influenced by political and philosophical perspectives introduced during the 1980s and 1990s. In other words, the fear about juvenile crime and threats to community safety remained a concern for public and policymakers.

Even though the good intention of the states in supporting the troubled youths and providing them with treatment and rehabilitation remains, the practices of the juvenile courts have not been necessarily in line with the best interest of the youth. To be sure, recent data suggest approximately 3,800 youths were transferred to criminal courts in 2017 (Hockenberry, 2019) and a majority of informally processed (not petitioned) juvenile cases were actually exposed to some form of juvenile justice sanctions, including probation (Hockenberry, 2019; Sullivan, 2019).

Nonetheless, a broader picture of the juvenile court's case flow suggests that the juvenile justice system has leaned toward treatment more than punishment in recent years (Hockenberry, 2019; Sullivan, 2019). Fortunately, scientific evidence appears to be more influential on how juvenile cases are handled in court compared to two decades ago, because harsh punishments appear to be utilized only as a "last resort" (Frensch & Cameron, 2002). They are saved for youths that the juvenile justice system struggles to deal with—serious, violent, and chronic juvenile offenders. Though, because this group of juvenile offenders poses a threat to public

safety, resources have been allocated to reduce their chances of future offending. To that end, the future of the juvenile justice system appears to be focused on reducing recidivism for serious and chronic youths and three ideologies/models are most likely to characterize its performances: the RNR model (Andrews, Bonta, and colleagues), the Balance and Restorative Justice philosophy (BARJ; Maloney, Romig, & Armstrong, 1988), and the developmental perspectives (for an overview, see Sullivan, 2019). Each of these are discussed briefly below.

The RNR Model

The RNR model suggests intensive interventions, such as those implemented in correctional settings, should be delivered to youths with the highest probability of reoffending (the *risk* principle). These treatments should target the criminogenic needs of the clients—the dynamic risk factors that drive their delinquency (the *need* principle). Lastly, the treatments should be based on cognitive behavioral therapies and social skill buildings that are matched with client's learning style (the *responsivity* principle). Couple these three principles with quality implementation and fidelity, and that would complete the recipe for correctional success when it comes to reduction in recidivism (Andrews & Bonta, 2014; Gendreau, French, & Gionet, 2004; Lipsey, 2009; Matthews, Hubbard, & Latessa, 2001). Over the past three decades, the RNR model has evolved significantly and been supported by many studies, making it virtually impossible to imagine that the future of the juvenile justice will not be characterized by its principles, as long as one of its goals remains reduction in recidivism.

The BARJ Model

The BARJ model, adapted by many juvenile courts across the nation, was introduced to dictate four major goals for processing of the juvenile cases: (1) the competency development of the youth, (2) providing appropriate treatment, (3) compensating damages done to the victims by

holding youths responsible for their actions, and (4) providing community protection. Because this model addressed both the interest of the child and protection of the community, it has gained popularity among the public and policymakers (Bazemore, 1994). Although implementation has proven challenging due to difficulties faced by the courts and probation departments in addressing all and every dimensions, the BARJ model has governed the juvenile justice system's practices over the past few years in a majority of states and remained a popular philosophy (Pavelka, 2016). Its second goal, "providing appropriate treatment," has largely been informed by the RNR model and the principles of effective interventions. In more recent years, developmental perspectives have emerged to improve upon that goal, but also to inform the "competency development of the youth."

Developmental Perspective

More recently, scholars have encouraged the incorporation of developmental perspectives to juvenile justice practices and decision-making (e.g. Sullivan, 2019; Steinberg, 2009). Building up on the principles of effective intervention, developmental perspectives are relatively more individualized and centered on meeting the interest of youth. Specifically, they call for implementing therapeutic treatment programs that carefully take adolescents' cognitive and psychosocial development into account (Lipsey, 2009; Steinberg, 2009). As such, developmental perspectives look into the causes that might be applicable to individual cases.

Similar to the theme of the current study, developmental perspectives heavily criticize punishment-oriented approaches to deal with juvenile offenders and draw attention to the original goals and purposes of establishing the juvenile justice system. As such, the health and well-being of youths are identified as a more central goal, which might call for the elimination of interventions that are harmful for youth. This approach recognizes individual's well-being as a

primary determinant of society's interest and a philosophical foundation that also is capable of improving public health (Sullivan, 2019).

Beyond Reducing Recidivism: The Juvenile Justice System as a Health Agent

As mentioned earlier, the juvenile justice system has a dual-goal of addressing social welfare and crime reduction in dealing with troubled children (Bernard & Kurlychek, 2010). So far, we have reviewed how the juvenile justice system has gone back and forth with different ideologies to achieve one of these two goals. A review of the historical spectrum and philosophical standpoints informed us that the juvenile justice system has, in recent decades, taken significant steps to minimize punishment-oriented approaches in dealing with juvenile offenders. Yet, all these perspectives appear to prioritize the "crime reduction" over the "social welfare agency" goal (Tanenhaus, 2004). Consequently, there has been comparatively less research aimed at identifying the features that may positively (or negatively) affect youths' quality of life—including their health.

This is not to suggest that the crime reduction and public protection are less important and that juvenile offenders should be let off without punishment. Rather, because of its very nature—for example, having contact with youths that often grew up in disadvantaged households and neighborhoods—the juvenile justice system has a great potential for improving other aspects of youths' lives, including their health. Pediatricians and economists, for example, have pointed at the social, financial, and political costs of poor public health (e.g. Heckman & Masterov, 2007; Shonkoff et al., 2012). This literature has documented that addressing risk factors early in life—such as adverse childhood experiences—would significantly affect future health and well-being of at-risk children (Shonkoff et al., 2012). If neglected, these risk factors are likely to manifest in other forms of social problems—such as decline in public health and behavioral

problems. In that regard, criminology and public health perspectives largely overlap (Welsh, Braga, & Sullivan, 2014). From a public health perspective, early signs of risk factors in a troubled child should be targeted with proper intervention (e.g. parental incarceration or child abuse) because otherwise they would contribute to poor health (Dannerbeck, 2005). From a criminological perspective, the risk factors should be targeted early in life because they might contribute to further offending (Baglivio et al., 2015; Link, Ward, & Stansfield, 2019).

Unfortunately, the juvenile justice system has not fully adapted its role as a public health agent. This is important, because adapting a public health perspective would get the juvenile justice system closer to the social welfare role upon which it was originally established. By implementing effective treatments that are multidimensional and address dysfunctionality in youths' lives, the juvenile justice system could play an important part in children's future well-being, above and beyond targeting antisocial behaviors (Bourdin et al., 1995).

A public health approach, therefore, can be adopted by the juvenile justice system to define and identify the risk factors affecting health early in life. This requires developing scientific-based and health-focused interventions and then evaluating their effectiveness relative to other approaches (Freudenberg, 2001; Welsh, Braga, & Sullivan, 2014). This also requires an in-depth understanding about the origins of these risk factors, the pathways by which they affect health, and how poor health outcomes might interfere with the juvenile justice interventions in improving cognitive, emotional, and behavioral issues.

Unfortunately, there is currently a limited understanding about the origins of health risk among juvenile offenders. Furthermore, it is not clear how these health risks and needs might interfere with the juvenile justice system's interventions, which have merely focused on behavioral modifications. Consequently, the juvenile justice system is currently ill-equipped in

addressing the health risk and needs of juvenile offenders effectively (Brown, Davis, & Shlafer, 2020; Teplin et al., 2005).

A handful of studies, however, have recently begun to pay attention to the origins and consequences of poor health among juvenile offenders to address some dimensions of this gap in the literature. For example, a recent study reported that poor nutrition during preschool has been linked to antisocial behavior during the elementary school phase (Jackson, 2016), suggesting that diet and nutrition in childhood could play an important role in manifestation of antisocial behavior early in life (McLaughlin et al., 2012). As will be discussed in more details in later chapters, findings of these nature may suggest that many health and behavioral issues might be traced back to parental behaviors and childhood experiences.

Chapter 3: The Health of Juvenile Offenders

Youths in placement are often chronic and serious delinquents that are believed to be at-risk of becoming career criminals (Farrington, 1995; Moffitt, 1993). Although the bulk of the literature on this population focuses on reducing recidivism, some studies have been dedicated to understanding the health status and needs of incarcerated youth. Most are prevalence studies, but some attempt to investigate the availability of health services in residential facilities (e.g. Abram et al., 2004; Hockenberry & Sladky, 2018; Teplin et al., 2002). More recently, research has focused on exploring the association between health and delinquency. Studies with that nature often use nationally representative samples (e.g. the National Longitudinal Survey of Youth or the National Longitudinal Study of Adolescent to Adult Health) to investigate how an experience of incarceration (e.g. number of times and length of stay in detention facilities) during childhood and adolescence might affect adulthood health (Barnert et al., 2017, 2019; Massoglia, 2008a, 2008b). Others have explored how poor health might be consequential for reentry by limiting one's access to conventional opportunities or interrupting relationships with significant others (Link, Ward, & Stansfield, 2019).

There is now ample evidence to suggest incarcerated youths have worse health status and outcomes compared to their counterparts in the general population (Forrest et al., 2000; Massoglia, 2008a; Shufelt & Cocozza, 2006), with mental and sexual health conditions being major areas of concern (Golzari, Hunt, & Anoshiravani, 2006). Because serious juvenile offenders often have a long history of unprotected sexual activities with multiple partners in early ages, they are at a heightened risk of being infected by sexually transmitted diseases (Allerton et al., 2003; Canterbury et al., 1995; Pack et al., 2000). In fact, approximately 9% of detained male youth in one study had a positive urine test for Chlamydia infection, the

prevalence of which was higher among those with a history of drug injection (Kelly et al., 2000). Other consequences of risky sexual behaviors include fatherhood, which is shockingly common among this population. One study reported 31.4% of serious delinquents had fathered children or caused pregnancy by age 19 (Wei, Loeber, & Stouthamer-Loeber, 2002).

The prevalence of mental illnesses, including substance abuse, is also substantially higher among this population compared to youths in the general population (Boesky, 2002). Youths in correctional facilities are about ten times more likely to have been diagnosed with mental health disorder (Fazel, Doll, & Långström, 2008), including substance abuse problems (Shufelt & Cocozza, 2006; Aarons et al., 2001), post-traumatic stress disorder (PTSD; Abram et al., 2004), depression and anxiety (Anckarsäter et al., 2007; Fazel, Doll, & Långström, 2008; National Research Council, 2013; Sedlak & McPherson, 2010), as well as attention-deficit/hyperactivity disorder (ADD/ADHD; Allerton et al., 2003; Anckarsäter et al., 2007; Boesky, 2002; Sedlak & McPherson, 2010; Shufelt & Cocozza, 2006).

Yet, relatively little attention has been paid to the origins and their potential pathways to poor health for incarcerated youth. Lack of properly identifying these risk factors has led to failure of the system in adequately providing health services for this population. To be sure, evidence has repeatedly shown that the mortality rate of serious juvenile offenders is significantly higher than those in the general public and that homicide, suicide, and substance abuse appear to be the top causes of death among this population (Aalsma et al., 2016; Teplin et al., 2005; Teplin et al., 2014; Sailas et al., 2005; Coffey et al., 2003; Gallagher & Dobrin, 2006). Even though reliance on the juvenile justice system to deal with mentally ill youths has increased over time, correctional facilities are often not equipped to address these mental health needs (Brown, Davis, & Shlafer, 2020; Sedlak & McPherson, 2010; Underwood et al., 2004).

In short, evidence provided by prevalence studies has clearly demonstrated that poor health of youths in residential facility is a serious concern. As such, the current study attempts to build on prior findings by addressing some of the environmental factors that might explain *why* serious juvenile offenders tend to be presented with poor health. To do so, I use the health models that were introduced earlier (i.e. importation, deprivation, and exportation) in more detail and will discuss how they can provide a useful theoretical framework for understanding the health risks and needs of incarcerated youth.

These discussions begin with the exportation health model to demonstrate that incarcerated youths have poor health outcomes later in life. Theoretically, there are two potential explanations for this. First, youth had health issues originated early in life and because they did not receive a proper treatment, the symptoms remained or exacerbated over time. This would be the argument of the importation health model because it suggests the poor health was originated outside the justice system and prior to incarceration. The deprivation health model, on the other hand, would argue that repeated contact with the justice system is responsible for the poor health status of chronic and serious juvenile offenders.

For reasons that will be discussed shortly, the importation health model appears to have received greater levels of support by the empirical evidence in explaining poor health in serious juvenile offenders. In addition, a public-health approach that was discussed earlier is based on delivering health-focused interventions early in life. Early intervention is only meaningful if poor health originates early in life, thus bringing even more emphasis to the importation health model. Together, these discussions suggest that a focus on the importation health model is likely to provide insights that are consistent with the proposed public health approach. As such, the

importation health model is more central in the present study and informs the analytical approaches discussed in chapter 6.

The Exportation Health Model

The exportation health model suggests those with a history of incarceration tend to be presented with poor health later in life or that they might develop certain health conditions that they export with them when they leave correctional facilities. Therefore, longitudinal data are needed to test the exportation health model and to evaluate whether exposure to juvenile correctional facilities is likely to develop long-term health consequences.

The literature suggests those with a history of incarceration are more likely to develop health issues later in life (Barnert et al., 2017, 2019; Massoglia, 2008a, 2008b; Teplin et al., 2014; Wang & Green, 2010). Aside from the deprivation health model, which suggests health declines during incarceration (discussed next), three other explanations have been presented in the literature for poor health outcomes in later life. One is that serious offenders are generally exposed to a risky lifestyle that they carry with them throughout the life course, but the origins are not necessarily traced back to childhood. The second is that those with a history of incarceration would be unable to secure a desirable life after experiencing incarceration, because the stigma attached to them would prevent them from accessing or obtaining conventional life opportunities, such as a successful marriage and/or a legitimate employment. Lastly, incarceration could undermine social stratification, which in turn affects individuals' perception and control over their lives. These three explanations are briefly discussed below.

Risky Lifestyle

Abram et al. (2007) conducted a longitudinal study on 1,829 adolescents who were incarcerated in a short-term detention facility between 1995 and 1998. The participants were then

re-interviewed six times over the next 14 years, when the median age was 30-years-old. Among the male participants (N = 1,140), approximately 25% reported having more than one sex partner over 90 days prior to the final phase, with African Americans having significantly more multiple partners than Whites and Hispanics. Even though the longitudinal nature of the data showed that risky sexual behaviors declined over time, many youths continued their risky lifestyle through adulthood, especially African Americans.

Similar themes have been observed in other studies that explored the long-term health consequences of incarceration and have linked it to a risky lifestyle. The strongest evidence can be observed in studies that reveal a sizable increase in odds of mortality following incarceration. Although these studies often use samples of incarcerated adults, the findings are consistent in that the risk of mortality is highest immediately following release from correctional institutions (within one month), with drug overdose being the leading cause of death, followed by suicide and homicide (Binswanger et al., 2007; Pratt et al., 2006; Massoglia & Pridemore, 2015).

One other source of evidence that might link risky lifestyle to poor health outcomes later in life comes from studies that investigated juvenile detainees' access and use to mental health services upon being released into the community. These studies generally concluded that the vast majority of these youths, particularly minority males, do not seek mental or behavioral health services immediately after being released into the community (Aalsma et al., 2012; White et al., 2019), so their mental health remains an unmet need. Importantly, issues at reentry—such as lack of proper housing and employment—might induce stress and anxiety (Massoglia & Pridemore, 2015), which, in absence of health services, might exacerbate mental health. Furthermore, it could contribute to an increased reliance on antisocial coping strategies that might put offenders

at a higher risk of mortality. This includes substance and alcohol abuse, which increases chances of death due to drug overdoses (Binswanger et al., 2007; Teplin et al., 2014).

Incarceration Inducing Stigma

Scholars have also argued incarceration has indirect impact on health that works through social stigma (Schnittker & John, 2007). Due to the stigma attached to incarceration, youths might have limited access to life opportunities and experience difficulty obtaining a legitimate job and/or be less likely to have a successful marriage after incarceration (Apel & Sweeten, 2010; Huebner, 2005; Laub, Nagin, & Sampson, 1998; Massoglia & Pridemore, 2015). These difficulties, such as lack of employment, may link incarceration experiences with negative health consequences through its impact on family structure and economic opportunities (Freudenberg, 2001).

Using a sub-sample of National Longitudinal Survey of Youth (NLSY) data that included 4,591 men, Huebner (2005) found that those with a history of incarceration were significantly less likely to obtain employment and be married. Specifically, incarceration was found to reduce chances of employment by 66 percent. Furthermore, a history of incarceration dropped chances of marriage by roughly 40 percent. The results remained significant even after controlling for a host of confounding variables such as education.

Other scholars have challenged Huebner's (2005) approach on a long-term impact of incarceration on marriage and employment. For one, a simple comparison between an incarcerated and non-incarcerated does not establish causality, because those without a history of incarceration may pose no risk of becoming unemployed (Apel & Sweeten, 2010). Thus, Huebner's (2005) observation regarding higher odds of unemployment among incarcerated might not be necessarily related to incarceration itself (Apel & Sweeten, 2010).

To address this controversy, and similar to Huebner's (2005) work, another study used the NLSY data but only included youths with first time conviction in the sample (Apel & Sweeten, 2010). The final sample included 823 individuals with only one conviction (i.e. those with more than one conviction were excluded), approximately 40 percent of whom were incarcerated for that offense. Comparing the two groups—convicted offenders with versus without incarceration—who were matched on pre-conviction observations, the authors found that the first time experience of incarceration significantly reduced the likelihood of employment. This finding reinforces those presented by Huebner (2005), perhaps using a more rigorous research design and selecting a more appropriate control group. Thus, incarceration appears to carry a negative effect on chances of obtaining legitimate employment (Apel & Sweeten, 2010; Huebner, 2005), which could go on to influence mental and physical health later in life (Paul & Moser, 2009).

Schnittker and John (2007) evaluated the long-term impact of incarceration on health. Similar to the studies reviewed earlier, the authors used the NLSY data and found that "incarceration has powerful effects on health, but only after release" (p. 115) and suggested that the stigma associated with incarceration is the likely explanation of poor health later in life. The authors interpreted their results by describing that those who spent four or more years in prisons (those who received longer/harsher sentences) appeared to "have characteristics that make them especially vulnerable to both poor health and crime, and that their sentence, per se, does little to elevate their risk. Among other things, this finding warns against any attempt to make claims about the effects of incarceration without also considering the personal characteristics of the incarcerated" (Schnittker & John, 2007, p. 125).

Together, these results provide some support for health consequences of long-term exposure to correctional facilities that might emerge later in life, which is consistent with the exportation health model. However, the authors' interpretation suggested that the negative impact of incarceration is likely to interact with personal characteristics to exert its effect on health. Another important observation from this study is that the NLSY data underrepresents those who have been incarcerated for less than 12 months. Juvenile offenders often fall in that category—about 90% spend less than 12 months in residential facilities (Hockenberry, 2018). Thus, the result found in those studies regarding the negative impact of incarceration on health might be conditioned on a long-term exposure to correctional facilities and not be broadly generalizable to youth in residential facilities. Other studies have also suggested incarceration dosage matters in assessing its impact on mental health (e.g. Porter & DeMarco, 2019).

Putting these all together, a review of the literature points at the possibility that those with poor health later in life had been exposed to risk factors that overlap with forces driving their criminality. Those risk factors, therefore, should be specific to serious and chronic offenders that not only increase their tendency to crime, but also compromise their health in a long run. That is what distinguishes them from situational offenders. Consequently, those factors are likely to put them at risk of receiving harsher sentences as well, such as being placed in correctional facilities. Some of these risk factors will be discussed in chapter 4.

Incarceration Affecting Social Stratification

The incarceration-health literature has also drawn attention to the social gradient and social location theories. This perspective suggests that social status affects how people have control over their life, such that those in lower social classes have less control over life circumstances. This then alters their level of participation in society, resulting in material

deprivation and psychosocial disadvantages that negatively affect their health (Marmot, 2004). These are powerful theoretical frameworks because they address the life course determinants of health. Because incarceration limits one's access to life opportunities that are the determinants of social status and social position—such as employment—it is reasonable to believe that social gradient and social location theories are applicable to incarceration in explaining poor health outcomes. It is also plausible that an experience of incarceration affects one's social position and stratification directly, which could go on to affect life opportunities found to be important for overall health and well-being (e.g. inability in obtaining employment due to a ex-felon status; Massoglia, 2008a, 2008b).

The Deprivation Health Model

The bulk of incarceration-health literature has been devoted to studying how the environmental factors of incarceration affects health during periods of incarceration. Scholars who argue against incarceration of youth for health-related reasons often center their criticism on stress-related symptoms that youths might experience due to restricted opportunities and limited freedom during incarceration (Powel, 2014; Massoglia, 2008a; Underwood et al., 2004). Because the nature of imprisonment offers restriction in movement, liberty, and privacy (Sykes, 1958; Toch, 1977), those incarcerated may experience stress and frustration, which could manifest in forms of complicated behavioral and health problems. This line of research generally suggests that an experience of incarceration during adolescence is associated with poor health in adulthood (Massoglia & Pridemore, 2015; Barnert et al., 2019; Burrell, 2013; Dierkhising, Lane, & Natsuaki, 2014; Powel, 2014). Though, unlike the exportation health model, it argues that poor health was initiated during confinement, or at least, pre-existing health conditions are likely

to be exacerbated during incarceration due to stress and anxiety associated with restrictive environments (Gonçalves et al., 2016; Underwood et al., 2004).

As one example, incarcerated youths were found to be more likely to report lifetime self-injurious behaviors, such as suicidal attempts, compared to those that come to contact with the juvenile justice system but were not placed in detentions or other correctional facilities (Wasserman et al., 2010). This may suggest more mental health problems among incarcerated youths, but it remains an empirical question whether the reasons might be found outside the juvenile residential facilities, such as events in childhood (more on this in the next section).

Research suggests the impact of incarceration on health is age-graded, such that incarceration has a larger impact at younger ages (Barnert et al., 2019). This suggests incarceration experienced early in life could be more consequential for health than those experienced later in life. On the other hand, with the exception of some long-term secure facilities, a majority of juvenile residential facilities are not as restrictive as adult prisons. Against this backdrop, it is easy to see how a sample consisting of incarcerated children and adolescents/adults could provide important insights into the role of incarceration on early health factors.

Relying on the National Longitudinal Study of Adolescent to Adult Health (Add Health) data, Barnert et al. (2019) identified 1,727 participants (approximately 12% of the sample) who had been incarcerated before age 25. Of those, approximately 7% (105 participants) were first incarcerated before 14, about 19% (315 participants) between 15 to 17, 38.5% (696 participants) between 18 to 20, and finally, the remaining 35.6% (611 participants) were first incarcerated between the ages 21- to 24-years-old. The authors found that those incarcerated before 14 were presented with significantly worse general health and more depressive symptoms in adolescence

and adulthood than any other group, controlling for a host of confounding variables (Barnert et al., 2019). They highlighted incarceration, characterized by "toxic stress," as a potential explanation for poor health later in life for those who had experienced incarceration in childhood. These findings suggest incarceration during childhood and early adolescence is more consequential for health than those experienced during adulthood. It also provides some evidence for the deprivation health model because it suggests environmental factors in correctional facilities are associated with health decline, particularly for those experiencing it early in life. Though, it remains an empirical question whether childhood experiences can explain both younger age of incarceration as well as worse health in adulthood (e.g. adverse childhood experiences could be responsible for both). This would be an argument of the importation health model (discussed next).

One of the challenges with studying health consequences of juvenile incarceration is that most youths placed in detention facilities only remain there for a short period of time (more on residential facilities and programs in later chapters), and thus it is almost impossible to estimate their health trajectories during their time at the facility. This is because observing meaningful changes, either positive or negative, that can be reasonably linked to any intervention requires time to emerge. Thus, it would be difficult to make conclusive statements about health improvement or decline over a short period of time and link it to an incarceration experience.

For example, suppose youths are assessed on their stress symptoms at intake in a residential facility, and then re-evaluated after a month. If a negative change is observed (i.e. stress level escalates), it would not be clear whether an increase in stress level is due to shock of imprisonment (Gonçalves et al., 2016) or is a meaningful increase in stress as a result of exposure to the facility. Similarly, if any improvement observed (i.e. stress level declines), it

would be unclear whether it was due to removing the child from certain stressors in the community, or it is because of specific treatments that the youth received during his time in the facility.

To reasonably link poor health to incarceration as a causal mechanism above and beyond those discussed in the exportation health model (e.g. stigma after reentry), it is necessary to rely on longitudinal studies that begin in childhood and continue to adulthood, treating incarceration as a mediator. In other words, unless childhood events and background information are fully accounted for, it would be unreasonable to assume that those with poor health started with a similar health status at baseline compared to those with a good health.

One strategy to increase the possibility that the control and treatment groups are similar prior to incarceration is by comparing justice-involved youths in residential facilities to those who were assigned to community treatments. Even so, there would be differences in offense types and perhaps other background variables prior to incarceration that might be related to health outcomes. Recognizing correctional environments as a toxic stressor and their potential consequences for juvenile's health, researchers at Columbia University used a multilevel modeling approach to compare suicidal behavior among youths across three types of juvenile justice settings: system intake, detention, and secure care (Wasserman et al., 2010). After controlling for relevant confounding variables, such as age at first offense, mental health conditions, history of suicide attempts, and offense type, the authors found that youths who were in detention and correctional settings were presented with significantly higher rates of suicidality. This finding may suggest the type of residential settings, and perhaps environmental factors associated with them, matters in predicting suicidal ideation among justice-involved youth, thereby providing some evidence for the deprivation health model. However, the tendency

to self-injurious behaviors, namely suicidality, might be explained by the factors that put the youths in residential facilities in first place, such as offense circumstances.

Though, one possibility is that the experience of incarceration might affect health for juvenile offenders, but only for some. Gonçalves et al. (2016), for example, found that, unlike youths without a history of mental health condition, young offenders with a pre-existing mental health condition experienced an increase in their symptoms (their symptoms got worse) between the third and sixth months of incarceration. Thus, there is some evidence that youths who enter correctional facilities with a pre-existing mental health condition may experience decline in their symptoms. In other words, incarceration may not initiate, but exacerbate health symptoms among certain individuals. This conclusion points at the possibility that the importation health model might be important in explaining poor health among serious juvenile offenders.

In short, understanding how juvenile incarceration might affect their health *during* incarceration is challenging, because youths stay for relatively a short period of time in residential facilities compared to adults in prison. On the other hand, the adult incarceration literature presents strong evidence that incarceration is linked to poor mental and physical health (Barnert et al., 2017; Massoglia, 2008a, 2008b; Schnittker & John, 2007), lending credence to the argument that similar outcomes would be expected among youth. In sum, the evidence to support the deprivation health model is weak and inconsistent, mainly because youths stay in residential facilities for a short time (less than 12 months; Hockenberry, 2018).

The Importation Health Model

The importation health model provides a useful theoretical foundation for the current study. It predicts that most youths enter juvenile justice facilities with pre-existing health conditions. In other words, it predicts that youths bring their health conditions to the correctional

facilities and thus the high prevalence of poor health among this population is unrelated to their exposure to correctional facilities. Importantly, the pre-existing health conditions might interfere with the treatments youth receive in residential facilities and affect their performance in the program (more on this in chapter 4). And there is empirical evidence to support these arguments.

One study conducted in late 1990s on a sample of first-time juvenile detainees, who were examined by medical professionals within 72 hours of admission, indicated that about 10% of youths had a major medical problem at the time of admission, *excluding* substance abuse and sexually transmitted disease—two of the most common health issues found among incarcerated juvenile offenders (Feinstein et al., 1998). Even in the absence of substance abuse, mental health condition remained among the top health concerns for this population. The results regarding their physical health suggested, after grouping youths based on their age, those falling in younger group (9 to 13 years) had less prior hospitalization compared to older groups (Feinstein et al., 1998). This may suggest decline in health could be detected early in life, but also the symptoms are likely to be exacerbated over time. In addition, these findings support the importation health model because the data consisted of first-time detainees who perhaps had no prior exposure to correctional facilities.

A study conducted on a sample of two detention facilities in Texas housing youths between the ages of 12 and 17 reported nearly all male juvenile offenders were sexually active, two-thirds of whom had intercourse before their thirteenth birthday ($N = 135$). The average number of lifetime sexual partners was 7.3. About 40% indicated that they did not use condom at their last intercourse and about 70% reported they had sex while intoxicated (Kelly et al., 2000). Recall that sexual and mental health conditions are primary health concerns among incarceration youth (Golzari, Hunt, & Anoshiravani, 2006), these findings provide evidence that many youths

begin their risky sexual behaviors early in life (before age of 13 in this study), perhaps before they enter residential facilities. As such, these findings appear to be supportive of the importation health model.

There is also some indirect evidence to support the importation health model. Using longitudinal data that followed 2,297 Dutch offenders for 25 years, Dirkzwager, Nieuwbeerta, and Blokland (2012) compared those who were adjudicated in 1977 and sanctioned to incarceration (26%) for the first time to the remaining 1,700 offenders who received other, noncustodial, alternatives. Their goal was to examine the impact of first-time incarceration on mortality in later life. They found that those who had been incarcerated were presented with significantly greater odds of mortality compared to those who had not. However, after carefully applying a propensity score matching on variables that are important in explaining poor health among formerly incarcerated population (e.g. offense type, employment situation, marital status), offenders with a history of incarceration were no longer at higher odds of mortality compared to the control group. This means incarceration was not found to be the cause of higher mortality among the incarcerated population (Dirkzwager, Nieuwbeerta, & Blokland, 2012). The authors concluded this result emerged because they adequately controlled for selection into imprisonment. “In this way, the treatment group (i.e., former prisoners) and the control group (i.e., offenders sentenced to noncustodial sentences) were made comparable on a large number of pre-interventions, observable variables” (Dirkzwager, Nieuwbeerta, & Blokland, 2012, p. 409). This finding provides some support for the importation health model, but also highlights the methodological limitation of prior studies. Together, these give us reasons to suspect whether studies that have identified a causal relationship between incarceration and poor health later in life (mortality at a younger age being an extreme example of it) enjoyed having such a well-

matched control group in their design. A review of the literature suggested this was not the case in a majority of studies.

At least for those who experience incarceration early in life, there appear to be certain factors above and beyond incarceration that puts them at a higher risk of developing health problems later on (Schnittker & John, 2007). In fact, the same study just reviewed found those incarcerated were three times more likely to die in a 25-years follow-up period compared to a youth in the general population (Dirkzwager, Nieuwbeerta, & Blokland, 2012). But poor health outcomes may not be related to an incarceration experience, because these results were not observed when compared with a more appropriate control group. Together, these findings suggest that poor health may be traced back to the same origins that had put the child in correctional facility for behavioral problems in first place—such as adverse childhood experiences or substance abuse (Schnittker & John, 2007).

These findings could be important in understanding how youth are processed in the juvenile justice system. To illustrate, exposure to risk factors prior to incarceration might manifest in forms of behavioral problems (Jaffee et al., 2005), which could affect youth's decision-making and reasoning capacity (Shonkoff, Boyce, & McEwen, 2009). Together, these might send the signal to the juvenile court officials that removing the youth from the community might be beneficial to the individual and to public safety (Sullivan, 2019), while youths with less health and behavioral problems might remain in the community (i.e. a presence of selection bias, such that those with poor health and behavioral problems may be perceived as the most-in-need). After all, residential treatment centers are supposed to host youths with mental, emotional, and behavioral needs (Mallett & Boitel, 2016).

The Takeaway

Tying these strands of research together, the literature suggests ignoring incarcerated offenders' health could create a "cycle" in the following way: serious juvenile offenders enter residential facilities with poor health (e.g. Feinstein et al., 1998; Golzari, Hunt, & Anoshiravani, 2006; Gonçalves et al., 2016; *importation health model*); incarceration may exacerbate those health conditions (e.g. Gonçalves et al., 2016; Massoglia & Pridemore, 2015; *deprivation health model*); and the health consequences of incarceration negatively affect offenders' reentry by interrupting family ties and limiting access to positive life transitions such as employment, which in turn increases the odds of further engagement in crime and returning to correctional facilities (Link, Ward, & Stansfield, 2019; *exportation health model*). Table 3.1 (next page) summarizes the literature that was covered in this and the previous chapter (chapter 2).

Table 3. 1

Summary of the Literature - Chapters 2 and 3

Topics and Chapters	Key Summaries	Example of Source
The Juvenile Justice System and Juvenile Offenders' Health (Chapters 2 & 3)	The juvenile justice system was established to protect and act to the best interest of the child.	Tanenhaus, 2004
	Around the mid-1900s, this purpose began to shift to protect of the public	Bernard & Kurlychek, 2010
	Youths began to be seen as criminals who deserved criminal sanctions.	Feld, 1999
	Martinson's work, political climate, and public opinion initiated the shift.	Cullen & Jonson, 2016
	Tough on crime was consequential for juvenile justice system's practices; The cease of that era re-introduced rehabilitation and treatment.	Bernard & Kurlychek, 2010
	The juvenile justice practices are likely to be influenced by three ideologies/models in the future: risk-need-responsivity (R&R); Balance and Restorative Justice; and developmental perspectives.	(Andrews & Bonta, 2014) (Maloney et al., 1988) (for an overview, see Sullivan, 2019)
	Addressing health in early childhood is the key in preventing poor health.	Shonkoff et al., 2012
	Poor health is prevalent among incarcerated juvenile offenders.	Barnert, Perry, & Morris, 2016
	Mental and sexual health conditions are major health concerns.	Golzari et al., 2006
	Incarcerated youths tend to present poor health later in life (exportation health model).	Barnert et al., 2017, 2019; Teplin et al., 2014
	Youths stay in residential facilities for a short time. Evidence to suggest that their health declines over time is weak and inconsistent (weak support for the deprivation health model).	e.g. Gonçalves et al., 2016 (but see, Porter & DeMarco, 2019)
	Ample evidence suggests youths enter residential facilities with poor health (heavily in favor of the importation health model).	Dirkzwager et al., 2012 Feinstein et al., 1998 Kelly et al., 2000

Chapter 4: Opening the Pandora's Box of the Importation Health Model

The empirical evidence reviewed in previous chapters suggested youths tend to *enter* residential facilities with health conditions. This chapter takes a closer look at the importation health model and discusses some of the potential explanations that have been offered in the literature for the origins of poor health among this population. It pays particular attention to mental health and how it might affect youth's responses to treatment in residential facilities. These discussions are followed by exploring adverse childhood experiences (ACE) as a potential explanation for poor health among serious juvenile offenders. The chapter concludes by discussing some of the challenges surrounding this population in addressing their basic health needs, such as availability, access, and utilization of health services.

It is evident that the deinstitutionalization of the mental health system has led to greater reliance on the justice system to deal with those who are mentally ill (Teplin et al., 2002). Many youths who come into contact with the juvenile justice system and also have mental health conditions are placed in residential facilities. Given that reducing recidivism has remained the juvenile justice system's primary goal, even residential facilities with therapeutic treatment approaches are not focused on improving mental and emotional health (see, generally, Brown, Davis, & Shlafer, 2020; Teplin et al., 2005). Rather, their primary goal is to address youth's health problems—mental health being one of them—to reach the ultimate goal of improving behavioral outcomes and reducing recidivism.

This is understandable because the high prevalence of mental illness among juveniles could interfere with treatment outcomes in correctional facilities. As discussed earlier, a review of the literature highlighted mental health as an important individual characteristic that might affect how inmates/residents cope with or respond to treatment in correctional settings

(Gonçalves et al., 2016; Schnittker & John, 2007). Youths with depressive symptoms, for example, may respond differently than those with ADD symptoms (Lyons et al., 2001). Similarly, youths with comorbidity—co-occurrence of more than one mental health condition—may have poorer responses to treatment, particularly boys (Moffitt et al., 2002). Examples of comorbidity among serious juvenile offenders is the co-occurrence of depression, ADD, and substance abuse (Shufelt & Cocozza, 2006). Scholars have repeatedly highlighted the complexity of comorbidity and how it might affect social and behavioral functioning among children and adolescents (Angold, Costello, & Erkanli, 1999).

Although the serious problem of poor mental health among youths in residential facilities is well-recognized and discussed in the literature, studies that explored how mental health conditions might interfere with youth's treatment in these facilities are scant. This is important, because prior studies have repeatedly stressed that individual characteristics and program features are likely to interact in determining who might benefit from residential programs and who might not (more on this in chapter 5). In addition, prior studies have reported juvenile correctional facilities are not adequately equipped to address mental health needs (Brown, Davis, & Shlafer, 2020; Mears, 2001; Sedlak & McPherson, 2010; Underwood et al., 2004). Given the earlier discussions in the context of the importation and deprivation health models framework, those who enter these facilities with pre-existing mental health conditions might experience exacerbation of their symptoms (Lyons et al., 2001; Connor et al., 2002; Wise, Cuffe, & Fischer, 2001), which might manifest in a form of behavioral problems and affect their responses to treatment.

A review of the literature suggests the following are examples of psychiatric disorders that are prevalent among youths in residential facilities: substance use disorder; attention deficit

hyperactivity disorder (ADHD); as well as anxiety and depression (Golzari, Hunt, & Anoshiravani, 2006; Leone & Meisel, 1997; National Research Council, 2013; Sedlak & McPherson, 2010; Shufelt & Cocozza, 2006; Quinn et al., 2005). Many of these studies have also highlighted the prevalence of comorbidity—a combination of two or more of these mental health conditions—among incarcerated youth (e.g. Shufelt & Cocozza, 2006). It is also important to note that most youths housed in residential facilities exhibit serious behavioral problems and are often diagnosed with conduct disorder, oppositional defiant disorder, and impulsivity disorder. In other words, it is reasonable to conclude that mental health conditions directly linked to behavioral problems are present among virtually all youths in juvenile residential facilities.

Substance Use Disorder

One risk domain that pertains to mental health is substance abuse, because it leads to "change in brain circuits that may persist beyond detoxification, particularly in individuals with severe disorders" (American Psychiatric Association, 2013, p. 483). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines substance use disorder as "a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems" (p. 483). Symptoms range from simple craving to building tolerance and more complicated mental and physical withdrawals, which might be less noticeable by others for stimulants (e.g. amphetamines and cocaine) compared to opioids, prescribed medications, alcohol, or sedatives. Together, these definitions suggest that the severity of substance use disorder matters in how this condition might manifest in forms of behavioral problems.

By far, the justice system has paid more attention to substance abuse than any other mental disorder because it is highly correlated with offending and recidivism (Andrews & Bonta,

2014). The prevalence of substance abuse is high among youths involved in the justice system (Aarons et al., 2001; McClelland et al., 2004; McClelland, Teplin, & Abram, 2004), to the extent that substance abuse treatment is often delivered separately from any other mental health services in correctional settings (Hockenberry & Sladky, 2018).

Studies on juvenile detainees indicate that almost all detained youths used marijuana at least once (McClelland, Teplin, & Abram, 2004), many suffer from marijuana use disorder (Teplin et al., 2002), and this pattern has been observed for youths in residential treatment facilities as well (Sedlak & McPherson, 2010). Importantly, substance use disorder is often co-occurred with other mental health conditions (American Psychiatric Association, 2013) and scholars have recognized that addressing the mental health needs of incarcerated youths is significantly more complicated by the co-occurrence of substance dependency (Domalanta et al., 2003; Shufelt & Cocozza, 2006). As one example, adolescent offenders who use cannabis frequently are more frequently presented with depression and anxiety disorders as well as suicide attempts, and using cannabis has been linked to exacerbating those symptoms (American Psychiatric Association, 2013).

One study assessed how comorbidity (co-existence substance abuse and psychiatric conditions) might affect juvenile substance abuse treatment outcomes (Rowe et al., 2004). Youths were randomly assigned to one of the two treatments that have been shown to be effective in dealing with substance abuse disorder—individual cognitive behavioral interventions and multidimensional family therapy. Youths who only had substance abuse problems (i.e. no co-occurring psychiatric disorder) demonstrated reduction in substance abuse in the six to 12-months follow-up, whereas those with psychiatric comorbidity presented with no significant improvement after the follow-up period. In other words, individuals with substance abuse and

other mental health problems were less likely to experience improvements due to the treatment. Generally, this result suggests that the co-occurrence of substance abuse and other mental health symptoms can have a negative long-term impact on treatment outcomes. Such a finding is important for the purpose of the current study because it reveals that positive effects of treatments may not reach their full potential for all juveniles—particularly for those with more complicated mental health disorders.

Unfortunately, substance use problems for serious and chronic juvenile offenders often go beyond recreational drug use and many begin showing signs of serious substance abuse habits. For example, intravenous drug use has been observed more commonly among serious offenders and is the leading cause of death among young offenders (Binswanger et al., 2007; Canterbury et al., 1995; Coffey et al., 2003). Furthermore, youths in residential facilities are significantly more likely than adolescents in the general population to use amphetamines, prescription drugs, LSD, and cocaine (Fulkerson et al., 1997), the health consequences of which may not emerge until later in life.

Substance abuse also increases the risk of developing physical health issues, such as being infected by STDs. Intravenous drug use has been linked to Chlamydia infection (Kelly et al., 2000), which may suggest that juvenile offenders that inject drugs are more likely to engage in unprotected sex, making them more likely to be infected by STDs (Griel & Loeb, 2009). The co-occurrence of substance abuse problems and proceeding health conditions signifies that serious and chronic juvenile offenders may be more likely to be exposed to risky lifestyles.

Before moving forward, it might be helpful to discuss substance use disorder in the context of health framework discussed earlier. Because institutionalized youths have very limited, if any, access to drugs while under the supervision, it is unlikely that they *develop*

substance abuse problems during incarceration. Thus, substance use issues are likely to exist prior to incarceration, an argument that is consistent with the importation health model.

There are good reasons to believe youths with serious substance use disorder would perform poorly in the program. This is because they might experience withdrawal symptoms during their time at the facility. For instance, withdrawal symptoms associated with cannabis disorder often takes at least several months after discontinuation to go away. During that time, the symptoms are likely to manifest in a form of other mental or behavioral problem, such as anger, depression, or anxiety (American Psychiatric Association, 2013). This might explain why youths with comorbidity of substance use and other mental health disorders tend to respond poorly to treatments (Rowe et al., 2004).

On the other hand, a majority of juvenile residential facilities incorporate treatments specifically designed to address substance use disorders (Hockenberry & Sladky, 2018), which might alleviate the symptoms associated with this condition during time at the facility. Furthermore, in long-term residential facilities, like the one used in the current study, youths often receive family therapies. Studies have identified family therapy as an effective treatment for juvenile offenders (Garrett, 1985; Palmer, 1996; Gendreau & Ross, 1987) and for youths with substance use disorder (Rowe et al., 2004). The underlying rationale of family interventions is based on the systems theory, which suggests the problematic behaviors of a child are the result of family dysfunctionality (Alexander & Parsons, 1973). Because substance use disorder is likely to negatively affect relationships within a family (American Psychiatric Association, 2013), youths with this condition may benefit from family intervention. Therefore, similar to substance abuse treatment, receiving family therapy is expected to be associated with less problematic behavior over time, although the effects might take a while to emerge.

ADD/ADHD

Neurodevelopmental disorders refer to developmental deficits that begin early in life, such as during childhood or adolescence, which affect social and functioning skills (American Psychiatric Association, 2013). Neurodevelopmental deficits, particularly neuropsychological disorders, are common among juvenile offenders. In fact, those who identified as having neuropsychological deficits in early adolescence and prior to exhibiting problems with substance use or violence were found to be the most delinquent in late adolescence (Moffitt, Lynam, & Silva, 1994).

One common neuropsychological disorder among justice-involved youth is Attention Deficit Disorder (ADD), which often occurs with hyperactivity (ADHD; Allerton et al., 2003; Anckarsäter et al., 2007). ADHD is defined as a "persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development" and therefore is characterized by inattention, hyperactivity, and impulsivity (American Psychiatric Association, 2013, p. 59). Attention difficulty can be defined as "the tendency to report being easily distracted and unable to concentrate more than momentarily," while hyperactivity can be defines as "the tendency to report being overly active, rushing through work or activities, and acting without thinking" (Behavior Assessment System for Children Third Edition, 2019, p. 8). The symptoms of ADD—such as concentration difficulty and impulsivity—are often presented before the age of 12. Those with these symptoms tend to perform poorly in school and are more likely to be engaged in risky behaviors (Shelton & Pearson, 2016). As such, hyperactive and inattentive children are at an elevated risk of criminality and drug abuse in adulthood (Jester et al., 2008).

This suggests targeting ADD symptoms might play a crucial role in treatment of juvenile offenders. In fact, studies reported male children who exhibit antisocial behaviors and presented

with ADD symptoms between the ages of 5 and 13 were significantly more likely to become persistent offenders in later life (Moffitt, 1990). Juvenile offenders who did *not* present symptoms of ADD in childhood had no substantial risk factor in family and expressed no signs of low intelligence or conduct problem until mid-adolescence. On the other hand, delinquent boys with ADD symptoms scored consistently higher on family risk factors and lower on reading and verbal intelligence tests in childhood.

Because neurodevelopmental disorders onset during childhood or early adolescence, the high prevalence of ADHD among youths in residential facility compared to the general population supports the importation health model, which argues youths essentially enter residential facilities with these conditions. Because neurodevelopmental disorders limit one's ability in social functioning, performing tasks and daily activities, as well as planning (American Psychiatric Association, 2013), the importation health model predicts that youths with these conditions perform poorly in treatment. Prior studies have also suggested symptoms associated with ADHD tend to undermine treatment effects (Lyons et al., 2001), because those symptoms might get worsen in residential treatments (consistent with the deprivation health model). Putting these all together, youths with ADHD are expected to be less successful in the treatment compared to those with no neuropsychological deficits.

Anxiety and Depression

Anxiety is a perceived feeling of fear and anxiousness about future threats. Anxiety disorders, which tend to develop during childhood, refer to those "that share features of excessive fear and anxiety and related behavioral disturbances… Sometimes the level of fear or anxiety is reduced by pervasive avoidance behaviors. Panic attacks feature prominently within the anxiety disorders as a particular type of fear response" (American Psychiatric Association,

2013, p. 189). Those with anxiety disorders tend to picture what they might perceive as "threats" in mind and feel fearful or anxious about the future.

A review of the juvenile incarceration literature suggested anxiety symptoms tend to exacerbate during incarceration (Lyons et al., 2001). Although this might be more applicable to more restricted than less secured (e.g. staff-secured) facilities, youths who come into residential facilities with preexisting anxiety disorders might be presented with more problematic behaviors and generally respond worse to treatment than those without anxiety symptoms. However, this pattern has not been observed for those with stress-related symptoms. Indeed, Lyons et al. (2001) reported those with stress-related symptoms tended to perform better in residential facilities. Furthermore, youths entering residential facilities with preexisting stress-related and anxiety (as well as depression) symptoms could benefit from family interventions. One study on a sample of youths with severe emotional and behavioral disorders found that—after randomly assigning youths to either a short-term residential program, a community-based program, or a family-based intervention—those with anxiety and depression symptoms were presented with improvement in their symptoms when assigned to family-based programs (Wilmshurst, 2002).

Theoretically, youths with anxiety disorder might benefit from residential treatment programs if they were exposed to toxic stressors prior to their placement (e.g. abuse, neglect, and violence). In other words, growing up in a disadvantaged neighborhood and/or household might be the driving force of anxiety disorder (see, generally, Ceballo & McLoyd, 2002). If so, removing the youth from those environments might alleviate symptoms associated with anxiety disorder.

As for depression, there are various forms of disorder, ranging from disruptive mood dysregulation to persistent depressive disorder (dysthymia). Though, "the common feature of all

of these disorders is the presence of sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual's capacity to function" (American Psychiatric Association, 2013, p. 155). Because symptoms associated with depressive disorders range widely, it is important to account for variation in their intensity. As such, diagnostic measures that simply account for absence/presence of depressive symptoms may fail to capture the intensity of the symptoms.

Depression is a special form of mental disorder, because it has a unique relationship with physical health and general well-being (Massoglia, 2008a). Specifically, restriction in physical activity is associated with an increase in depressive symptoms (Link, Ward, & Stansfield, 2019; Moussavi et al., 2007) and depression during adolescence has been linked to physical health issues, such as diabetes (National Academies of Sciences, Engineering, and Medicine, 2019). Importantly, adolescents are more likely to experience depressive symptoms than young adults, adjusting for substance abuse and sociodemographic factors (Mojtabai, Olfson, & Han, 2016).

Depression is also likely to affect cognitive capacities and behavioral trajectories. Brain imaging studies have shown that individuals with major depressive symptoms have a smaller prefrontal cortex, which is responsible for decision-making and executive functioning (Drevets et al., 1997). Thus, depression could lead to poor decision-making and behavioral problems. In addition, the nature of delinquency and official interventions is likely to lead to negative self-image, which could go on to affect further engagement in offending (Coster & Heimer, 2001).

A recent study suggested depressive symptoms can be reduced by positive reinforcements that contribute to an increased feeling of value and self-worth (Telzer et al., 2014). Other studies have suggested that the quality of peer relationships during adolescence has a long-term effect on self-perception and emotional regulations (Masten et al., 2013). These

findings are valuable for treatment purposes, because they suggest incorporating treatments that provide a positive self-image and produce a sense of social connections—such as positive reinforcements and connection with prosocial peers and family—reduce depressive symptoms, which in turn can have a positive impact on treatment outcomes.

Anxiety and depression are salient for the current focus because of the well-established impact of incarceration on depressive and stress-related outcomes (Powel, 2014; Massoglia, 2008a; Underwood et al., 2004). The deprivation health model predicts incarceration would exacerbate anxiety and depressive symptoms by increasing stress, which might manifest in forms of frustration, aggression, or other emotional and behavioral problems. Thus, those with pre-existing anxiety and depression are likely to perform worse compared to those without such histories and a longer stay is expected to be associated with a worse treatment outcome.

The Takeaway

Table 4.1 summarizes the relationships we might expect between substance use, ADHD, anxiety, depression, and treatment outcomes. These predictions are connected to the importation and deprivation health models, such that the underlying assumption is that youths enter the facility with pre-existing mental health conditions (i.e. substance use disorder, ADHD, anxiety, and/or depression) and symptoms associated with some of these conditions might affect youth's responses to treatment. The predictions are based on prior studies and how youths entering the residential facilities are expected to respond to treatments. These discussions are further extended in the next chapter (chapter 5).

Table 4. 1

Health Models Predictions

Predictors	Predictions on Treatment Outcome
Substance Use Disorder	1. Respond poorly to treatment due to experiencing withdrawal symptoms. 2. Respond positively due to receiving treatment interventions that focus on substance abuse problems. Examples include substance abuse treatments, individualized therapies (such as cognitive behavioral therapy), and family therapies.
ADHD	Respond poorly to treatment, because neurodevelopmental disorders limit one's ability in planning, social functioning, and performing tasks and daily activities.
Anxiety	1. Respond poorly to treatment, because the deprivation health model identified confinement as a stressful experience. Thus, assigning youth to residential facility is likely to exacerbate anxiety symptoms. 2. Respond positively to treatment, because the anxiety symptoms were related to environmental factors prior to incarceration (e.g. living in a stressful household or disadvantaged neighborhood). Removing youths from those stressors might lead to a decline in anxiety symptoms.
Depression	1. Respond poorly to treatment, because the deprivation health model identified confinement as a frustrating experience and youths are separated from friends and family. In addition, depression could lead to poor decision-making and behavioral problems. 2. Respond positively to treatment due to receiving individual and family therapies.
Comorbidity	Respond poorly to treatment, because a collection of mental health symptoms (substance use disorder, ADHD, depressive symptoms, and anxiety) is expected to negatively affect adaptation to residential facilities.

Adverse Childhood Experiences (ACE)

A review of the literature clearly revealed that youth in residential facilities have poor health and has given us good reason to believe they are likely to enter these facilities with pre-existing health conditions rather than developing poor health in residential facilities (consistent with the importation health model). It was also discussed that the sources of developing poor health appear to overlap with what drives offending behaviors. This section reviews some of those overlapping risk factors. They are potential explanations of poor health that may have been initiated early in life.

Among all explanations for offending and poor health during adolescence, one risk factor consistently emerges—adverse childhood experiences (Asmussen et al., 2020; Baglivio et al., 2015; Dube et al., 2009; Jackson et al., 2018; Jackson et al., 2019; Jaffee et al., 2005; Shonkoff et al., 2012; Shonkoff, Boyce, & McEwen, 2009; Stimmel et al., 2014). Studies have identified several pathways by which ACE might affect health. First, by promoting risky lifestyle as a coping mechanism to life stress (Brown & Shillington, 2017; Suglia et al., 2020). Second, by disrupting neural networks, which could manipulate the formation of the immune system in a growing child (Asmussen et al., 2020; Dube et al., 2009; Shonkoff, Boyce, & McEwen, 2009). Third, by affecting mental health and cognitive performance such that brain functioning and information processing of those with adverse childhood experiences have been found to be interrupted in brain-imaging studies, resulting in poor decision-making and cognitive abilities (Asmussen et al., 2020; Shonkoff, Boyce, & McEwen, 2009). As such, ACE could lead to developing mental health issues, such as depression, anxiety, substance abuse, and aggression (Chapman et al., 2004; McEwen, 2007; Paul & Moser, 2009), or limiting access to life opportunities that are important for overall health and well-being (Aaron & Dallaire, 2010). Importantly, these are all common among serious juvenile offenders, offering insight into why poor health is so prevalent in this population.

Many justice-involved youths, particularly those considered chronic and serious offenders, tend to grow in poorly resourced communities and live in households characterized by abuse, parental confrontations and domestic violence, parental incarceration, substance abuse, and instable housing to just name a few (Barnert, Perry, & Morris, 2016; Brown & Shillington, 2017; Stimmel et al., 2014; Voisin et al., 2017). These adverse childhood experiences appear to affect delinquency in indirect and complex ways. For example, those who experienced early

adversity tend to rely on antisocial coping strategies—such as substance abuse—to deal with stressful life events and the absence of a protective caregiver appears to elevate the reliance on antisocial mechanisms (Brown & Shillington, 2017). Furthermore, accumulation of ACEs has been found to increase the risk of early onset and chronic offending (Baglivio et al., 2015).

Importantly, these complicated pathways of ACE to delinquency often meet health symptoms along the way. One study found that childhood sexual abuse attenuates impulse control in adulthood—a robust predictor of antisocial behavior (Gottfredson & Hirschi, 1990; Pratt & Cullen, 2000)—and this relationship is likely to be mediated by depressive symptoms and suicidal thoughts (Tasharrofi & Barnes, 2019). Other studies have shown how ACE attenuates life opportunities such as educational achievement and employment (Aaron & Dallaire, 2010), which could go on to affect mental health (Paul & Moser, 2009) and further engagement in crime (Link, Ward, & Stansfield, 2019).

As another example, youths who had experienced neglect in childhood, such as having no access to proper and safe food, have been found to present mental and emotional problems later in life (Belsky et al., 2010). Indeed, nutritional deficiency has been found to be a persistent predictor of ADD, after accounting for a host of confounding variables, including family income, parental mental health, family structure, and prenatal exposure to cigarette smoking (Melchior et al., 2012). Recall that those who present symptoms of ADHD early in life tend to be the most delinquent in late adolescence (Moffitt, Lynam, & Silva, 1994), these findings may highlight another pathway by which adversity in childhood affects both health and delinquency. Similarly, another study compared 1,206 children with no history of malnutrition to 353 children who were identified as having nutritional deficiencies at age 3 and found that at age eight, malnourished

children were more hyperactive and aggressive regardless of their gender (Liu et al., 2004, see also Poole-Di Salvo, Silver, & Stein, 2016).

It is also evident that ACE affects physical health. Because younger populations are generally healthy (Esposito et al., 2017), the influence of ACE on physical health might not emerge until later in life. This is evident in studies that have explored the determinants of health across the life course and identified chronic stressful childhood events as robust predictors of adulthood health (for an overview, see Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012). An autoimmune complication resulting from exposure to toxic childhood stressors, for example, may not emerge until after transition to adulthood (Dube et al., 2009).

In short, ample evidence supports the impact of ACE on both poor health and delinquency, although only the latter has been the focus of the juvenile justice system. In a broad sense, ACE has been recognized as a "chronic" or "toxic" stressor that affects health throughout the life course (Asmussen et al., 2020; Shonkoff, Boyce, & McEwen, 2009). Even though well-recognized, targeting ACE has been a challenge in treatment of justice-involved youth. One reason might be that the treatments are almost always focused on addressing the current symptoms, failing to take appropriate investments early in life for reaching a more positive result in the future (Asmussen, McBride, & Waddell, 2019).

Diet and Nutrition

A history of neglect and abuse in childhood heightens the risk of nutritional deficiencies (Testa & Jackson, 2020), which has been linked to a myriad of negative health outcomes (Belsky et al., 2010; Jackson, 2016; Liu et al., 2004; Poole-Di Salvo, Silver, & Stein, 2016). This section briefly reviews the importance of nutrition and how it might affect health. Although the current study does not directly test for the relationship between nutritional deficiency and health

outcomes, these discussions are presented here because diet and nutrition are often overlooked in the juvenile justice literature. Above and beyond its impact on mental health that was discussed earlier, diet and nutrition could play a significant role in understanding other aspects of health among juvenile offenders, such as poor physical health.

The current Standard American Diet, as the acronym suggests, is SAD. It includes excessive consumption of calories from poor nutrient sources such as refined carbohydrates, soda, and poor-quality meat (Grotto & Zied, 2010). That is a recipe for diet-related diseases, which could lead to developing various health conditions in a long run. In fact, nutrient-poor diet has been linked to an increased chance of mortality in earlier age due to nutritional deficiencies (Kant et al., 2009). To enhance public health, the challenge is to shift the dietary habits of consumers from fast and processed food to nutrient-dense alternatives. Such a culture should be initiated from organizations that are in a close contact with the younger generation (e.g., schools, universities, or juvenile residential facilities).

The quality of diet and nutrition is particularly salient during adolescence, because youths experience cognitive and physiological developments during this period. As such, a growing child needs a balanced diet that delivers all essential components a healthy meal has to offer (Beaver, 2019; Haas, 2006). Youths who consume refined and processed foods commonly suffer nutritional deficiencies. Adolescents are more likely to eat fast and fried foods as a result of spending more time outside of home and hanging out with friends, which puts them at a higher risk of developing health-related issues later in life if those dietary habits continue to be part of their lifestyle (Haas, 2006). Fast foods are high in sugar, salt, unhealthy fats, and additives, because the only important factor is to provide a quick, delicious meal (Harris, Schwartz, & Brownell, 2010; Dennisuk et al., 2011; Hurley et al., 2008). Unfortunately, little attention has

been paid to the importance of nutrition in the culture of American institutions—even some public schools and universities' cafeteria serve fast foods rather than providing students with high-quality, nutritious food options. Studies have shown the greater availability of fast food restaurants is associated with an increased intake of these types of food by the younger generation (Forsyth et al., 2012).

One of the many challenges facing today's youth in the United States is obesity (Ogden et al., 2012). Frequent fast food consumption has been linked to obesity in transition from adolescence to adulthood (Niemeier et al., 2006). The challenges that arise from obesity are both physical and psychological—obesity is hard on the body but it is also hard on the psyche. Studies have linked obesity to various forms of physical health problems, including diabetes, hypertension, and heart diseases (Klein et al., 2007). Also, adolescents who perceive themselves as overweight are at a higher risk of developing mental health issues in young adulthood, including depression and anxiety (Al Mamun et al., 2007).

Evidence on the impact of incarceration on unhealthy weight is mixed. Using a nationally representative sample, a recent study reported that incarceration is a risk factor for obesity among adult males, particularly for African Americans (Houle, 2014). Though, this pattern has not been consistently observed among the population of juvenile offenders in residential facilities. One study examined the prevalence of abnormal weight among youths incarcerated in long-term correctional facilities and found that they did not become overweight nor underweight (Feinstein et al., 2007). Yet, a recent study used a sample of 217 youths resided across 12 juvenile correctional facilities and found that they were significantly more likely than the comparison group—a sample of roughly 170,000 school students in Minnesota—to be overweight or obese (Brown, Davis, & Shlafer, 2020).

A Brief Review of Basic Health Needs

This section reviews some of the basic health needs that prior studies have identified as major concerns for youths entering residential facilities. Several studies have identified poor dental care as a major health challenge for youths in residential facilities (e.g. Barnert, Perry, & Morris, 2016; Golzari, Hunt, & Anoshiravani, 2006), but basic health needs may also include routine physical exams as well as optical checkups (Brown, Davis, & Shlafer, 2020). It is expected that youths have access to these basic health services in the community as well as in residential facilities.

Dental Care

Dental care is important throughout life, but problems can emerge early in the life course. Cavities, for example, are common during adolescence (Bagramian, Garcia-Godoy, & Volpe, 2009). Part of this is related to diet, such as consuming refined sugars or suffering from mineral deficiencies (Alm et al., 2012; Haas, 2006), but perhaps youths are also less attentive to their oral health compared to adults (e.g. tooth-brushing and flossing). Research has identified other factors that are negatively associated with oral health, some of which are common among the population of juvenile offenders. For example, studies suggest that poverty in childhood and adolescence has a negative impact on dental health (Peres et al., 2007), mainly due to limited preventive care visits and lack of insurance coverage (Irwin et al., 2009). In addition, minority children are more likely to have limited access to dental care (Flores & Tomany-Korman, 2008). Oral health issues have been found to be a serious problem among population of youths in detention facilities, particularly for African Americans (Barnert, Perry, & Morris, 2016; Bolin & Jones, 2006).

One study revealed that of the 47,288 adolescents housed in a New York City detention facility during 1970s, 90% of those that received dental examination had not had adequate dental care prior to arrival at the facility (Hein et al., 1980). Furthermore, a survey conducted on 24 juvenile detention facilities during 1990s revealed that dental care was one of the main reasons for health care referrals (Golzari, Hunt, & Anoshiravani, 2006). Another study found that more than half of the 419 youths in a detention facility had untreated tooth decay, which is well beyond the 20% national average (Bolin & Jones, 2006). This is unfortunate because, if left untreated, oral health problems could lead to pain, destruction of bone, spread of infection, and perhaps the loss of teeth at early ages (Bagramian, Garcia-Godoy, & Volpe, 2009). The current study explores whether youth had access to dental care and other basic health services.

Chapter 5: Residential Treatment Programs

Residential facilities host serious juvenile offenders. Youths placed in residential facilities are typically different than situational offenders (Sullivan, 2019). This chapter casts light on these differences and then moves on to review the literature on residential facilities.

Facts and Figures

There is quite a diversity in how delinquents are handled in juvenile courts. At intake, court officials decide whether to file a petition and formally process a case or to handle it informally. In 2017, of those handled informally, approximately 18% were dismissed at intake, largely due to lack of sufficient evidence to hold the youth accountable for the offense (Hockenberry, 2019). Though, a majority of informally processed cases still received some form of sanctions. Of cases that were processed formally (roughly 57%), just above half were adjudicated delinquent. This translates to about 30% of the entire delinquency cases (N = 818,900) that were handled in 2017 (≈ 248,100; Hockenberry, 2019).

A majority of adjudicated cases receive probation or other community-based sanctions, leaving less than the remaining 30% of the cases to be assigned to out-of-home placements. In 2017, this number was close to 70,000 youth, just above 8% of total cases handled by the juvenile courts in that year (Hockenberry, 2019). Estimates from 2016 indicated a majority of the juveniles offenders who were assigned to residential placements were held in publicly operated facilities (≈70%). The remaining privately operated facilities hosted approximately 13,266 offenders nationwide (Hockenberry & Sladky, 2018).

There are three major placement status for juvenile offenders: committed, detained, and diverted. The committed placement includes youths who have been adjudicated delinquent and assigned to a residential facility as part of a court-ordered disposition (or conviction if they had

been waived to a criminal court). A detained placement status is for a youth who is either awaiting the juvenile court adjudication hearing, has been adjudicated and is awaiting disposition, adjudicated and awaiting other placements, or awaiting a hearing in/transfer to a criminal court. Lastly, diversion status includes a relatively small portion of youth who were not adjudicated but were placed in a facility as a part of a diversion agreement (Sickmund, Sladky, & Kang, 2019).

More than 25% of juvenile offenders are held in detention programs. Generally, detention centers are short-term and more secured type of facilities that serve two purposes of the juvenile court: to protect the community (and youth) and to ensure that youth will appear at court hearings (Sullivan, 2019). For a longer stay, which applies mainly to those committed, youths are often placed in residential treatment programs, correction programs, community-based programs, or in some type of camps. About 15% of youths are in residential programs, which are often privately owned and operated units (Sedlak, 2016).

There is a great variation across placement facilities in terms of operation, type, size, screening practices, organizational complexity, and the delivery of services. Unlike detention programs in which youths are often held securely, a majority of residential treatment programs do not use locks during the day (i.e. they are staff-secure). Youths in residential treatment programs (and other facilities for committed youth) also tend to stay significantly longer than youths in detention programs (Sedlak, 2016). However, given the diversity of services they provide, length of stay for students in residential treatment programs varies substantially. Estimates from 2003 indicated about 10% of youths stayed less than two months, 31% between two to four, 36% between four to six, and about 23% of youths remained in these programs for more than six months (based on median length of stay in days; Sedlak, 2016).

Juveniles in Residential Programs

Aside from a tiny fraction of youths that are transferred to criminal court each year (about 1%; Hockenberry, 2019), assigning youths to a residential placement is considered the most severe disposition for youth remaining under the juvenile courts' jurisdiction. These facilities are often referred to as the "last resort" (Frensch & Cameron, 2002). Thus, from the juvenile justice perspective, these youths are considered serious and chronic offenders who need to receive the most attention. Interestingly, the offense profile of juvenile offenders housed in these facilities appear to be quite similar across all type of programs, with more serious career offenses, such as person and property, being more prevalent than less serious ones (Sedlak, 2016).

Even so, there is a considerable variation in purpose, operation, and security level of facilities that the juvenile justice system assigned youths to. Thus, the juvenile court needs to decide, ideally based on the youth's need and risk factors, which program serves the "best interest of the child." This decision is vital, because it affects the type of treatment as well as the level of security and restriction that governs their discipline. Thus, together, these decisions could have a direct impact on how youths are treated in the justice system as well as their treatment outcomes. For example, long-term correctional facilities are considered the most restricted type of facility, whereas residential treatment centers are less restricted, rehabilitative-focused alternatives (Sickmund, Sladky, & Kang, 2019).

Data also suggest substantial variation in racial compositions of these facilities. For example, in 2003, African American were more likely to be placed in correction programs, whereas Whites were more likely to be placed in residential treatment facilities. Importantly, studies have shown White youth tend to receive dispositions that are more rehabilitative in nature, whereas minorities are more likely to receive punishment-oriented dispositions (Cochran

& Mears, 2015). Furthermore, similar to other sectors of the justice system, African Americans adolescents are overrepresented in out-of-home residential placements compared to their White counterparts (Leiber, Brubaker, & Fox, 2009; Sickmund, Sladky, & Kang, 2019).

Given these findings, scholars have called for studies to explore background and service needs of juvenile offenders that might explain these racial gaps (Sedlak, 2016). Above and beyond the criminal justice treatments, it is possible that some of these racial gaps are linked to differences in individual characteristics, such as mental health. This is because studies have documented White youths in residential placement had significantly more mental health needs compared to their African American counterparts (Teplin et al., 2002; Baglivio et al., 2017). Because many of the residential treatment programs are claimed to utilize treatments that target mental and behavioral modifications, court officials may perceive these programs to be more suitable for Whites. Other issues point at the effectiveness of these programs. As discussed earlier, youths in residential placement often have significant health and behavioral needs (Golzari, Hunt, & Anoshiravani, 2006; Hockenberry, 2018; Sedlak & McPherson, 2010). However, it remains unclear whether these facilities are the best alternatives for serious and chronic juvenile offenders with complicated health conditions, especially those placed in long-term residential facilities (Development Services Group, 2019).

Controversies, Challenges, and Limitations

A primary concern surrounding research on residential treatment programs is centered on outcome measures and program comparisons. More specifically, it is not clear what defines a program as successful or effective. Given this ambiguity, if an out-of-home placement program is considered "effective," it remains unclear how it would perform compared to other alternatives, such as community-based programs (Barth et al., 2007; Bettmann & Jasperson,

2009). Another challenge is whether the effectiveness of the residential programs conditioned on individual differences and/or specific features of a program (Curry, 1991; Lyons et al., 2001). Scholars have long recognized these sentiments as major challenges in studying residential placement programs and their effectiveness (Bettmann & Jasperson, 2009; Butler & McPherson, 2007; Butler, Little, & Grimard, 2009).

In the literature, the term "residential facility" could refer to any of the programs discussed earlier (e.g. detention, treatment, or correction). This is because "residential programs" generally mean any inpatient and out-of-home facility that monitors the patients on a 24-hours per week basis (Bettmann & Jasperson, 2009). Given the diversity of these programs in organizational philosophies, operations, and treatment purposes (Helgerson et al., 2007), a lack of definition serves as a major challenge in studying them (Butler & McPherson, 2007).

For this reason, there has been virtually no research to explain what features of a program might work for particular types of juvenile offenders (Development Services Group, 2019). A proper research design should account for program differences by defining specific elements of the program and examining how those particular features affect treatment outcomes. For instance, residential treatment centers are those that adapt rehabilitation as their guiding philosophy and attempt to address mental, emotional, and behavioral problems through providing intensive and multidisciplinary treatments for youths who had failed in outpatient treatments or had serious conditions to remain in the community (Bettmann & Jasperson, 2009; Mallet & Boitel, 2016). This would serve as a definition for the residential treatment centers, although some of the goals and approaches might overlap with other programs (Butler & McPherson, 2007).

Even when programs are explicitly defined, it would still be difficult to learn much about their effectiveness. There are two reasons for that. First and foremost, there is a substantial variation in terms of treatment approaches and availability within these programs across facilities around the country. For instance, approximately 13% of residential treatment centers reported they did not provide mental health and 25% did not provide substance abuse services in 2016 (Puzzanchera & Hockenberry, 2018). Given that by definition such services are among the priorities of the residential treatment programs, it remains unclear why some do not provide them and how their absence might affect the treatment goals.

Second, different studies use different outcomes (e.g. symptoms reduction, family relationships and social functioning, reducing recidivism). For example, would reduction in recidivism in a follow-up study constitutes effectiveness if the participants were presented by an increase in mental health symptoms? For the most part, the issue of diversity in outcome measures is embedded in the absence of clearly defining goals for each program. Is the main purpose of the program *X* reducing recidivism or improving health? Although the two might overlap, each goal needs to be targeted with precise planning that characterizes the program. These ideals appear to be missing in current practices, making these programs difficult to study.

Another interrelated issue centers around studies that evaluate the effectiveness of the residential programs compared to other alternatives. Generally, these studies are informative, because they allow comparison across programs, which helps with resource allocation decisions and introduction of more cost-effective interventions. However, conclusion about effectiveness of residential programs is subject to their comparison with non-custodial alternatives. This is important, because prior studies have shown that residential facilities are not more effective in reducing recidivism—currently the primary goal of the juvenile justice system—than

community-based sanctions (Bontrager Ryon et al., 2013). One study (Barth et al., 2007) compared the school and placement status as well as problem with the law one year following discharge from two programs: residential care and intensive in-home therapy. Because an ideal approach—random assignment of youths to these programs—was not possible, the authors used propensity score matching to increase the comparability of the two samples. The authors then categorized the outcome measures to three ordinal variables: desirable outcome, mixed outcome, and undesirable outcome. A desirable case outcome was considered a youth who lived with his family, had progressed in school, had no problem with the law, and had no out-of-home placement within one year post discharge (Barth et al., 2007). The result indicated that youths who were assigned to residential care had worse outcomes. On the other hand, clients who received an in-home therapy were presented with higher odds of falling into the "desirable" category.

Treatment Evaluations: Symptoms Reduction in Residential Programs

Unlike studies that considered reducing recidivism as the outcome of interest, those that considered the trajectory of youth's mental health appears to show some positive results (i.e. symptoms reduction). After all, as have been discussed throughout this study, these outcomes should be the primary goal of the juvenile justice system, because paying attention to youths' well-being is what separates the juvenile justice from the criminal justice system (Mears, Pickett, & Mancini, 2015). In addition, the definition of these programs does not explicitly identify reduction in recidivism as a primary goal, but it does dictate mental and behavioral improvement as the outcome of interest (Mallett & Boitel, 2016).

Overall, the literature suggests that residential facilities are effective interventions in reducing diagnostic symptoms for troubled youth (Bettmann & Jasperson, 2009). However, a

careful review reveals that psychotherapeutic improvements depend on specific program features (Lipsey, 2009) and individual characteristics (Frensch & Cameron, 2002). For juvenile offenders, the program features would vary from philosophical perspective to treatment implementation. Lipsey (2009) found that the most effective programs were adapting a therapeutic intervention philosophy and implementing high quality interventions.

Studies that focused on the relationship between individual characteristics and symptoms reduction cast light on who might benefit the most from these programs (Curry, 1991; Connor et al., 2002). For example, using a sample of adolescents (12- to 17-years-old), one study found that youth's tendency to risky behaviors, particularly those related to self-harm, declined over time in residential settings. In addition, youths were presented with improvement in managing psychosis and depressive symptoms. However, youths with hyperactivity symptoms were presented with decline on their symptoms (i.e. symptoms exacerbated over time), providing some evidence that youths with ADHD may not benefit from programs in a residential setting (Lyons et al., 2001), even if placed in those classified as "therapeutic."

Because these findings suggest some mental health symptoms, such as hyperactivity and inattention, might be aggravated in a residential setting, it might be the case that they also interfere with youth's responsivity to treatments in these facilities. For instance, youths with ADHD may experience difficulty planning and thinking ahead about the consequences of their actions (Boesky, 2002), which could result in more impulsive behaviors. Thus, ADHD can have a negative impact on treatment outcomes because those youths might be less attentive to rules and regulations, less likely to follow assignments and schedules, and generally, act more impulsively compared to those without ADHD.

The negative impact of ADHD on treatment outcome is further supported by studies that examined the co-occurrence of ADHD and other mental health conditions (Wise, Cuffe, & Fischer, 2001). As discussed earlier, comorbidity is common among youths in residential facility (Shufelt & Cocozza, 2006) and thus considering a mental health condition, such as ADHD, in conjunction with other psychiatric symptoms merits careful consideration for staff in residential facilities to deliver successful interventions. To that end, one study (Rowe et al., 2004) conducted on $N = 91$ youths participated in a residential substance abuse treatment program found that youths with ADHD had less success in the treatment. More specifically, youths with the co-occurrence of ADHD and substance abuse symptoms were significantly more likely to have an unsuccessful participation in the program. Interestingly, the negative impact of ADHD on treatment outcome was even stronger than conduct disorder (note that this was not a juvenile justice facility).

Other studies have revealed how individual characteristics and temperament might interfere with responses to treatment. Colson et al. (1991) found that youths who were resistant to treatment and had anger problems presented with the greatest barriers for staff in implementing therapeutic interventions. Perhaps most importantly, roughly 70% of the sample (47 out of 69 clients) had a history of hospitalization for mental health reasons. This result suggests that the intensity of mental health conditions might be an important factor in individual responses to treatment, such that youths with higher degree of symptoms have worse cooperation with staff in effectively implementing treatments. Furthermore, the authors noted, the most difficult youths in this sample were all male who scored highest on symptoms related to anger, suggesting that individual characteristics are important predictors of treatment outcomes, especially for male clients.

Adverse childhood experiences also appear to affect treatment responses. A study of seriously emotionally disturbed children and adolescents in a residential treatment facility found that participants with a history of physical and/or sexual abuse were presented with an increase on clinical psychopathology, whereas those with no history of childhood abuse were presented with improvement on psychopathological scales at discharge (Connor et al., 2002). This finding suggests adverse childhood experiences might moderate the impact of treatment for emotionally disturbed children.

In short, a review of the literature suggests mental health could be an important determinant of youth's success in residential treatment programs. Unfortunately, there is currently no clear guideline as to how juvenile offenders might be effectively treated for specific mental health conditions in residential facilities. As one example, psychiatric medication is commonly used to treat mental health symptoms of juvenile offenders (Handwerk et al., 2008). Yet, there is some evidence that psychotropic medication therapy may not be an effective strategy in reducing mental health symptoms in residential facilities (Wise, Cuffe, & Fischer, 2001). Thus, it is important to note, a presence of psychiatric or other mental health professionals in these facilities does not necessarily mean that youth's mental health needs are improving or being adequately addressed. This point once again highlights the importance of merging public health approaches with treatment of juvenile offenders.

To conclude, juvenile residential facilities have been heavily criticized for removing youth from their community, creating distance between their conventional bonds and in turn promoting more association with peers with similar antisocial tendencies housed in the same facility (Akers, 2017; McCurdy & McIntyre, 2004). Moreover, youth's placement in a residential facility has been linked to increased odds of further involvement in the justice system (Leiber,

Brubaker, & Fox, 2009). Importantly, a deeper involvement in the justice system has shown to be associated with worse mental health. One study found that suicidal ideation increases with deeper involvement of youth in the juvenile justice system (Stokes et al., 2015). Together, these discussions suggest that placement of youths in residential facilities might not be the best alternative in improving the health and well-being of justice-involved youth unless individual characteristics have been carefully matched with specific program features. Overall, studies have found no relationship between the level of supervision and reduction in recidivism for juvenile offenders, suggesting that community-based programs might work similarly, if not better, than residential facilities for rehabilitating juvenile offenders (Bontrager Ryon et al., 2013; Lipsey, 2009).

Although this does not mean residential facilities are ineffective, with the current evidence it is hard to justify that the taxpayers' money is invested properly to the "best interest of youth." Specifically, the evidence suggests these programs appear to work for *some* youths and that mental health conditions could be a predictor of treatment outcome. In other words, there is ambiguity in how mental health might impact treatment outcomes. A logical next step, therefore, is to identify for whom these programs could be beneficial. This serves as one of the main motivating aims for the current study.

Table 5.1 summarizes the literature that was covered in this and the previous chapter.

Table 5. 1

Summary of the Literature - Chapters 4 and 5

Topics and Chapters	Key Summaries	Example of Source
Residential Facility, Mental Health, and Treatment (Chapters 4 & 5)	Program features and individual characteristics affect treatment responses. Not all programs are effective and not all individuals are successful in the programs.	Lyons et al., 2001
	There is a great variation across placement facilities in terms of operation.	Barth et al., 2007
	About 25% of residential treatment facilities do not provide substance abuse treatments. About 13% fail to provide mental health services.	Puzzanchera & Hockenberry, 2018
	Substance abuse, ADHD, anxiety, and depression are prevalent.	(Varies)
	Mental health matters in youths' response to treatment. Those with depressive and stress-related symptoms might perform better in treatments.	Wilmshurst, 2002 Lyons et al., 2001
	Symptoms of impulsivity and depression tend to improve in residential facilities, whereas ADHD tend to decline (worsen).	Lyons et al., 2001
	Youths with comorbidity of substance abuse and other mental health conditions tend to perform poorly in treatments compared to those with no other mental health condition than substance abuse.	Rowe et al., 2004
	Many youths in residential facilities have basic health needs (e.g. dental and optical care). Recent evidence also suggests they are more likely to be overweight or obese compared to youth in the general population.	Brown et al., 2020
	Residential facilities are ill-equipped to address health.	Teplin et al., 2005; Underwood et al., 2004
	There is no clear guideline on who is assigned to which residential program. The programs and their expected outcomes are also vaguely defined. It remains unclear what constitutes effectiveness.	Bettmann & Jasperson, 2009
	Residential treatment centers are designed to address mental, emotional, and behavioral problems through providing intensive and multidisciplinary treatments.	Mallet & Boitel, 2016
	Diversity in outcome measure in studies that have evaluated residential facilities has left a gap in knowledge about these programs' effectiveness.	Bettmann & Jasperson, 2009
	Adverse childhood experiences appear to be at the heart of poor health among juvenile offenders.	Asmussen et al., 2020 Shonkoff et al., 2009, 2012

The Focal Site

The purpose of this section is to familiarize the reader with the focal site and to provide an overview of rules and regulations enforced at the facility. Throughout this section, I refer to the focal site as the "Facility" or "Site", use the word "Academy" when I refer to the program, and use the words "students" or "residents" interchangeably.

This section begins by discussing the eligibility criteria followed by the process of admitting youth into the program. Furthermore, it explains students' day-to-day activities and introduces some of the features of the program. Lastly, it will discuss the steps required for a youth to successfully complete the program. All the information has been collected by either interviewing the staff (i.e. case managers, nurses, and mental health professionals on the Site), reviewing the Academy's handbooks, or searching on its website.

This facility operates privately and is considered a "residential treatment program." It serves serious juvenile offenders and its treatments follow therapeutic approaches. Located in Cincinnati, Ohio, the Facility is operated in partnership with Hamilton County Juvenile Court and Probation Department. It runs under a bigger organization that operates 40 treatment-based programs in 16 states across the country, and for more than thirty years it has provided service to vulnerable and at-risk youths. According to its website, about 2,000 youths are served each year under its supervision—the focal site being just one of them. This organization is dedicated to improving the lives of youth, families, and communities and attempts to incorporate evidence-based practices with a particular focus on mental, physical, and emotional well-being.

Program Characteristics

Physical Characteristics

Due to punitive approaches that the criminal and juvenile justice systems have historically exercised, residential facilities are often perceived as heavily restricted environments in which students have little to no freedom. Although this might be true for some juvenile residential facilities, it does not entirely apply to the focal site. This is a all-male *residential staff secured facility*—meaning there is no barbed-wire fence surrounding the campus—despite hosting serious juvenile offenders. The landscape is clean and filled with trees, and on a typical day, it looks just like any other school. Thus, because students are not strictly confined, it can be distinguished from facilities that exercise traditional incarceration.

The Organizational Philosophy

The primary goal of the Academy is to provide evidence-based treatments to improve the thinking patterns and behavioral aspects of the youth. It follows a therapeutic treatment approach (Lipsey, 2009) and allocates a significant portion of its resources to positively affecting different aspects of the youth's life quality. This includes health improvements, vocational skills, educational tools, and relationship improvements. Students have the opportunity to resume their education at the Academy and transfer their credits after successfully completing the program. Each year in June and December, the Academy celebrates students' graduations, which could be a positive reinforcer not only for youths who successfully graduated from the program, but also to other students seeking the same accomplishment.

Exclusionary Criteria

There are certain criteria that must be met for youths to be admitted to the Academy. Specifically, youth with the following characteristics are not eligible: females, students younger than 12 or older than 18 years old, students with serious developmental problems (IQ below 70), a history of fire setting, a significant history of runaway, serious medical conditions including active psychosis, a sex offense history (unless they have completed the sex offender treatment programs in the past and currently pose low risk of recidivism in that area), a history of homicide or suicidal ideation, and those that show no interest during the initial interview. In addition, youths whose guardian is highly opposed to the placement are not admitted to the Academy. Although special exceptions have been made in the past, for the most part the Academy implements these exclusionary criteria. Thus, the composition of the sample used for the current study will reflect these exclusionary criteria, meaning the study sample will not generalize to the broader population of juveniles in treatment facilities. For this reason, the analysis presented

below will begin by describing the characteristics of the participants included in the study so that the reader may gain perspective on the youth that were included in the analysis.

The Placement and Admission Procedures

The placement process is often initiated by placing agencies. After reviewing the referral request, the youth will be interviewed by the Academy's staff and then a decision will be reached about whether he is a good fit for the program. If so, the Academy would review the youth's background, including education files, medical records, criminal history, and risk assessments. They will then have an admission meeting with the youth to go over rules and regulations and to ensure that the youth understands their expectations from him. If the student is admitted, the Academy will notify the court and he will be placed at the Academy within the next few days. The financial cost of having a youth at the academy ranges from $190 to $260 a day, depending on county and placing agency (e.g. probation or child services). This raises an important point concerning the cost-benefit balance between residential facilities and alternatives such as community-based programming. Such a cost-benefit analysis is not possible for the present study because our focus is centered on youth who reside in the Academy, but the broader point is one worth acknowledging here and I will return to a discussion of the overall cost of housing youth in this particular facility.

Students are assessed for their individual needs upon admission to the program. This often initiates with an interview with the staff, known as Clinical Intake Interview. During the Clinical Intake Interview youths are asked about their general background, education, sleep issues, typical dietary habits and eating issues, risk issues (e.g. number of times in juvenile detention, possession of weapons, gang membership), drug and alcohol use, family issues, treatment history, as well as abuse and trauma history.

Other assessments at intake include evaluating the risk of victimization through a vulnerability assessment, whether they pose any danger to other themselves or others (e.g. history of aggressive behavior or sexual offense), as well as risk for going absent without leave (AWOL). Taking all these factors together, students will be assigned to an appropriate cottage. Students who are vulnerable, or those who pose a significant risk to others, will be assigned to single rooms. The remaining students will be assigned to a cottage that houses two students per room. There are 13 cottages on the Site, but only some are being used for the purpose of students' residence. In short, staff have the flexibility of assigning students to different cottages based on students' individual needs. The picture below demonstrates the outside view of some of these cottages.

Within the first 30 days, trained clinicians evaluate students' thinking patterns, emotional and mental well-being, and risk for future violent behaviors using standardized assessments such as How I Think (HIT), Behavior Assessment System for Children (BASC), and Structured Assessment of Violence Risk in Youth (SAVRY). These assessments will then be used to modify the treatment plan that was previously determined based on information received from the referral agencies, such as risks and needs that had been identified using standardized risk assessments (e.g. Ohio Youth Assessment System; OYAS).

For example, the initial case plan, which was created upon the youth's arrival, may suggest that association with antisocial peers, substance abuse, and antisocial beliefs were the main risky domains to be focused on. But the clinical assessments may recommend the youth receive treatment for family risk, substance abuse, and antisocial beliefs, which would lead to a change in the youth's treatment plan. Antisocial peers, for instance, may no longer be a primary risk factor for the youth, and thus the Academy may substitute that with another primary risk factor, such as education or family. As such, the Academy attempts to address the criminogenic needs of the residents, which are subject to change over time (see, generally, Gendreau, French, & Gionet, 2004).

Case managers are responsible for ensuring that students' service plans are implemented appropriately. They use all the available information, such as information derived from the assessments, to decide which treatments would best suit the youth under their supervision. They also help the youth to follow the necessary steps in achieving their goals. Throughout their time at the Facility, students are encouraged to set realistic goals and follow specific steps in reaching those goals. Case managers and other staff members guide students in pursuing and achieving their goals and assess their performance on a daily basis (more on this later).

Student Code of Conduct and Other Rules

Students are expected to uphold certain values in the Academy. This includes trust, mutual respect, and determination to help students be successful in the program and after being released from the Facility. In addition, students enjoy certain rights at the Academy. This includes the right to receive appropriate food, clothing, housing, and medical care. Students are protected from any forms of abuse or sexual exploitation, and they have the right to be free from inhumane treatment or unusual punishment. If these rights are violated, students are encouraged to file a grievance.

Violation of rules is not tolerated. Students are expected to closely follow the rules and regulations of the Academy, and major rule violations result in a disciplinary hearing during which appropriate consequences are determined. Any rule violation—any act that violates the Code of Conduct—will result in point deduction, which delays students' progress and completion of the program. Penalties for all violations are clearly indicated in the student handbook so that residents are aware of the consequences of their actions in advance.

Treatments & Therapies

Group treatments include Thinking for a Change, Aggression Replacement Therapy, and Substance Abuse. Furthermore, the Academy provides students with individual therapy sessions. Each youth is assigned to a therapist to address his individualized needs. Interventions used during individual therapy sessions include trauma-focused, cognitive behavioral, motivational interviewing, strength-based, solution-focused, and client-centered interventions.

The family therapy sessions are designed to incorporate the role of family to the youth's treatment. Family therapy plays a significant role in the treatment of youths at the Academy. Each case plan must include a family plan (unless family is not involved in the treatment of the

youth), and students need to have at least three family therapy sessions completed before they become eligible for a home pass. Families are assigned a therapist, who will provide them with tools and guidelines necessary for successfully treating their child. Parents or legal guardians are invited to attend meetings that are focused on the youth's progress. Although the Academy is accessible from different parts of the city, Academy staff provide transportation for families to attend therapy sessions. This helps to ensure that transportation is not a barrier in youth's treatment progress. In addition, residents enjoy family visitations—at least one-hour visit per month. Phone calls, mail, professional and special visitations, as well as home passes during their time at the Academy are other privileges that students could enjoy at the Academy, based on their status in the program.

Completing the Program

The steps required for a youth to climb the progression ladder to successfully complete the program are clearly outlined in the Student Handbook. As mentioned earlier, students are assigned a cottage in which they live and are supervised by staff on a day-to-day basis. Students' activities, such as their progress in academic courses (education), participation in group treatment programs, and compliance with daily rules and regulations (also known as *Group Living*) are recorded in Daily Progress Notes. These notes are the main indicators of students' behavioral progress throughout their time at the Academy. They are reported in forms of narrative and present student's compliance with rules and regulations, as well as treatment and school expectations. The narratives are translated into scores that are used to document the student's progress, known as Force Field Analysis (FFA). These FFA scores are the main indicators of the residents' status at discharge.

Staff at the focal site use the FFA forms to rate the residents' day-to-day interactions,

behaviors, and compliance with the rules and regulations. More specifically, staff rank seven items for each resident, ranging from 0 to 4, where 0 (= unacceptable), 1 (= lacks skills), 2 (= shows efforts), 3 (= needs consistency), and 4 (= models expectations). The seven items are: (1) understands rules and norms, (2) understands daily schedule, (3) understands public address and manners, (4) tries during health and wellness, (5) accepts instruction, (6) care and concern for others, and (7) understand dining/medication norms. Each day, staff members score each of these items from 0 to 4 for each resident. Together, those scores shape the final daily rating of the resident's behavior.

For instance, receiving a score of 4 on all the seven items would lead to a daily rating of 100 (after scores are transformed by the Sites proprietary algorithm). A score of 4 on five of the items, followed by a score of 3 on one and a score of 2 on another, would drop the daily rating to 89. Figure 6.1 is an example of how FFA scores might look for a hypothetical resident.

Figure 6. 1

A Snapshot of Force Field Analysis (FFA) Scoring Example

Day's Rating	Follows Rules/Norms	Ready for Activities & Room Inspection Ready	Uses Public Address & Manners	Best Effort in Health & Wellness	Accepts Support	Demonstrates Positive Skills	Follows Dining/Med Norms
100	4	4	4	4	4	4	4
96	4	4	4	3	4	4	4
89	2	4	4	4	4	3	4

In this example, the resident "models expectations" across all the seven domains on the first day (i.e. receives a score of 4), resulting in a daily score of 100 (the top row). On the following day (middle row), he continues to perform well by receiving the highest score (= 4) on

all domains except on health and wellness, on which he received a score of 3. One the last day (the bottom row), the resident received a score of 2 on following the Academy's rules and regulations and a score of 3 on demonstrating positive skills, although he performed well on all other domains.

The FFA consists of three colors—green, yellow, and red—that indicate the level of consistency in prosocial skills and behaviors students presented each week. To receive a green week, students need to achieve 80% or more on average in their treatment, education, and group living scores. Green denotes consistency in demonstrating pro-social skills, while yellow indicates some consistency but leaves more room for improvement. Yellow signifies the average consistency of 60% to 79% in the three areas during the week. Red suggests the student is not consistently demonstrating prosocial skills and not meeting the objectives of the program (below 60%) in these areas (i.e. education, treatment, and group living). In a sense, to accelerate successful graduation from the program, the resident's goal is to achieve a "green week" and avoid a "red week." As such, the students' progress in treatment will be judged on a weekly basis (rather than daily) by staff. The FFA scores are then used to determine the residents' status levels.

There are five status levels that can be reached (not to be confused with the *discharge* status—see the next paragraph): 1) Orientation, 2) Rookie, 3) RAM-Intern, 4) RAM, and 5) Block-R. Students must work their way up from Orientation to at least the third level (RAM-Intern) to successfully complete the program. The second phase of the program is Rookie, which is for students that have spent the three weeks in Orientation phase and have learned about the culture, norms, and regulations of the Academy. It introduces no extra privileges to the students, however. To be in the third phase—known as RAM-Intern status (or simply Intern)—students

need to maintain their green status on their FFA rating over five weeks and receive approval—known as sign offs—from the treatment team. This phase signifies positive changes in student's thinking and behaviors.

The RAM is the most common status for students who successfully *graduate* from the program (graduation is the highest status at discharge, followed by *completion* in a hierarchical order). To achieve a RAM status, students need to earn four green weeks out of five total weeks, which requires about a month of consistent positive choices and behaviors. Thus, advancing from an Orientation status to a RAM status takes about 9 total weeks, if students comply consistently with the Academy's rules and regulations and have no major incidents that impact their progress. The RAMs act as role-models for their peers and they are expected to display respect and positive attitudes.

Finally, the Block-R is the highest status at the Academy. It is important to note that obtaining this status is optional and is not required for the purpose of graduation from the program. Students that achieve this status, however, act as leaders among their peers. In other words, they become the president of the student body and they are the voice of their peers. They lead the RAM meetings, and they have special privileges, such as an increased number of phone calls and more freedom on campus.

Basic Health Services

In this section, I explain some of the basic health needs that students receive at the Site. It is important to note that the health services provided by the Academy might go beyond what is explained here. Though, because a review of the literature suggested unhealthy weight, dental care, and optical needs are among the common health needs for youths entering residential

facilities (Brown, Davis, & Shlafer, 2020), this section briefly reviews the availability of those services at the focal site.

The medical staff consists of contracted doctors, registered nurses and licensed practical nurses, and a dentist. All employees are certified Cardiopulmonary Resuscitation (CPR) and First Aid, or otherwise they will not be left alone with students. In short, medical care is available on a daily basis to students, and those in close contact with students have been trained to make appropriate moves in times of emergencies.

The Academy pays particular attention to students' hygiene, health, and nutrition. All students shower and shave daily, and are issued a toothbrush, toothpaste, deodorant and other personal care items. In addition, a registered nutritionist certifies all meals served at the Academy. The ingredients are cooked fresh at the Academy, which are supervised by the National School Lunch Program. Each day, youths receive three meals and a snack, and in case students do not like a particular meal, they can receive a sub-sandwich as a replacement. These are in addition to the fruits, salad bar, and soup that are available to the students.

Other attempts to improve students' health include physical activities available at the Academy, such as 3-mile runs and cardiovascular circuits. Students can also volunteer to participate in competitive sport events, such as high school football games and intramural sports. According to the Director of student services, many of these youths have never experienced participating in organizing sporting activities. The picture below was taken during an afternoon visit in the summer of 2019 and shows students practicing football.

A Day in the Life of a Resident

On a typical day, students wake up at 6:45 a.m. They have a morning meeting in their cottage, leaving them with enough time to do hygiene and personal care prior to breakfast. Breakfast starts at 7:30 a.m. followed by school at 8:10 a.m. Students spend a significant portion of their day in attending classes, participating in treatment groups, and partaking in credit recovery to earn credits toward the completion of the program. They have lunch from 12:15 to 1 p.m., and then they return to school until 2 p.m.

From 2 p.m. to 3 p.m., each student attends a cottage group, which focuses either on positive skill developments or positive organizational cultures. In the former, they learn about social skills and role-play them, while in the latter, students make weekly commitments (such as

using coping skills when they are frustrated) and they receive feedback on presenting those commitments. After that, it is time for their snack, and for them to focus on health and wellness.

During the night block, which runs from 4 p.m. to 6 p.m., students have a few options for their activities. Examples include participating in sports (such as football and cross country) or attending credit recovery. Dinner is served at 6:15 p.m., and then the evening programming starts, in which students spend their time showering, attending team meetings, and doing their homework. Lastly, student's status (will be discussed shortly) determines their bedtime, which ranges from 8:30 p.m. to 9:00 p.m. Everyone is supposed to be in bed by 9 p.m.

A Comparison Between the Sample and the Academy's Total Population

The Academy provided me with the full list of youths who had entered the program in 2011-2012. The file included the current and former residents' date of birth, date of entry, date of discharge, as well as the youth's treatment outcome. This allowed me to conduct a comparison analysis on some of the variables to assess whether the sample that will be used for the analysis in later chapters is representative of youths who had entered the Facility over the past nine years. The results are presented in Table 5.2.

Table 5. 2

A Comparison Between the Sample and Population

Variables	**Sample (n = 99)**	**Population (*N* = 661)**	**t-test (*p*-value)**
	Mean (S.D.)	Mean (S.D.)	
Age	15.77 (1.17)	15.66 (1.37)	0.75 (0.44)
Length of Stay (Days)	273.87 (111.18)	234.44 (125.92)	2.95 (0.00)
	Frequency (%)	**Frequency (%)**	**Chi-Square (*p*-value)**
Discharge Status			
Graduation	51 (51.5)	252 (38.1)	
Completion	21 (21.2)	155 (23.4)	6.95 (0.03)
Failure	27 (27.3)	254 (38.4)	

Note: The sample is included in the population

The results provided evidence that the sample is fairly generalizable to the population of all youth who have entered the Facility. Those included in the sample are around the same age as the entire population of youth in the Facility (i.e. 15.5). Although the average length of stay for youth in the sample was longer (and statistically significantly greater) than those in the population (273.87 days versus 234.44), this represents on average of about one month difference, which might not be substantial given that the Site is considered a long-term facility.

The comparison between the sample and population on discharge status uncovered some interesting information as well. It appears that youths in the sample were more likely to graduate from the program compared to the larger population. Specifically, approximately 52% of the sample graduated from the Academy, whereas only 38% of their entire population graduated since 2011-2012. Although these percentages are rather close for completion (about 21% in the sample versus 23% in the population), youths in the sample were also less likely to fail the program compare to the population. The chi-square statistics suggested that these differences were statistically significant ($p = 0.03$).

There are a few speculations for why this might be the case. As will be explained in the next chapter, the sample was selected based on the released status, starting with the most recent discharge and then moving backward in time down the list of residents (see chapter 6). Thus, the sample consists of 99 of the most recent releasees. As such, one speculation is that the program and its treatments have improved over time and thus the most recent discharges received relatively better care compared to those who entered the facility earlier in time. Another possibility is that the Academy may have been more lenient in allowing students to progress toward graduation in more recent years.

Follow-up analyses appear to support these possibilities. Specifically, when the population was restricted to include only students who have entered the program since January 2015—setting the baseline with a three to four years delay for inclusion of the participants compared to the original selection—the graduation percentage for the new population ($N = 379$) increased from 38% to 46%. Though, this might not be a fair comparison, because the 99 students included in the sample are now included in the population, which is now relatively smaller. After excluding those from the population, the remaining 278 students had 45% graduation rate, which suggest excluding the sample did not have a substantial impact on the comparison (see Table 5.3). Importantly, the comparison of students' age and length of stay remained similar compared to those presented in Table 5.2.

Table 5. 3

A Comparison Between the Sample and Restricted Population (since 2015 - sample excluded)

Variables	Sample (n = 99)	Population (*N* = 278)	t-test (*p*-value)
	Mean (S.D.)	Mean (S.D.)	
Age	15.77 (1.17)	15.55 (1.42)	1.35 (0.17)
Length of Stay (Days)	273.87 (111.18)	218.27 (131.39)	3.52 (0.00)
	Frequency (%)	**Frequency (%)**	**Chi-Square (*p*-value)**
Discharge Status			
Graduation	51 (51.5)	125 (44.8)	
Completion	21 (21.2)	39 (14.0)	6.89 (0.03)
Failure	27 (27.3)	115 (41.2)	

Note: The sample is excluded from the population

Cost

In this section, I estimate the cost at the focal site per youth. These costs were recorded from the students' case management file (reported in "Cost from Care Agreement") and include maintenance, administration, case management, transportation, and other direct services such as clothing, respite, and behavioral health care. This cost for approximately 95% of the known (non-missing) cases was *either* $187.95 or $232.96 per day with the remaining 5% falling in between, suggesting that there is not much variation in initial estimations of cost per day for youths. This has allowed me to estimate the minimum and maximum cost per youth. Missing cases were replaced by the average cost ($212.80).

Table 5. 4

Estimating the Average Cost per Youth (n = 99)

	Cost[a]	
	Low Threshold[b]	High Threshold[c]
Mean	$51,473.61	$58,279.25
Standard Deviation	$20,896.48	$23,659.33
Minimum	$2,443.35	$2,766.40
Maximum	$127,806.0	$144,704.0

Note: missing cases were replaced by the mean ($212.80)
[a]Cost = (Length of Stay) x (Daily Cost)
[b]Cost (Low Threshold) = (Length of Stay) * ($187.95)
[c]Cost (High Threshold) = (Length of Stay) * ($232.80)

The average cost per youth at the Academy is slightly below those reported nationwide, which was estimated between $66,000 to $88,000 for 9 to 12 months of stay (Mendal, 2011). On average, the focal site has spent between $51,473.61 and $58,279.25 per youth, with the average length of stay of approximately 9.2 months. The median falls quite close to the mean ($50,370.6, $57,030.4), suggesting that the data are normally distributed (similar for the mode). Further inspection of data suggested that the cost changed from $187.95 to $232.96 around June 2018 (in the sample, the earliest admission was April 2017 and the latest was September 2019). This means currently it costs approximately $85,000 for a youth to attend the Academy for one year (365 * $232.96 = 85,030), which is quite close to the national average.

Chapter 6: Methods

The focal site is located in Cincinnati, Ohio. In the spring of 2017, I enrolled in a graduate course, called "Applied Corrections," offered by the University of Cincinnati. Dr. Paula Smith, who serves as a committee member on this dissertation project, was the instructor of that course. The course took place at the focal site. I gained access to the Facility through the formal relationship that is in place between the Site and University of Cincinnati.

This residential facility was selected because it hosts serious juvenile offenders. As discussed earlier, serious juvenile offenders have more health needs compared to situational and non-serious offenders. Furthermore, the focal site is considered a *staff-secured facility*, meaning there is no barbed-wire fence surrounding the campus. This is an important feature for the purpose of this study, because evidence reveals environmental factors, such as security level of a correctional facility, contribute to residents' mental and behavioral well-being (Burrell, 2013; Dierkhising, Lane, & Natsuaki, 2014; Nurse, Woodcock, & Ormsby, 2003; Powel, 2014). Because the current study attempts to explore how health status might affect treatment outcome, the less-restrictive nature of the facility minimizes the impact of environmental factors.

Data

When residents of the focal site are discharged from the program, staff members archive their case management and medical files. The Site provided me with a room in the administration building where I could review these files to collect data for this project. I started data collection by reviewing the most recently discharged student's file and then moved backward in time down the list of discharged students. Information for $N = 99$ residents was collected (see Appendix B for the IRB approval letter).

I used this sampling strategy for two reasons. First, it is important that the data reflect on the Academy's current practices. Recent data are more likely to represent the current practices implemented in the Facility than older data. The second reason was to harmonize, as much as possible, the type of information available for each youth. For example, recently graduated residents were more likely to be administered the same type of questionnaires at intake compared to those who entered the facility long ago.

Case Management Files

This section will briefly describe the information that is available in the case management files. Rich information is available about students' demographic background, childhood, family, education, offenses, risk assessments, emotional and behavioral status, incidents that occurred during their time at the Site, prior residential placement, and their progress in the program (Force Field Analysis scores). Specific sources of data that were used to address the research aims are explained later in this chapter.

Pre-arrival

The case management files provide information about specific aspects of the residents' lives prior to arriving at the Facility, such as their childhood experiences, familial circumstances, parental situations and their health conditions, medications, nutritional intake in a typical day, grade, school attendance, mental health diagnoses, and offense history. Other information, such as adverse childhood experiences, school performance, difficulties in accessing foods or basic needs, and parental incarceration, is available from youth's documented records provided by the juvenile court or other agencies (e.g. child welfare or probation). The court reports also include information on offense profile, such as the number of contacts with the juvenile court as well as

charges and adjudications. In short, much of the pre-arrival information is included in the case management files.

At intake

Within 30 days of arrival at the Site, youths are assessed on various health and behavioral aspects. Some of these evaluations are done using self-reported questionnaires, such as Behavioral Assessment System for Children (BASC) and Adverse Childhood Experiences (ACE), which are fully explained later in this chapter. Others, such as height and weight at intake, risk for violence, victimization, or AWOL are completed by staff.

Students are also interviewed at intake by a mental health specialist. These interviews— known as Clinical Intake Interview (CII)— are often structured to cover a wide range of topics related to clinical evaluations to help treatment planning and uncover any potential risk to youth and others that may not have been disclosed in court reports or by the child welfare or probation agencies. This may include most up-to-date information on students' substance use problems or other health related symptoms, such as sleeping and eating disorders. Other information discussed during the CII includes number of times in detention facilities, current or past signs of suicidal ideation, history of carrying a knife or gun, history of mental health treatment and hospitalization, number of lifetime sexual partners, and whether the resident has fathered or is expecting a child.

Although these are only examples of questions that are asked from each student, they are presented here to demonstrate that the intake interviews provide wide range of information about students' background and current situation. Putting these altogether, the evaluator then provides a report that highlights the youth's current situation, as well as background information and risk factors. It might be important to note that, although these interviews are based on self-reported

information disclosed by youth, they are generally validated and any discrepancy is often noted by the staff.

Post-arrival

A large portion of the case management files includes information on treatments youths received during their time at the Facility and the residents' responses to those treatments. To name a few examples, the discharge summary reports the number of individual therapies, medical care (e.g. medications; dates of initial medical, dental, and physical screenings), criminogenic needs that were targeted, reportable incidents (e.g. fights, assault, or attempted AWOL), as well as awards and certificates that youths received during their time at the Facility.

The Force Field Analysis (FFA) forms that are used to rate students based on their daily performance in the program are also included in the case management files. As will be explained shortly, the FFA reflects youth's performance in the program. For instance, reportable incidents, such as a fight or assault, would negatively impact scores on the FFA form.

Medical Files

The medical files include information on physical and mental health, vaccination records, weight and height at intake, medications received, medical examinations (physical, dental, and optical), history of mental or physical health conditions in the family, as well as medical services received at the Site ($N = 98$). Because I characterized this project by exploring the importation and deprivation health models, I consider youths' health status at two separate phases: prior to arrival (i.e. before or immediately after youths were admitted to the Facility) and during their time at the Facility.

Health Status Prior to Arrival

The following are examples of information to capture the youths' health status prior to, or immediately after, arriving at the Facility: presence/absence of optical and dental care within the past year; height and weight; whether the youth indicated he needs nutritional help to gain or lose weight; mental health diagnoses; major physical health issues including STD; and risky sexual behaviors (e.g. number of sexual partners and condom use for sexually active youths).

Health Services Received at the Facility

The medical file includes information on health relevant status, as well as the interventions that youth received, during their time at the Facility: monthly weight (to observe increase or decrease in BMI); the number of days it took the youth since his arrival at the Facility to receive medical, dental, and optical examinations; whether the youth received vaccinations; medical incidents; and whether the youth refused to take his medications or receive a vaccination that is due or past due. It is important to note that the unit of analysis remains the residents.

Research Aims and Measures

Our review of the literature suggested much is left to be learned about juvenile offenders housed in residential treatment facilities and the treatments and health services they receive. This section introduces the research aims that will guide the present study to fill some of those gaps in knowledge.

Research Aim #1: Demographics and Offense Profile

The first Research Aim is to get a sense of the sample and understand the characteristics and background of the residents. This includes basic demographic (i.e. age and race), school, and offense history information. As explained earlier, a youth's placement in juvenile residential facilities is considered a severe outcome. Therefore, youths residing in these facilities are

expected to have lengthy criminal histories, perhaps with violence.

- 1A: What are the demographic and background characteristics of the youths (e.g. age, race, school status)?
- 1B: What is the offense profile of the residents (e.g. age of onset, number of contacts with the justice system, risk assessment scores, number of felony offenses)?

Demographic Characteristics

The following measures were collected and will be assessed for Research Aim #1A.

Race/ethnicity (White/Caucasians, Black/African American, Hispanics, and others), *school grade* (most recent completed grade was recorded), and a history of *school suspension* or *expulsion* were captured from the residents' intake files that were available in the case management file. The following variables were also captured using the case management files:

Age. The residents' age was calculated by subtracting their date of birth from their admission date, reported in years.

Birthplace. The resident's birthplace was used to indicate whether he was born in Ohio (= 1) or not (= 0). Foreign-born residents were also coded as 0 (this applied to two residents born in an African country, who had moved to the United States early in life).

School Attendance. In the clinical intake interview, staff asked students about their school attendance status. Residents who indicated they were currently attending school were coded 1 (= yes), whereas those who were expelled, suspended, dropped out, or not attending were coded as 0 (= no).

IEP. Whether youth received individualized education program (= 1) or not (= 0) was indicated by their IEP status.

Offense Profile

The following measures were collected and will be assessed for Research Aim #1B.

First Contact. Age of first contact with the juvenile justice system was recorded from the juvenile court report available in the archived case management file.

Number of Contacts. The court report also included the number of times youth had contact with the justice system. This included both adjudicated and not adjudicated (or dismissed) cases, as well as violation of supervision condition reported to the court.

Number of Felonies. Number of felony adjudications was recorded from case management files.

Number of Times Detained. During the clinical intake interview, residents were asked "how many other times have you been to Juvenile Detention ('20/20' or 'The 40')"? This was an open-ended question and thus responses were presented in a continuous scale. Reponses that were larger than 20 (such as 50 times in detention) were recoded to 20 to prevent extreme responses affecting the overall picture of the sample. This decision was made because only one youth indicated he had been in detention for more than 20 times.

Weapon. During the clinical intake interview, residents were asked whether they have carried gun or knife. Respondents who answered "yes" were coded 1 and those who answered "no" were coded 0.

Risk Level. Youth's risk levels were measured using the Ohio Youth Assessment System (OYAS) and Structured Assessment of Violence Risk in Youth (SAVRY) risk assessments. Both tools are used to assess juvenile offenders' risk for recidivism, although SAVRY is used for predicting violence offending and is scored by staff at the focal site. The OYAS scores, on the other hand, were reported by the court prior to youth's arrival at the Facility. The most recent

scores from OYAS and SAVRY were recorded. Both tools classify juvenile offenders based on their risk level in an ordinal scale (i.e. low, moderate, high).

Caused Injury in Fight. During the clinical intake interview, residents were asked whether they have ever caused injuries in a fight. Respondents who answered "yes" were coded 1, while those who answered "no" were coded 0.

Onset Marijuana Use. A self-reported measure for age of first marijuana use was included in the case management file and was coded in years.

Frequency of Marijuana and Alcohol Use. During the clinical intake interview, residents were asked how often they use marijuana or drink alcohol. These were two open-ended questions (one for alcohol and one for marijuana). The responses were then coded into the following ordinal scale: never/not applicable (= 0) if the respondent indicated he has never tried alcohol and marijuana; tried (= 1) if indicated he has only tried before/once; rarely/occasionally (= 2) if more than once but less than three times; sometimes (= 3) if between three to six times; and often (= 4) if he indicated he uses regularly, often, or the number of times used was greater than six.

Other Drugs (drugs other than marijuana/alcohol). During the clinical intake interview, residents were asked "have you used any of the following"? and were given the following drug names: cocaine, Vicodin, ecstasy (X), Xanax, sniffed paint/glue/household cleaners, prescription pills not prescribed for you, and "others" to indicate any other type of drug that the resident may have used. Those who responded "yes" were coded 1 and all others were coded 0.

High or Drunk in School. During the clinical intake interview, residents were asked "Have you ever gone to school drunk or high"? Those who responded "yes" were coded 1 and

others 0.

Drug Sell. During the clinical intake interview, residents were asked whether they have ever sold drugs, including marijuana. Respondents who answered "yes" were coded 1, while those who answered "no" were coded 0.

Research Aim #2: Mental Health

One of the foci of the current study is to evaluate whether youths' mental health condition affect their treatment outcome. Studies have revealed different types of mental health conditions are associated with success or failure in treatment programs in juvenile residential facilities or with improve or decline in symptoms (see Table 5.1 for an overview). For example, some research shows that youths with ADHD and a history of abuse were presented with decline in their mental health symptoms during the course of treatment (Connor et al., 2002; Wise, Cuffe, & Fischer, 2001), while there is some evidence that those with depressive and stress-related symptoms had better treatment outcomes in residential facilities (Lyons et al., 2001).

Given these findings, it appears mental health conditions might play a crucial role in youth's responsivity to treatment in residential facilities. The following mental health conditions were identified as common for youths in residential facilities: substance abuse (Shufelt & Cocozza, 2006); ADD/ADHD (Sedlak & McPherson, 2010; Shufelt & Cocozza, 2006); depression and anxiety (National Research Council, 2013; Sedlak & McPherson, 2010); and comorbidity of the above conditions (Shufelt & Cocozza, 2006). Conduct disorder, oppositional defiant disorder, and impulsivity disorder diagnoses were not recorded because these conditions were noted for virtually all the residents (i.e. there was almost no variation).

The Facility that is the focus of the current study does not admit youth with severe mental health conditions (such as active psychosis) and developmental problems (see chapter 5 for a full

list of exclusionary criteria). Thus, research aim #2 was formulated to explore whether the mental health conditions highlighted in the literature are identified in the analytic sample, and if so, whether they affect treatment outcome.

- 2A: What is the prevalence of mental health conditions among residents?
- 2B: How does substance use disorder, ADD/ADHD, depression, and anxiety (and comorbidity) affect youth's treatment outcome in residential facilities?

Diagnostic Mental Health Measures

After the clinical intake interview with the newly admitted youth takes place, a mental health professional incorporates all the information gathered during the interview as well as those reported by the juvenile court, child welfare, and/or supervision agencies to provide a detailed and comprehensive report. The report summarizes youths' background information and the result of all the self-report questionnaires completed within the first 30 days of arrival to help with treatment planning by highlighting the youth's most in-need areas. Diagnostic and self-reported measures of mental health were included in case management and medical files. The following measures were collected and will be assessed for Research Aim #2A.

Mental Health Hospitalization. This measure was coded yes (= 1) if the medical file indicated the youth spent time in a hospital for mental health reasons. All other cases were coded no (= 0).

Substance Use Disorder. This measure was coded yes (= 1) if the report indicated that youth has been diagnosed with substance use disorder or has substance abuse problems that reached clinical level. All other cases were coded no (= 0).

ADD/ADHD. This measure was coded yes (= 1) if the report indicated that youth has been diagnosed with ADD or ADHD. All other cases were coded no (= 0).

Depressive Symptoms. This measure was coded yes (= 1) if the resident had been diagnosed with depression or dysthymia. All other cases were coded no (= 0).

Anxiety. This measure was coded yes (= 1) if the report indicated any of the following: anxiety; general anxiety; panic attacks; adjustment disorder with anxiety symptoms; stress-related disorders; adjustment disorder with anxiety; and unspecified anxiety disorder. All other cases were coded no (= 0).

Self-reported Mental Health Measure

Behavior Assessment System for Children (BASC). This is a multimethod tool to assess children's behavior. It typically consists of a self-report as well as parents and teachers' ratings on child's behavior, though the focal site only used the self-report scale. Depending on which version of the BASC was used (this Site used BASC-2 and, recently, updated to BASC-3), there are about 180 statements in this questionnaire. The questions tap into clinical and adaptive scales that are useful for the purpose of this study. The following are scales that can be drawn from BASC-3: attitude to school and teachers, sensation seeking, atypicality, locus of control, social stress, anxiety, depression, sense of inadequacy, somatization, attention problems, hyperactivity, relationship with parents, interpersonal relations, self-esteem, self-reliance, anger control, ego strength, mania, and test anxiety (Reynolds & Kamphaus, 2015).

The BASC questionnaire consists of statements that determine the respondents' scores on behavioral and emotional functioning. Some of these statements are presented in a true/false fashion, while others ask the participants to select their answer from a range of ordinal scale response options: never, sometimes, often, and almost always.

The questionnaire could be completed using either a paper rating scale form or be administered on-screen. The focal site has the residents complete BASC within 30 days of arrival

using a paper rating form and then scores are calculated using steps highlighted in the manual. The scores are presented in three forms: raw scores, *T* scores, and percentiles. The *T* scores and percentiles are standardized formats that allow comparison across respondents, such that the *T* scores indicate how extreme a score is compared to others while the percentiles indicate the frequency of a score (Reynolds & Kamphaus, 2015). The current study will use the percentile scores because they allow for easier interpretations.

BASC has been designed to evaluate behavioral and emotional functioning in children and adolescence. Although BASC is not diagnostic, it is useful for the current study because it assesses the residents' mental, emotional, and behavioral needs at intake and allows to account for variation between responses. In addition, self-reported tools have been used elsewhere to determine the mental and emotional needs of juvenile offenders (e.g. Sedlak & McPherson, 2010). In fact, it has been suggested that using only primary diagnostic measures to classify cases could be misleading, because many youths in residential treatment facilities have multiple diagnoses (Lyons et al., 2001), making it difficult to observe variation between individuals.

Dependent Variable

The dependent variable—treatment outcome—will be used in assessing Research Aim #2B.

Treatment Outcome. The treatment outcome signifies the status of the residents at discharge, which is mainly determined by the FFA forms (see chapter 5). The focal site assigns one of the following seven status when youth are released from the program: (1) graduation, (2) completion, (3) AWOL on-site, (4) AWOL off-site, (5) medical termination, (6) agency/probation officer pull, and (7) failure.

Graduation is the highest outcome status that residents could achieve at discharge, demonstrating successful completion of the program. *Completion* is considered a successful outcome for the program, though only by meeting the minimum requirements. *AWOL on-site* refers to residents who were not permitted to leave the facility, but they did (i.e. ran away), whereas *AWOL off-site* refers to residents who were authorized to leave the facility but they ran away with the intention of not coming back (e.g. disappeared during a school sport competition). Residents could also be *pulled* from the program for medical reasons, or if they probation agency did not find the program beneficial to the youth. Lastly, *failure* status is assigned to students that were not successful in completing the program.

Independent Variables

Both self-reported and diagnostic measures will be used to assess the impact of mental health conditions (ADHD, anxiety, depression) on treatment outcome. For substance use disorder, only the self-reported measure will be used, because the vast majority of the sample had substance use problems. The self-reported measure allows to account for variation in the intensity of the substance use disorder.

Substance Use Disorder. The self-reported CRAFFT questionnaire, which includes six items to measure substance use disorder, was used to measure the presence and intensity of youth's substance use problems. The validity of CRAFFT has been established by various studies, including those using samples of adolescent clinic patients and youths with different racial and ethnic backgrounds (Knight et al., 2002; Subramaniam et al., 2010). During the clinical intake interview, the residents were asked the CRAFFT questions and were asked to answer them in a yes/no fashion (no = 0; yes = 1). These scores were then added together to

determine the final CRAFFT score. Studies have shown a CRAFFT score of 2 or higher signifies substance use problems for adolescents, regardless of their age or sex (Knight et al., 2002).

Attention Deficit/Hyperactivity Disorder (ADD/ADHD). Symptoms of ADD/ADHD were measured using BASC and diagnostic measures. Attention problems and hyperactivity are measured as separate constructs in BASC, but the score is reported as one measure to assess ADHD. *Attention problems* attempts to capture difficulty with concentration, while *hyperactivity* items measure being overly active and acting impulsively.

Anxiety and Depression. Symptoms of anxiety and depression were measured using BASC and diagnostic measures explained earlier. *Anxiety* is a 13-items measure in BASC, tapping on symptoms of stress, panic, and nervousness, as well as feelings of worry and guilt. These constructs are generally in line with the DSM-5 definition presented in chapter 4. *Depression* was measured using BASC, which includes 12 items. Individuals suffering from depressive symptoms believe that nothing goes right, and generally, they feel unhappy, lonely, and sad most time (American Psychiatric Association, 2013). These definitions are generally consistent with the BASC measures of depressive symptoms.

Comorbidity. To account for variation in number of co-occurring mental health conditions, comorbidity was measured by adding the following diagnoses: ADD/ADHD (= 1); substance use disorder (= 1); depressive disorder (= 1); and anxiety disorder (= 1). Thus, higher scores indicate more overall mental health conditions.

Covariates

In an attempt to rule out the possibility that the relationship between mental health and treatment outcome is confounded by exogenous factors, the statistical models presented to test these relationships account for several theoretically driven variables. This includes some of the

variables that were described earlier, such as demographic characteristics (i.e. age and race), background information, and offense profiles (e.g. age of onset, number of contacts with the juvenile justice system, and number of times in detention facilities).

Age. The residents' age was calculated by subtracting their date of birth from their admission date, reported in years.

Black. To account for the impact of race, African Americans were coded 1 and all other races were coded 0.

School Grade. School grade was captured as a count variable, identifying the last grade before arriving at the facility.

Risk Level. Whether the youth was classified as having a low (= 1), moderate (= 2), or high (= 3) level for violent offending was included as an ordinal variable to account for a possibility that risk-level affecting health and treatment outcome. This information was gleaned from Structured Assessment of Violence Risk in Youth (SAVRY) risk assessment.

Number of Times Detained. A self-reported count of times in a detention center to account for prior exposures to residential facilities.

Individual Therapy. Due to its therapeutic treatment nature, the focal site incorporates individual therapies that are solution- and trauma-focused, strength-based, and client-centered interventions. A count of individual therapy sessions was included in the models.

Family History of Mental Health. A history of mental health in the family was controlled for because prior studies have identified it as an important determinant for children's overall well-being (Pinquart & Sörensen, 2003). If a history of mental health or substance use in the family was noted in the medical files, family history of mental health was coded 1 (= yes). All others were coded 0.

BASC Version. As mentioned earlier, the focal site has used both BASC-2 and BASC-3, two different versions of the questionnaire. In the models that assess the impact of mental health on treatment outcome using self-reported BASC measures, a binary measure was included and was coded 1 if the resident received BASC-3 and 0 if they received BASC-2. It is important to note that this variable is strongly correlated with admission date (Pearson correlation = 0.813), such that newly admitted youths were more likely to be given BASC-3 than BASC-2. Virtually all residents admitted in 2016 and 2017 had taken BASC-2, but only 5% of those admitted in 2018 were given BASC-2, and all the residents admitted in 2019 were administered BASC-3. Thus, any difference that might be observed could be related to treatment services youths received and not necessarily the differences in the questionnaires.

Research Aim #3: Medical Services and Physical Health

Medical Services

Youths involved in the justice system are less likely to use medical health care and services (Aalsma et al., 2017), especially those who had been previously detained (Golzari & Kuo, 2013). Therefore, it is expected that many youths enter residential facilities with immediate health needs. The third research aim was, therefore, to investigate whether the youths' health needs were being addressed prior to entering the facility. Furthermore, if the focal site provided health services, how long did it take youth to receive them and what medical needs were commonly identified?

- 3A: Did youths have access to basic health services such as dental and optical care within one year before entering the facility?
- 3B: If the residents received these medical services during their time at the focal site, how long after their arrival did they receive those services?

- 3C: What did the medical services youths received on the Site suggest about their health needs and status?

The following measures were collected and will be assessed for Research Aim #3A-C.

Optical and Dental Care (before arrival). During the initial medical examination, the residents were asked to indicate the last time they received eye and dental examination and care services. If the response was within one year of youth's admission date, it was coded 1 (= yes), indicating that the youth received that service over the past year. It is worth noting that this timeline—over the past year—had been used in the literature and thus it was chosen in the present study as well (e.g. Brown, Davis, & Shlafer, 2020).

Health Services (at the facility). The case management files include dates on which the youth received medical, dental, and physical examinations and services. Admission date was subtracted from those dates to indicate how long it had taken the resident to receive those services at the Facility (recorded in days). The following three variables were created in that way to capture the gap between arrival and the delivery of these services: *length to medical exam*, *length to physical exam*, and *length to dental exam*. Another variable called *length to measuring weight* was also created to capture the gap between admission and the first time youth's height and weight were recorded at the Facility.

Optical and Dental Issues (during stay). The medical files include information on optical and dental issues that were detected by the medical staff at the Facility. Optical and dental issues (two separate measures) were coded yes (= 1) if the residents' file indicated an optical issue (e.g. abnormal vision) and a dental issue (e.g. cavity, need for root canal, or bloody gum). These measures were coded no (= 0) if the files explicitly mentioned that youth had no optical and dental issue after the initial examination.

Physical Health

Physical health was measured in two ways: *sexual health* (including risky sexual behavior) and healthy weight (*Weight Status Using BMI*). Due to their risky lifestyle, the prevalence of risky sexual behaviors among serious juvenile offenders is expected to be high (Kelly et al., 2000). Risky sexual behaviors are defined as sexual activities with a high-risk of resulting in pregnancy or transmission of sexually transmitted diseases (Kirby, Lepore, & Ryan, 2005). Previous studies have identified four indicators of risky sexual behaviors for adolescent males: the initiation of sex, the frequency of sex, the number of sexual partners, and the use of condoms (for an overview, see Kirby, Lepore, & Ryan, 2005). As for the healthy weight, the importance of diet, nutrition, and having a healthy weight were discussed in chapter 4. Given these observations, research aims #3D and #3E are to determine the sexual and physical health of the residents.

- 3D: What proportion of residents is sexually active? How many sexual partners have they had? What is the prevalence of condom use? What proportion reported being a father? And, how many reported being diagnosed or having symptoms of STDs?
- 3E: What proportion of youths enter the Academy with body weight that falls outside a standardized healthy range? Have residents with unhealthy weight at intake receive any special programming to help in achieving a healthy weight?

The following measures were collected and will be assessed for Research Aim #3D and #3E.

Sexually Active. During the initial intake interview, residents were asked whether they were sexually active prior to arriving at the facility. Respondents who answered "yes" were coded 1, while those who answered "no" were coded 0.

Number of Sexual Partners. The number of sexual partners was reported as a count by

taking answers to an open-ended question inquiring about the number of lifetime sexual partners. Responses above 20 were recoded 20. This decision was made to prevent skewed responses because 99% of the sample indicated they have had 20 or fewer partners.

Fatherhood. Youths were asked whether they have any children. Respondents who answered "yes" were coded 1, while those who answered "no" were coded 0. The "yes" responses were then further investigated using the intake reports for verification purposes. This was because, during the data collection, staff mentioned some youths lied about having kids (or expecting one) so they could receive a home pass.

Condom Use. Residents who indicated they were sexually active prior to arriving at the facility were asked a follow-up question of how often they used condom in their sexual intercourses. The responses were coded in an ordinal scale: never (= 0), rarely (= 1), sometimes/often (= 2), and always (= 3). Residents who reported were not sexually active were coded not applicable.

Sexually Transmitted Diseases (STD). Sexually transmitted diseases were captured from the medical files. Youths who reported ever being diagnosed with an STD or having STD symptoms were coded as 1. Those who answered "no" to both questions were coded 0. It is worth noting that some youths were screened for STDs and the test results were available in their medical file. When that was the case, test results were used in replacement of self-reported symptoms or diagnoses of STDs. This is because prior studies have found that many youths with STDs report having no symptoms (Pack et al., 2000).

BMI. To determine the weight status of youths entering the residential facility, Body Mass Index (BMI) was calculated (weight in kilograms divided by height in meters squared). Because adolescence is a period of significant change in weight and height, the BMIs needed to

be adjusted to account for these changes in a growing child. This adjustment was applied using CDC Growth Charts (Kuczmarski et al., 2000). Specifically, the BMI for each youth was determined using their height and weight and then adjusted in accordance to their age and gender (being a male). The BMIs were then transformed to percentile to be compared with adolescents in the general population. This was to determine where each youth falls based on his BMI in the population distribution.

Based on the percentiles, youths were categorized into five groups to determine their weight status: underweight, at-risk of underweight, healthy weight, overweight, and obese. The "healthy weight" category belongs to the residents that were between the 15th and 85th percentiles in the population distribution. Those who fell below the 5th percentile were classified "underweight," while those between the 5th and 14th were classified "at-risk of being underweight." On the other side of the spectrum, residents whose BMI was between the 85th and 94th percentiles were coded "overweight," while those above the 95th percentile were categorized "obese."

Research Aim #4: Adverse Childhood Experiences (ACE)

As explained in chapters 3 and 4, serious and chronic juvenile offenders may have been exposed to risk factors that are known to affect health (e.g. toxic stressors). Research aim #4 was to cast light on adverse childhood events experienced by the residents.

- Are adverse childhood experiences common among serious juvenile offenders? If so, what are the most common ACEs among this population?

The relationship between adverse childhood experiences and mental health conditions in later life is well-established and has been discussed in the present study. In the present study, they are measured using a 10-items questionnaire, tapping on a history of abuse (physical, sexual,

psychological), neglect, parental separation, criminality in the family, familial mental health and substance abuse, and witnessing domestic violence (see Appendix A). These are examples of toxic stressors, because they are happening for a long period of time, meaning that they are not temporarily or situational (Asmussen et al., 2020).

Chapter 7: Results

Research Aim #1: Demographics and Offense Profiles

The first research aim was to learn about the demographics and offense profiles of the residents. Table 7.1 presents the demographic characteristics of the residents and Table 7.2 provides an overview of the residents' offense profiles.

Research Aim 1A: Demographics

Table 7.1 results were presented based on the variables' type (categorical or continuous). The variable *age* presented at the bottom of the table and indicates that all the residents were between the ages of 12 and 17-years-old. The average age was 15.77 with the standard deviation of 1.17. Given this information, it is not surprising that approximately 78% of the sample were in grades 8, 9, and 10 prior to arrival at the Site (indicated by the variable *school grade*).

The sample consists of 76% African Americans, 14% Whites, and the remaining 10% fall in other racial/ethnic categories, such as multiracial or being identified as Hispanic. These results are generally consistent with prior studies that have suggested African Americans youths are overrepresented in out-of-home residential placements (Leiber, Brubaker, & Fox, 2009; Sickmund, Sladky, & Kang, 2019). Moreover, the vast majority of the sample were born in Ohio (about 90%). The remaining 10% were born in other states such as South Carolina, West Virginia, Oklahoma, Illinois, New York, and Kentucky. Two of the residents were born in an African country (Kenya).

Table 7.1 also provides information on youths' education and schooling. About 27% of the sample were not attending school before their current placement (information on 13% of the sample was missing on this variable). In addition, 41% of the residents were receiving Individualized Education Program (IEP) before placement, mostly due to behavioral problems

and poor performance at school. In fact, 95% of the sample had a history of out-of-school suspension or expulsion.

Table 7. 1

Demographic Characteristics of the Analytical Sample (N = 99)

Categorical Variables	**Frequency**	**Percentage[a]**
Race/Ethnicity		
White/Caucasians	14	14.1
Black/African American	75	75.8
Hispanic	4	4.0
Multiracial/Others	6	6.1
Birthplace		
Ohio	85	89.5
Not Ohio[b]	10	10.5
School Grade		
5th grade	1	1.0
6th grade	2	2.0
7th grade	8	8.2
8th grade	29	29.6
9th grade	22	22.4
10th grade	25	25.5
11th grade	10	10.2
12th grade	0	0
13th grade	1	1
School Attendance		
Attending	60	60.6
Not attending	27	27.3
School Suspension or Expulsion		
Yes	88	94.6
No	5	5.4
IEP		
Yes	40	40.8
No	58	59.2

Continuous Variable	**Mean**	**Standard Deviation**	**Min.**	**Max.**
Age	15.77	1.17	12	17

[a]Calculated as: frequency divided by (*N* - the number of missing cases)
[b]Includes two foreign-born residents from Kenya

Research Aim 1B: Offense Profiles

Table 7.2 provides information about the residents' offense profile. Only three residents in the sample had no felony adjudication on their record and further analysis of those cases suggested that they were assigned to the focal site for reasons other than offending (referred by a child welfare agency, for example). Nonetheless, more than 95% of the sample for whom the number of felony adjudications was known (= 89 youth) had at least one adjudication. A majority of the sample (approximately 70%) had two or more felony adjudications, reflecting on the mean of 1.94 with the standard deviation of 0.98 (ranges from 0 to 5; see the bottom of the table).

Because prior studies have identified early age of onset (12-years-old or younger) as an important predictor of serious and persistent offending (e.g. Baglivio et al., 2014), residents' first contact with the justice system was included in Table 7.2. The age of onset for the sample was 12.96 with the standard deviation of 1.77. Two residents were only eight years old when their contact with the justice system initiated, which was the earliest age of onset for the sample. The highest value on the age of onset was 16-years-old, which may suggest some youths had just recently initiated their contact with the system. On average, youth reported 6 stays in detention facilities (the standard deviation was 4.56) prior to their current placement.

Table 7. 2

Offense Profile of the Analytical Sample (N = 99)

Categorical Variables	Frequency	(Percentage)[a]
Risk Level OYAS		
Low	10	12.8
Moderate	45	57.7
High	23	29.5
Risk Level SAVRY		
Low	5	5.1
Moderate	68	68.7
High	23	23.2
Caused Injury in Fight		
Yes	82	82.8
No	11	11.8
Weapon (Gun/Knife)		
Yes	72	72.7
No	25	25.3
Frequency of Alcohol		
Never/Not Applicable	24	27.3
Tried	25	28.4
Rarely/Occasionally	17	19.3
Sometimes	16	18.2
Often	6	6.8
Frequency of Marijuana		
Never/Not Applicable	5	5.4
Tried	6	6.5
Rarely/Occasionally	4	4.3
Sometimes	11	11.8
Often	67	72.0
Other Drugs[b]		
Yes	43	---
High or Drunk in School		
Yes	60	65.2
No	32	34.8
Drug Sell		
Yes	43	46.2
No	50	53.8

Continuous Variables	N	Mean	Standard Deviation	Min.	Max.
First Contact (Age of Onset)	85	12.96	1.77	8	16
Number of Contacts	73	13.96	6.77	2	38
Number of Times Detained	92	6.07	4.56	0	20
Number of Felonies	89	1.94	0.98	0	5
Onset Marijuana	87	12.07	2.13	6	16

[a]Calculated as: frequency divided by (*N* - the number of missing cases)
[b]Includes any illicit drugs besides alcohol and marijuana. Only "Yes" reported (43.4% of the sample) because a report of "No" could not be distinguished from missing

Further evaluation of the residents' offense profile suggested most fit the profile of a chronic offender. This is evident from the number of contacts with the justice system, which has the mean of 13.96 and the standard deviation of 6.77. Though, it is worth mentioning that the number of contacts includes all offenses on youth's profile, including probation violations and those that were dismissed at intake, resulting in some large numbers as high as 38 offenses (or contacts).

The last continuous variable in Table 7.2 is age of onset for marijuana use. Given that cannabis use is common among serious juvenile offenders, this variable was included to provide some insights about the residents' substance use problems. The result indicated that many of youth began using marijuana early in life—with age of six being the youngest in the sample. The average age for first time using marijuana was 12.07 with the standard deviation of 2.13.

The categorical variables also provide useful information. It appears that many youths denied using alcohol regularly, even though marijuana use was common. Specifically, more than half of the sample reported either never used alcohol before or have only tried it once, whereas 72% of the sample reported using cannabis often. Importantly, 43 youths also reported they had used drugs other than alcohol or marijuana, with Xanax, Lean (also known as Purple Drank), prescription pills not prescribed to them, and Ecstasy being among the most common drugs.

Approximately 83% of youth reported they had been involved in fights that had led to significant injuries for the opposing person (bruises/scratches, bloody nose/lip, concussion, or broken body part) and 73% reported had carried a gun or knife at least once. More than 65% reported going to school high or drunk at least once and about half a sample reported that they had sold drugs in the past.

Given these observations, it is reasonable to conclude that youths at the focal site are mostly serious, violent, and chronic juvenile offenders (Baglivio et al., 2014). Yet, the risk-level reported by the Hamilton County Court (OYAS) and staff at the Facility (SAVRY) have classified most youths as "moderate-risk" offenders. Even though the percentage of high-risk youths was still substantial (about 30% using OYAS and 23% using SAVRY), these results were unexpected. This is because, for example, OYAS reports the probability of reoffending and the average number of lifetime offenses, which were reported by the Hamilton County Court (and thus refer to offenses that are known to the juvenile justice system), was approximately 14 in this sample.

Research Aim #2: Mental Health

The second research aim was to explore the mental health of the residents and how it might affect treatment outcome.

Research Aim 2A: Prevalence of Mental Health Conditions

The mental health conditions were measured in two ways: diagnostic and self-report. The diagnostic measures were from the evaluation reports provided by staff and the self-report measures were from the CRAFFT and BASC questionnaires (see chapter 6). The results are presented in Tables 7.3 and 7.4. It is worth noting that because virtually all the residents had behavioral problems, conduct disorder, oppositional defiant disorder, and impulse control diagnoses, these conditions were not recorded (it was expected that most youths have these conditions).

Diagnostic Mental Health Measures

Mental health diagnoses were recorded from intake reports provided by staff (mental health professional at the facility). The medical file also included information on mental health

conditions that had required hospitalization (i.e. whether youths received in-patient treatments for mental health reasons).

Table 7.3 presents the results. At least twelve residents (12.1% of the sample) had a history of hospitalization prior to their arrival at the facility for mental health reasons. The most prevalent mental health diagnoses were substance use disorder and ADD/ADHD. About 70% of youths were diagnosed with substance use and about half for ADD and hyperactivity disorders. Although not as common, depressive and anxiety symptoms were also prevalent among this population. Approximately one-third of the sample were diagnosed with depressive symptoms and about one-fourth with anxiety and stress-related symptoms. Together, more than half of the sample had been diagnosed with either depressive or anxiety-related disorder.

It is important to note that cases for which the archived case files showed a discrepancy were also documented. For example, in one participant's file, the court report indicated a history of ADHD diagnosis that needed further evaluation. However, that specification was not noted by the health professional at the focal site. Therefore, given the information available in the archived files, it was not possible to determine whether or not the resident was diagnosed with ADHD. Cases like this are identified under the "discrepancies" column in Table 7.3.

The comorbidity constructs come from a collection of diagnoses reported by staff or mental health professionals. Specifically, comorbidity was measured as a continues variable by adding scores on ADD/ADHD (= 1); substance use disorder (= 1); depressive disorder (= 1); and anxiety disorder (= 1). This choice was made to account for variation in mental health conditions among those who had been diagnosed with more than two symptoms. Only seven residents were reported with having none of the four mental health diagnoses (although they were diagnosed with other conditions not considered in this study) and only two residents were presented with all

four symptoms. Importantly, more than half of the sample had two or three mental health conditions.

Figure 7. 1

Bar Chart of Comorbidity

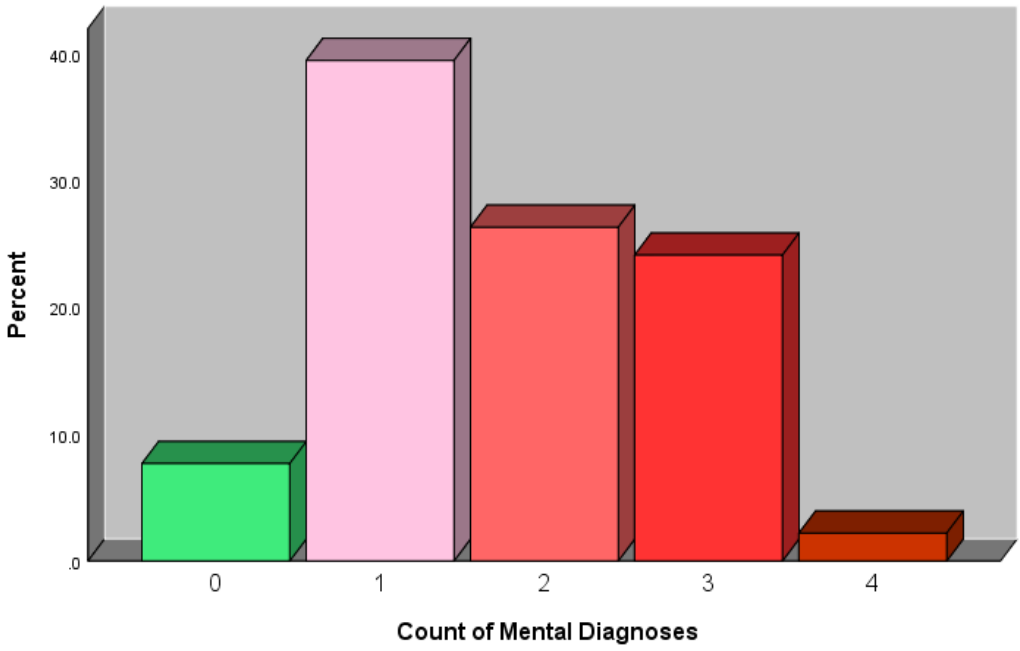

Figure 7.1 presents a bar chart for comorbidity. The x-axis is the number of mental health diagnoses and the y-axis shows the percentage of the sample diagnosed with those conditions. Generally, the red color shows cases with comorbidity of mental health diagnoses with darker red presenting higher number of diagnoses. The green and pink colors present cases with no comorbidity.

Table 7. 3

Mental Health Diagnoses

Diagnostic Measures	Frequency (Percentage)	*N*	Discrepancies[a] (Percentage)
Mental Health Hospitalization			
Yes	12 (12.1)	99	Missing 36 (36.4)
No	51 (51.5)		
ADD/ADHD			
Yes	47 (47.5)	99	Missing 4 (4.0)
No	48 (48.5)		
Substance Use Disorder			
Yes	69 (69.7)	99	Missing 5 (5.1)
No	25 (25.3)		
Depressive Symptoms			
Yes	30 (30.3)	99	Missing 2 (2.0)
No	67 (67.7)		
Anxiety			
Yes	22 (22.2)	99	Missing 1 (1.0)
No	76 (76.8)		
Comorbidity[b]		99	Missing 8 (8.1)
None	7 (7.1)		Cases that had missing on one of the four diagnoses were coded missing
One	36 (36.4)		
Two	24 (24.2)		
Three	22 (22.2)		
Four	2 (2.0)		

Continuous Variables	Mean	Standard Deviation	N	Min.	Max.
Comorbidity	1.74	0.98	91	0	4

[a]Indicates the number of missing cases on each variable, which includes cases with "no report" or those with "inconsistent inputs" on their reports (e.g. court reported ADHD but no ADHD was noted by the mental health professionals at the Facility)
[b]Is the sum of the following diagnoses: ADD/ADHD (= 1); Substance Use Disorder (= 1); Depressive Disorder (= 1); and Anxiety Disorder (= 1). Missing on any of the four measures were coded "missing" on the comorbidity measure

Self-report Measures of Mental Health Symptoms

Self-reported mental health symptoms are presented in Table 7.4 (note that comorbidity was measured using mental health diagnoses only). This table includes measures reported by the residents. Recall that the self-reported CRAFFT identifies youths with a score of 2 or higher on this questionnaire as having substance abuse problems (Knight et al., 2002). With that classification, more than 80% of youths in the current study entered the facility with substance

abuse problems, which is similar to the diagnostic measure described earlier (73%). The sample mean for substance use disorder using CRAFFT was 2.95 with the standard deviation of 1.84. The other three mental health conditions (ADD/ADHD, depression, and anxiety) were measured using standardized scores (percentiles) in BASC, where higher scores represent more symptoms.

Table 7. 4

Self-reported Mental Health Symptoms

Categorical Variables	**Frequency**	**Percentage[a]**	**Questionnaire**	***N***
Substance Use Disorder				
Scored on none of the items	11	11.8		
Scored 1 item	14	15.1		
Scored 2 items	13	14		
Scored 3 items	15	16.1	CRAFFT	93
Scored 4 items	20	21.5		
Scored 5 items	11	11.8		
Scored on all 6 items	9	9.7		

Continuous Variables	**Mean**	**Standard Deviation**	**Min.**	**Max.**	**Questionnaire**	***N***
Substance Use Disorder	2.95	1.84	0	6	CRAFFT	93
Inattention/Hyperactivity (ADD/ADHD)	54.51	28.92	1	99	BASC	89
Depression	56.36	24.59	1	98	BASC	89
Anxiety	49.62	27.02	1	94	BASC	89

[a]Calculated as: Frequency divided by (*N* - the number of missing cases)

A Comparison of Diagnostic and Self-reported Measures

Table 7.5 compares the diagnostic and self-reported measures of mental health. This is to evaluate whether the two measures are generally in line with each other. Overall, the average scores across the four self-report measures are significantly different between those who were

diagnosed compared to those who were not (at 0.05 significance level). This suggests using the self-report measures is likely to produce similar results compared to using diagnostic measures for mental health in this sample, though we can expect the self-reported versions will give more insight into variation that may exist in the sample compared to the binary coded diagnostic versions.

Table 7. 5

Comparison of Diagnostic and Self-reported Measures

Mental Health Diagnoses		**BASC/CRAFFT[a]**		
	Yes/No	**Mean**	**Standard Deviation**	**t-test (*p*-value)**
ADHD	Yes	61.54	27.59	0.023
	No	47.48	28.34	
Depressive Symptoms	Yes	66.70	23.22	0.010
	No	52.10	24.21	
Anxiety	Yes	63.74	24.04	0.010
	No	46.32	26.47	
Substance Use	Yes	3.45	1.64	0.000
	No	1.59	1.81	

[a]All measures are from BASC (percentile), except substance use disorder, which was measured using CRAFFT.

Research Aim 2B. Mental Health and Treatment Outcome

This section evaluates the association between mental health conditions and treatment outcome. Treatment outcome has three categories: failure (= 1), completion (= 2), and graduation (= 3). Because the outcome variable (i.e. treatment outcome) is presented in three categories, a multinomial logistic regression was used to evaluate whether mental health is associated with

higher/lower probability of successfully completing or graduating from the program. As such, completion and graduation were compared against failures, which served as the reference category. Note that the difference between completion and graduation is in meeting the minimum requirements as opposed to meeting the expectations, respectively. All models adjust for the following covariates: age, race, school grade, risk level, number of times youth has been detained, history of mental health in the family, number of individual therapies, and BASC version.

It is important to acknowledge that logistic regression coefficients have been shown to be upwardly biased as analytic sample sizes decrease (Nemes et al., 2009). Because the analytic sample size for the current study is between $n = 82$ and $n = 78$ after listwise deletion, this concern should be kept in mind and caution is warranted when interpreting the results of the multinomial logistic regression models presented in this section.

Substance Use Disorder

Table 7.6 presents the result of the multinomial logistic regression of treatment outcome regressed on the self-reported substance use disorder (CRAFFT). Recall that the CRAFFT questionnaire ranges from 0 to 6. As can be seen in the table, participants with a higher score on substance use disorder had a significantly higher probability of both completion ($b = 0.652$, $p = 0.035$) and graduation ($b = 0.546$, $p = 0.039$), as opposed to failure, net of the influence of the covariates. Importantly, the only statistically significant covariate in the model was *individual therapy*. Residents who received more treatments (and stayed longer in the program) were more likely to successfully finish the program (i.e. completion or graduation) compared to failing it.

Table 7. 6

Multinomial Logistic Regression of Treatment Outcome on Substance Use Disorder (N = 78). The Reference Category is "Failure"

	Completion			Graduation		
	b	**(SE)**	**OR**	***b***	**(SE)**	**OR**
Intercept	-28.498**	(9.385)	---	-14.406	(7.827)	---
Substance Use Disorder	0.652*	(0.310)	1.919	0.546*	(0.264)	1.726
Age	1.725*	(0.681)	5.614	0.989	(0.597)	2.689
Black (= 1)	1.075	(1.261)	2.931	1.237	(1.035)	3.446
Grade	-0.897	(0.574)	0.408	-0.402	(0.484)	0.669
Risk-level	-0.253	(1.066)	0.776	-0.627	(0.849)	0.534
Number of Times Detained	-0.199	(0.117)	0.813	-0.131	(0.090)	0.877
Family Mental Health (= 1)	-0.623	(1.077)	0.536	-1.453	(0.880)	0.234
Individual Therapy	0.299***	(0.078)	1.348	0.170**	(0.066)	1.186
BASC-3 (= 1)	-2.414	(1.263)	0.089	-1.777	(0.090)	0.169

Abbreviations: *b* = unstandardized coefficient; SE = standard error; OR = odds ratio
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

The health models predictions about the impact of substance use disorder on treatment outcome were discussed in chapter 4 (see Table 4.1 for a summary). One was that youths with substance use problems might perform better—after adjusting to the incarceration experience and perhaps overcoming the potential withdrawal symptoms—because much of the resources of the juvenile justice system is invested in dealing with substance abuse problems. The focal site was no exception—substance abuse interventions were one of the key treatment approaches available at the focal site. Recall that the individual therapies were focused on cognitive behavioral therapies and motivational interviewing, these results suggest that youths with more severe substance use disorders may have benefited more from the program compared to those with less (or without) substance use problems.

ADD/ADHD

Table 7.7 presents the result of the multinomial logistic regression for the self-reported ADHD symptoms (from BASC) predicting treatment outcome. As can be seen from the table, ADHD was a statistically significant predictor of treatment outcomes. In other words, residents with a higher score on ADHD were statistically no different than those with lower score on ADHD in likelihood of completing or graduating from the program. Controlling for the other variables, age was statistically significant in the model that assesses the likelihood of completion but had no impact on graduation. Older youths were more likely to complete the program rather than failing it in the ADHD model. Similar to the observations in the substance use disorder model (Table 7.6), individual therapies played a significant role in increasing the likelihood of both completion ($p = 0.00$) and graduation ($p = 0.010$). Higher number of prior detentions approached significance in predicting the likelihood of completion compared to failure ($p = 0.066$). Similarly, a history of mental and substance use disorder in family did not pass the threshold of statistical significance, but its effect is worth highlighting in lessening the probability of graduation ($p = 0.050$). It is also worth noting that entering the ADHD diagnosis measure (as opposed to the self-report BASC used here) yielded similar results (thus, not shown), suggesting that ADHD may not be a significant predictor of successfully completing the program, regardless of the measurement strategy. This result was in contrast with prior studies that suggested youths with ADHD tend to perform poorly in the program (Lyons et al., 2001).

Table 7. 7

Multinomial Logistic Regression of Treatment Outcome on ADHD (N = 79). The Reference Category is "Failure"

	Completion			Graduation		
	b	**(SE)**	**OR**	***b***	**(SE)**	**OR**
Intercept	-27.880**	(9.006)	---	-10.212	(6.768)	---
ADHD	0.021	(0.018)	1.021	0.002	(0.013)	1.002
Age	1.723**	(0.621)	0.005	0.801	(0.514)	2.228
Black (= 1)	0.078	(1.116)	1.081	0.410	(0.859)	1.507
Grade	-0.882	(0.524)	0.414	-0.341	(0.432)	0.711
Risk-level	0.203	(1.025)	1.225	-0.375	(0.809)	0.688
Number of Times Detained	-0.209	(0.114)	0.811	-0.122	(0.089)	0.885
Family Mental Health (= 1)	-1.013	(1.060)	0.363	-1.652	(0.844)	0.192
Individual Therapy	0.274***	(0.069)	1.315	0.138*	(0.054)	1.148
BASC-3 (= 1)	-1.983	(1.138)	0.138	-1.044	(0.893)	0.352

Abbreviations: *b* = unstandardized coefficient; SE = standard error; OR = odds ratio
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

Depression

Table 7.8 presents the result of the multinomial logistic regression of treatment outcome on self-reported depression symptoms (from BASC). These results were similar to those observed in Table 7.7 for ADHD. Specifically, depression did not appear to predict treatment outcome. Controlling for other covariates, older youths were more likely to complete the program than failing in it. Individual therapies remained statistically significant in the model for likelihood of both completion and graduation. Those who received more individual therapies were more likely to successfully complete the program as oppose to fail in it.

Unlike the other models discussed so far, a history of mental health or substance use problem in the family was statistically significant in the depression model. Because prior studies have found caregivers' mental health to be an important predictor of the care recipients' mental health (Pinquart & Sörensen, 2003), these results are not surprising. This is because the mental

health or substance use problem in a family may capture a broad range of mental health symptoms in the present study and thus it might be the case that mental health matters in predicting treatment outcomes but depression may not be one of the conditions through which it exerts its effect. Another possibility is that a history of mental health in family might affect many other aspects of the child's home life, thereby weakening social bonds, which may result in more behavioral issues for children. The behavioral problems then might affect treatment outcomes.

Nonetheless, depressive symptoms reported by the residents did not appear to significantly predict their treatment outcome at the focal site. Similar results were observed when the self-reported BASC measure of depression was replaced by the diagnostic measure.

Table 7. 8

Multinomial Logistic Regression of Treatment Outcome on Depression (N = 79). The Reference Category is "Failure."

	Completion			Graduation		
	b	**(SE)**	**OR**	***b***	**(SE)**	**OR**
Intercept	-24.791**	(8.260)	---	-10.214	(6.616)	---
Depression	-0.002	(0.020)	0.998	0.004	(0.015)	1.004
Age	1.625**	(0.613)	5.079	0.801	(0.515)	2.227
Black (= 1)	0.179	(1.091)	1.196	0.460	(0.851)	1.584
Grade	-0.892	(0.525)	0.410	-0.344	(0.429)	0.709
Risk-level	-0.005	(1.025)	0.995	-0.384	(0.814)	0.681
Number of Times Detained	-0.184	(0.110)	0.832	-0.125	(0.089)	0.882
Family Mental Health (= 1)	-0.614	(1.063)	0.541	-1.648*	(0.822)	0.192
Individual Therapy	0.266***	(0.068)	1.304	0.139*	(0.053)	1.149
BASC-3 (= 1)	-1.729	(1.111)	0.177	-1.138	(0.889)	0.320

Abbreviations: *b* = unstandardized coefficient; SE = standard error; OR = odds ratio
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

Anxiety

Table 7.9 presents the result of the multinomial logistic regression for self-reported anxiety symptoms (from BASC) predicting treatment outcome. Similar to depression, anxiety was not found to be significant predictor of treatment outcome. Age remained a significant covariate for completion, such that older residents were more likely to complete the program. The impact of age was not observed when graduation was compared to failure in this model. A higher number of participation in individual therapies was associated with higher likelihood of completion and graduation. A history of mental health or substance abuse in the family emerged as a significant predictor of graduation, such that those who reported a history of mental health or substance use disorder in their families were less likely to graduate.

Similar results were observed when the diagnostic measure of anxiety was inserted into the model instead of the self-reported BASC. One exception was that a history of mental health and substance use disorder in the family became non-significant in predicting the likelihood of graduation, although remained in the same direction.

Table 7. 9

Multinomial Logistic Regression of Treatment Outcome on Anxiety (N = 79). The Reference Category is "Failure"

	Completion			Graduation		
	b	**(SE)**	**OR**	***b***	**(SE)**	**OR**
Intercept	-25.105**	(8.289)	---	-10.311	(6.625)	---
Anxiety	-0.003	(0.017)	0.997	0.007	(0.013)	1.007
Age	1.649**	(0.608)	5.202	0.800	(0.511)	2.225
Black (= 1)	0.188	(1.095)	1.207	0.467	(0.858)	1.595
Grade	-0.907	(0.524)	0.404	-0.353	(0.428)	0.702
Risk-level	0.008	(1.004)	1.008	-0.385	(0.809)	0.680
Number of Times Detained	-0.189	(0.108)	0.828	-0.119	(0.087)	0.887
Family Mental Health (= 1)	-0.604	(1.039)	0.547	-1.646*	(0.817)	0.193
Individual Therapy	0.267***	(0.068)	1.306	0.137***	(0.053)	1.147
BASC-3 (= 1)	-1.747	(1.121)	0.174	-1.077	(0.890)	0.341

Abbreviations: *b* = unstandardized coefficient; SE = standard error; OR = odds ratio
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

Comorbidity

Given that tables 7.6 through 7.9 identified substance use disorder as the only significant predictor of treatment outcome, it was expected that the combination of substance use disorder and other mental health diagnoses included in the comorbidity measure (i.e. ADHD, depressive symptoms, and anxiety) might lead to a pattern of results that is largely driven by the substance use disorder item. Table 7.10 presents the result.

Table 7. 10

Multinomial Logistic Regression of Treatment Outcome on Comorbidity (N = 82). The Reference Category is "Failure"

	Completion			Graduation		
	b	**(SE)**	**OR**	***b***	**(SE)**	**OR**
Intercept	-13.068	(7.604)	---	-3.366	(6.190)	---
Comorbidity[a]	0.141	(0.480)	1.152	-0.293	(0.407)	0.746
Age	0.862	(0.522)	2.367	0.451	(0.442)	0.307
Black (= 1)	0.363	(1.071)	1.438	0.864	(0.910)	2.372
Grade	-0.672	(0.488)	0.511	-0.489	(0.409)	0.613
Risk-level	-0.829	(0.903)	0.436	-0.998	(0.760)	0.369
Number of Times Detained	-0.191	(0.105)	0.826	-0.115	(0.077)	0.134
Family Mental Health (= 1)	-1.208	(0.981)	0.299	-1.387	(0.804)	0.084
Individual Therapy	0.242***	(0.063)	1.274	0.147***	(0.051)	1.159

Abbreviations: *b* = unstandardized coefficient; SE = standard error; OR = odds ratio
[a]comorbidity was measured by adding the following diagnoses: ADD/ADHD (= 1); substance use disorder (= 1); depressive disorder (= 1); and anxiety disorder (= 1)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed)

Yet, as can be seen from the table, comorbidity was not a significant predictor of treatment outcome. The number of individual treatments the residents received was the only significant predictor of their treatment outcome. Although not significant, the comorbidity coefficient was in the expected direction for the graduation comparison with the failure. Recall that the coefficient of the substance use disorder was positive and statistically significant (b = 0.546, p = 0.039), it appears that the combination of substance use disorder and other mental health conditions reverses the positive impact of substance use disorder on treatment outcome to negative and non-significant. This result is generally in line with prior studies that concluded youths with substance use disorder might benefit from treatment programs, whereas those with comorbidity of substance use disorder and other mental health conditions might not (Rowe et al., 2004).

Research Aim #3: Medical Services and Physical Health

The third research aim had two parts. First, to understand whether youths had access to basic health services such as dental, optical, and medical care within the past year of arriving at the facility and whether similar services were available to youth at the facility. Second, to explore whether physical health issues common among the population of youths in residential facilities (e.g. STD and unhealthy weight status) also exist in this sample.

Medical Services

Availability of medical services within one year prior to and immediately after arriving at the facility are shown in Table 7.11. This table also includes information on the health needs of the residents, which were determined by the medical team at the focal site. A close review of the medical files revealed that the delivery (or lack of delivery) of medical services are more complicated than what the prior studies have revealed. For example, a lack of access to medical services at a residential facility could be due to the resident's refusal in receiving services. In the current study, about half of the known cases (about 25% of cases were missing on this variable) refused to receive at least one form of medical health service, including dental care, vaccination, and medication. These results are generally in line with recent research that reported serious juvenile offenders might be less likely to *utilize* medical services (Aalsma et al., 2017), even if such services are available to them. Another example for why studying medical services for incarcerated youths might be challenging is that a resident may have left the facility earlier than expected, and thus the facility may not have had the opportunity in providing such services (e.g. youth was pulled from the program or AWOL). In terms of medical services available to youth prior to placement, it might be reported that the resident had received a particular medical service in the community, but those services may have been received in other residential facilities. This

is an important distinction, because it could affect the conclusion of whether medical services are widely available to youths under the juvenile justice supervision. This is to suggest that a binary measure of medical services (i.e. available/not available) could be misleading.

Unfortunately, because these specifications are lacking in the literature, I also was not aware of them until I began to question the differences and observed these patterns. As such, I was unable to account for these facets until roughly halfway through the study. Even so, I consider these details to be important and thus they are included in Table 7.11.

Research Aim 3A: Medical Services Prior to Arrival

The top portion of Table 7.11 shows the self-reported access to medical services prior to residents' arrival (over the past year). Recall that youths were asked when the last time was that they visited a dentist and/or an ophthalmologist. If the response was within one year of youth's admission date, it was coded 1 (= yes). Approximately 37% of the sample indicated they received optical care over the past year. However, some of these cases (at least four) had received these services in other juvenile justice facilities (and not in school or their community). Unfortunately, the exact number of cases that this may apply to remains an empirical question, because these specifics were not consistently reported.

Table 7. 11

Medical Services Within One Year Before and Immediately After Arriving at the Facility along with the Basic Health Needs Identified at the Academy (N = 99)

Time of Service	Type of Service	Frequency	Percentage
Before Arrival (within one year)	Optical Care		
	Yes	37	37.4
	Yes - at detention[a]	4	4.0
	No	24	24.2
	Unknown	33	34.3
	Dental Care		
	Yes	30	30.3
	Yes - at detention	16	16.2
	No	20	20.2
	Unknown	33	33.3
	Medical Exam		
	0 days	95	97.9
	2 days	2	2.1

	Length to…	Mean	Standard Deviation	Min.	Max.
At the Facility (number of days)	Dental Exam/Care	6.02	4.14	0	28
	Physical Exam	5.77	7.65	1	76
	Measuring Weight ($N = 55$)[b]	99.87	102.79	0	437

	Health Need	Frequency	Percentage
During Stay	Optical Issue[c]		
	Yes	57	57.6
	No	33	33.3
	Unknown	9	9.1
	Dental Issue[d] ($N = 50$)[b]		
	Yes	46	46.5
	No	4	4.0
	Not Applicable[e]	4	4.0
	Unknown[f]	49	49.5

[a]Indicates that the service had been delivered in another juvenile facilities (e.g. detention centers)
[b]Number of cases for which data were available on specific variables
[c]Includes failing optical exam, abnormal vision, and other major issues with vision/eyes
[d]Includes cavity, root canal, restorative dentistry, and bloody gum
[e]Refers to cases that either refused or did not stay long to receive the service
[f]This was a limitation of the research design (did not collect data on about half of the cases)

Even though data suggested a majority of the sample had received optical care over the past year, regardless of the source by which they were provided, about one-fourth of the sample still reported that they had not had their eyes/visions checked over the past year. An "unknown" category was included in Table 7.11, because a majority of this category consisted of responses such as "I am not sure" or "I do not know [when was the last time I met an ophthalmologist]." In other words, it could be the case that at least some of these responses may indicate a lack of access to medical services over the past year because they could not recall the last time they had checked their eyes/vision.

Compared to an optical examination, more youths reported receiving dental/oral hygiene services at another juvenile justice facility (16%; note that I began coding "Yes – at detention" for these two variables at the same time) within one year prior to their current placement. The other 30% of the sample who reported receiving such services may or may not have received them in other residential facilities. This suggests that at least 45% of the sample had received dental care over the past year but it also highlights the importance of considering these categories separately. For example, combining these two categories may suggest that most youths had received these services in the community, while the juvenile justice system may have been the source for care.

Research Aim 3B: Number of Days Since Arrival to Receive Medical Services

The middle section of Table 7.11—shaded with grey—provides important information about the number of days it took for youths to receive four types of health-related services at the facility for the first time since arrival: a medical examination, a dental examination, a physical examination, as well as having their weight/height measured. The *Medical Exam* variable was reported in a categorical format in Table 7.11 because there were only two inputs—zero and two

days. This means that the entire sample was screened for medical health conditions on the day of arrival, except for two youths who received that service two days after their admission.

All youths also received dental care services within the first month of admission, but typically within the first week. Similar results were observed for physical examination, with youths being typically examined in the first week. The standard deviations of dental and physical examinations were about two days apart (5.77 and 7.65), despite having a similar mean. Though, further examination of the data revealed that 99% of the youth were screened for both dental and physical needs within the first 18 days post arrival.

However, not all youths were asked to step on a scale to have their weight measured with any urgency. The data suggest that approximately half of the sample did not have their weight measured at all (43 residents). For those that had their weight measured, it took about 100 days after arrival, on average, to receive that service. The large standard deviation of 102.79 suggested that there is a lot of variation in how long it would take individual cases to have their weight measured. Discussions around having a healthy weight for adolescence were covered in chapter 4, but the residents' weight does not appear to be measured as a routine practice like other screening services at the Facility. I, therefore, consulted these results with the nurses at the focal site. It was reported that youths' weight is typically measured only if they are receiving psychotropic medications. It remains unclear how long after the start of the medications youth is being assessed for their weight change.

Research Aim 3C: Basic Health Need Detected During Stay

The bottom portion of Table 7.11 reports any optical/vision and dental issue for which youth was treated at the Facility. Optical examination is typically done during the physical examination, which as explained in the last section is typically done within the first week of

arrival. Because residents receive these services almost immediately after their arrival, it becomes important to investigate whether dental and optical issues are common for youths entering the facility, which would be the argument of the importation health model.

Recall that the top portion of Table 7.11 revealed that many residents reported they had received optical and dental services within one year prior to their arrival at the facility. This might suggest that many youths will have no vision or oral health needs. Yet, the results indicated that the vast majority of cases examined had these health concerns. Specifically, it was reported that about 60% of the sample had abnormal vision, many of whom received eyeglasses at the facility. Although data were available for only about half of the sample, dentists determined dental health needs for about 85% of the known cases. Dental health needs included signs of poor oral hygiene, such as cavity, bloody gum, a need for root canal, restorative dentistry, as well as other dental needs such as teeth deformities that needed referral to an orthodontist. These results are consistent with other studies that have reported dental health as a serious concern for juvenile offenders (e.g. Golzari, Hunt, & Anoshiravani, 2006).

Physical Health

Research Aim 3D: Risky Sexual Behavior

In the present study, physical health was measured in two dimensions—sexual health and having a healthy weight. Risky sexual behaviors were defined as sexual activities with a high-risk of resulting in pregnancy or transmission of sexually transmitted diseases (Kirby, Lepore, & Ryan, 2005). Sexual health was conceptualized based on engaging in risky sexual behaviors (e.g. number of sexual partners, use of condoms, fatherhood) as well as presence of a STD virus or STD symptoms (see chapter 6).

Table 7.12 presents the results. The vast majority of the sample (92%) reported being sexually active before the placement. More than 30% of sexually active youths reported never or rarely using condoms. About 41% reported using a condom sometimes/often, but only 17% reported always using it. Approximately 25% of the sample either reported or were verified for having an STD. Though, one of the more surprising findings given the relatively young age of the sample (mean age was 15.77) was that 9% of the sample reported has fathered or is expecting a child soon (when staff indicated youth may not have been truthful this measure was coded missing).

These results are generally in line with prior studies that have identified risky sexual behaviors as a major health risk for serious juvenile offenders (Golzari, Hunt, & Anoshiravani, 2006; Kelly et al., 2000; Wei, Loeber, & Stouthamer-Loeber, 2002). In some instances, the finding suggested that these risks might be more pronounced for youths included in the current study. For example, the average number of lifetime sexual partners was reported to be 9.45 in the current study with the standard deviation of 6.55, whereas prior studies have reported this number to be around 7.3 (Kelly et al., 2000). On the other hand, fewer youths had fathered children compared to reports from other studies. One study reported that 31.4% of serious delinquents had fathered children or had someone pregnant by age 19 (Wei, Loeber, & Stouthamer-Loeber, 2002).

Table 7. 12

Sexual Health (N = 98)

Categorical	Frequency	Percentage[a]
Sexually Active		
Yes	90	91.8
No	8	8.2
Condom Use		
Not applicable[b]	7	7.1
Never	20	20.2
Rarely	10	10.1
Sometimes/often	41	41.4
Always	17	17.2
STD		
Not applicable[b]	7	7.1
Yes	24	24.2
No/unknown	66	66.7
Fatherhood		
Yes	9	9.1
No	86	90.5

Continuous	**N**	**Mean**	**Standard Deviation**	**Min.**	**Max.**
Number of Lifetime Sexual Partners	77	9.45	6.55	0	20

[a]Calculated as: Frequency divided by (*N* - the number of missing cases)
[b]Residents who reported were not sexually active were coded "not applicable"

Research Aim 3E: Unhealthy Weight

An unhealthy weight was determined based on the residents' BMI, which was calculated using their height, weight, and age reported at admission (see chapter 6). The results are presented in Table 7.13. Approximately one-fourth of the sample was classified overweight or obese (see Kuczmarski et al., 2000). Thus, it became important to investigate whether these health aspects were being addressed at the Facility. Recall that many youths were not frequently measured on their weight during their time at the facility (see Table 7.11). Only 55 residents had their weight measured at some point after the initial weight report (100 days after admission, on average). Further inspection of this group suggested they were presented with 1.43 increase in

their BMI, on average, which was statistically significant at 0.05. This means, overall, youths' weight increased during their time at the Facility.

Because these results were based on aggregate data, it was necessary to breakdown cases based on their weight status to inspect whether the overall weight gain in the sample also applies to individual youths who were classified overweight or obese at intake. Of the 26 overweight and obese cases, only 15 had their weight measured after intake (on average, 72 days after intake). These 15 residents had an average BMI of 26.40 at intake but were presented with an average BMI of 27.52 just two months later—an increase of 1.12 points on average. This difference was statistically significant.

Putting these altogether, it appears that a majority of youths gained weight during their time at the facility, regardless of their weight status at intake. Even though this might be a positive feature of the program for most youths coming from disadvantaged households, there is some evidence that overweight and obese youths may not have received special programming to achieve a healthy weight, which would require individualized dieting programs and perhaps more physical activities (Fock & Khoo, 2013).

Table 7. 13

Weight Status Using BMI

	Categorical	Frequency	Percentage
BMI Full Sample (*N* = 98)	BMI[a]		
	Underweight	0	0
	At-risk of underweight	2	2
	Healthy weight	71	71.7
	Overweight	20	20.2
	Obese	6	6.1

	BMI Comparison	Mean	Standard Deviation	Min.	Max.
BMI Change for youths with at least two BMIs (*N* = 55)	BMI at Intake (non- missing cases)[b]	22.43	2.99	17.74	30.22
	BMI first measured after intake	23.86	3.01	18.79	32.08
	Paired sample t-test for BMI	**t-value**		***p*-value at 0.05**	
	Mean difference between BMI at intake and BMI first measured after intake for those with no missing value on the latter	-7.31		0.00	

	BMI Comparison	Mean	Standard Deviation	Min.	Max.
BMI Change for overweight and obese youths with at least two BMIs (*N* = 15)	BMI at intake for Overweight or Obese (Non-Missing Cases)[b]	26.40	2.29	23.00	30.22
	BMI first measured after intake for overweight or obese	27.52	2.60	23.15	32.08
	Paired sample t-test for BMI	**t-value**		***p*-value at 0.05**	
	Mean difference between BMI at intake and BMI first measured after intake for those with no missing value on the latter	-2.40		0.03	

[a]Created according to the CDC Growth Charts (Kuczmarski et al., 2000), with one exception of adding "at-risk of being underweight" category. BMIs below 5th percentile were classified "underweight"; between 5th and 14th "at-risk of being underweight"; between 15th and 85th "healthy weight"; between 85th and 94th "overweight"; and above 95th percentile were categorized "obese"

[b]Refers to cases that had their weight measured at least once after intake

Research Aim #4: Adverse Childhood Experiences (ACE)

The importation health model suggested poor health among serious juvenile offenders had likely been initiated early in life. As such, ACEs could be important in explaining poor health among serious juvenile offenders. The last research aim was centered around this idea and attempted to explore the prevalence of ACE in the sample. The results of research aim #4 inquiries are presented in Table 7.14. On average, youths in the sample had experienced three of the 10 adverse events in childhood (see Appendix A). The vast majority of youths were a product of broken homes with approximately 85% parental separated or divorced. About 61% of the youths also had a family member who had gone to prison, about one-third had lived with someone with substance and alcohol use problems, and more than one-fifth had lived with a mentally ill person. A history of abuse was also common—about 20% had experienced physical abuse, 13% sexual abuse, and 15% threat or verbal abuse. Domestic violence against mother or stepmother was also common among youths (25%) and lack of emotional support and neglect were noted in 18% of cases.

Table 7. 14

The Prevalence of ACE

	Mean	Standard Deviation	Min.	Max.	N
ACE Questionnaire Total Scores	3.08	2.06	0	10	95
ACE Questionnaire (yes/no)[a]					
1. Threat and verbal abuse	0.15	---	0	1	95
2. Physical abuse	0.20	---	0	1	95
3. Sexual abuse	0.13	---	0	1	95
4. Lack of emotional support	0.18	---	0	1	95
5. Neglect	0.18	---	0	1	95
6. Parental separation/divorce	0.85	---	0	1	94
7. Maternal domestic violence	0.25	---	0	1	95
8. Household substance use	0.33	---	0	1	95
9. Household mentally ill	0.22	---	0	1	95
10. Household gone to prison	0.61	---	0	1	95

[a]See Appendix A for specific items/questions

Chapter 8: Discussion and Conclusion

Discussion

Serious juvenile offenders placed in residential facilities have been a major concern for public health and safety. This group of youth accounts for less than 9% of all delinquency cases that come to attention of the juvenile courts (Hockenberry, 2019). Yet, the juvenile justice system struggles to deal with this population because youth belonging to this classification often have major risks and needs that affect their mental, emotional, and behavioral well-being (Baglivio et al., 2015; Barnert, Perry, & Morris, 2016; Stimmel et al., 2014; Teplin et al., 2014). Juvenile residential facilities are common venues for housing these youths. Although substantial resources have been allocated to address their needs in residential facilities (Mendal, 2011; Barnert, Perry, & Morris, 2016), the evidence to support their effectiveness is weak and inconsistent (Bontrager Ryon et al., 2013).

Several explanations have been offered in the literature for this inconsistency in supporting residential facilities as a successful alternative for serious juvenile offenders. One is ambiguity in goals and purposes of these programs and absence of clear guidelines to dictate how treatments might need to be adjusted to match the specific needs of each youth (Frensch & Cameron, 2002). There is a gap in knowledge about which features of a program might positively contribute to treatment outcomes based on individual characteristics (Helgerson et al., 2005). These shortcomings might be related to the treatment philosophies because reducing recidivism has been identified as a primary goal of the juvenile justice system. Consequently, the current practices in residential facilities are mainly focused on reducing recidivism and their effectiveness is often assessed with those outcomes (e.g. Bontrager Ryon et al., 2013).

Yet, studies have shown that some residential programs are not successful in treatment of youths with a history of abuse (Connor et al., 2002), a combination of substance abuse and other mental health symptoms (Rowe et al., 2004), or ADD and hyperactivity (Lyons et al., 2001). Therefore, recognizing who might benefit the most from these programs (and to whom it might not be beneficial) represents a critical area of study. The importance of this topic goes beyond resource allocation—it might affect youth and public health.

This served as a primary motivation for the current study, which aimed at highlighting 1) the health risks and needs of serious juvenile offenders housed in a residential facility in Ohio and 2) how these health aspects might affect responses to treatment. The literature has clearly highlighted the high prevalence of poor health—particularly mental and sexual health—among serious juvenile offenders and several studies have also highlighted their dental and other basic health needs (e.g. Barnert, Perry, & Morris, 2016; Golzari, Hunt, & Anoshiravani, 2006). It remains unclear, however, whether poor health is initiated in these facilities or if youths enter residential facilities with pre-existing health conditions. It also remains an empirical question whether poor health affects youth's response to treatment.

Evidence to address these questions remains mixed. Drawing on and extending the inmate health and adaptation literature (Armour, 2012; Durcan, 2008; Thomas, 1977), the current study investigated the possibility that youths might enter residential facilities with pre-existing health conditions rather than developing poor health at these facilities. Because the empirical evidence heavily favored this possibility, one goal of the present study was to restrict health measures to residents' intake. The results revealed that youths tend to enter the residential facility with extensive history of risky behaviors, poor sexual health, and high prevalence of mental and emotional problems.

The next step was to explore whether common mental health conditions among this population that were highlighted in the literature (substance use disorder, ADHD, anxiety, and depression) affect youth's likelihood of successfully graduating from these programs. The overall result provided mixed evidence. Specifically, youths with more substance use disorder appeared to benefit from the program, but none of the other mental health conditions (ADHD, depression, and anxiety) were found to have a statistically significant impact. One *suggestive* (though statistically non-significant) finding was that the co-occurrence of substance use disorder and other mental health diagnoses might reverse the positive impact of substance use disorder on treatment outcome to negative and non-significant.

It is important to recall that regression coefficients can be upwardly biased as analytic sample sizes decrease (Nemes et al., 2009), so caution is warranted when interpreting these results. This concern is minimized in the current study because only one of our focal variables passed the threshold for statistical significance (substance use disorder) and most of the other effect sizes were close to zero. Nonetheless, readers should exercise caution when interpreting the results around substance use disorder and when interpreting the results for the other covariates included in those models.

With that context in mind, it is worth noting that these results align with prior studies that have called for paying more attention to individual characteristics—particularly mental health—when assigning youth to placement. Currently, little evidence exists to inform on whether assigning youths to residential facilities is an effective treatment strategy compared to non-custodial alternatives—both in serving the public safety role (Bontrager Ryon et al., 2013) and social welfare role (Barnert et al., 2017, 2019). More research is needed to specify who may benefit from these programs and who might not.

Other findings on juvenile offenders included in the sample and their health risk and health needs are also worth highlighting. The offense profile of youths was similar to what has been highlighted in the literature (e.g. Baglivio et al., 2014). Examples include early age of onset, several prior detentions, having a felony adjudication on the record, and repeated contacts with the juvenile justice system. Substance use appeared to be a major concern, with youth reporting smoking marijuana as early as 6-years-old for the first time and about half selling drugs at least once. Furthermore, two-thirds of the sample reported they had gone to school high or under the influence of a drug at least once and about three-quarters reported using marijuana regularly prior to the current placement. Data on the CRAFFT questionnaire, which measures the intensity of substance use disorder, also suggested about three-quarters of the sample had substance abuse problems, with more than 40% scoring on at least four items on the six-items CRAFFT questionnaire (see Table 7.4). Table 8.1 (next page) summarizes the key findings addressed by research aims #1 and #2.

Table 8. 1

Research Aims #1 and #2: Summary of the Key Findings

Research Aim #	Table #	Findings
1A	7.1	The average age was 15.77; Three-fourths of the sample consisted of African Americans Residents were mostly in grades 8, 9, and 10; one-third were not attending school just before the current placement; 40% were receiving IEP; 95% had a history of expulsion or out-of-school suspension
1B	7.2	Almost all had at least one, and about 70% at least two, felony adjudications; Almost half had sold drugs The average number of prior placements was 6, with 14 prior contacts with the justice system Most had caused injuries in fights, carried weapons, used marijuana often, and gone to school high Risky behaviors started early in life. The average age of onset for marijuana use was 12.07 (age of six being the youngest). The average for the first contact with the system was 12.96
2A	7.3 & 7.4	Consistent with the importation health model, most youths entered the facility with mental health conditions Substance use disorder and ADHD were the most prevalent mental health diagnoses Comorbidity was common as well; most residents had more than one mental health condition 40% of the sample scored on at least four out of the six possible CRAFFT items. 20% scored on at least five
2B	7.6 varies 7.8 & 7.9 7.10	Youths with higher substance use (CRAFFT) score were more likely to graduate from the program. Number of individual therapies was the only significant covariate across all the five models Besides substance use disorder, mental health does not appear to predict treatment outcomes at this facility A history of mental health disorder in the family was negatively associated with graduation in the depression model. This was also the case in the anxiety model, but only with the self-reported BASC measure It appears that a combination of substance use disorder with other mental health conditions (comorbidity) might reverse the positive impact of substance use disorder on treatment outcome to negative and non-significant. More studies needed to confirm these findings, however.

Importing poor health to the juvenile residential facility was not limited to mental health. In fact, many youths presented with poor sexual and physical health at intake as well. These possibilities were explored in research aim #3 (see Table 8.2). Risky sexual behaviors and STDs were common, with almost all youths in the sample (92%) reporting they were sexually active before the current placement, but the vast majority reported not using condoms regularly. Youths reported an average of nine lifetime sexual partners. A report of STD was observed in one-fourth of the sample. These results were generally in line with prior research highlighting risky sexual

activities as well as a high prevalence of STD among this population (Golzari, Hunt, & Anoshiravani, 2006; Kelly et al., 2000).

A striking finding was that 9% of the sample reported being a father or expecting a child soon (because they had caused pregnancy just before entering the Facility). Given the behavioral and health issues observed among this population and reported in the literature, the social and financial costs of being a teenage father could place a major strain on the resident's community.

Table 8.2 summarizes the key findings from research aims #3 and #4.

Table 8. 2

Research Aims #3 and #4: Summary of the Key Findings

Research Aim #	Table #	Findings
3A	7.11	About half of youths in the sample reported they received dental and optical care over the past year Some youths received these services in other residential facilities Information on dental and optical care over the past year was missing for about one-third of the sample
3B 3C	7.11	All youths received a medical examination on the day of arrival (except two, who received this service 2 days after admission). Most received dental, optical, and physical examinations within the first week of arrival Only half of the sample were measured on their weight after initial report (at intake). For those that had their weight measured for the second time, it took about 100 days after arrival, on average, to receive that service Consistent with the importation health model, the vast majority had dental and optical needs, which was detected soon after their admission. Many received eyeglasses and extensive dental care About half of the known cases refused to receiving some forms of medical services at least once (e.g. dental, vaccination, medication)
3D	7.12	Consistent with the importation health model, the vast majority of youths entered the facilities with having an extensive history of risky sexual behaviors, including high number of sexual partners 9% of the sample has fathered or were expecting a child; at least one-fourth had a STD virus or reported having its symptoms
3E	7.13	About one-fourth of the sample were classified as having an unhealthy weight; 26% were obese or overweight The overweight and obese group gained weight during their time at the Academy. The increase in BMI since admission was statistically significant
4	7.14	On average, youth had experienced 3 adverse childhood experiences (Appendix A)
Note:		From chapter 5, the estimates suggested it costs about $232.96 per day for a youth to attend the academy in 2019

Physical health was measured using BMI (adjusting for age) to determine the weight status. Although the majority of the sample fell in the range that was classified as "healthy" by CDC standards (Kuczmarski et al., 2000), one-fourth of youths in the sample were presented with BMI scores classified as overweight or obese. Two youths were also identified *at-risk* of being underweight (this classification is not included in Kuczmarski et al., 2000). These findings were consistent with a recent study that reported juvenile offenders housed in correctional

facilities were more likely to be categorized as having an unhealthy weight compared to their counterparts in the general population (Brown, Davis, & Shlafer, 2020).

Further investigations suggested about half of the sample did not have their weight measured during their time at the Facility. Of those that had their weight and height monitored at least once after admission, the data suggested an overall increase in their BMIs. Thus, on average, youths gained weight at the Program. Consequently, it became important to explore how BMIs may have changed for those who had been classified as overweight or obese at intake. The result suggested that this group increased their BMIs during their stay, which might suggest they did not follow their individualized diet planning.

Because the results suggested youths tend to enter the residential facility with poor health, the logical next step was to explore adverse childhood experiences that might account for their health status. This is because the literature has repeatedly highlighted ACE as a common risk factor of early age of onset and chronic offending (Baglivio et al., 2015; Stimmel et al., 2014) as well as poor health (Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012). This possibility was examined in research aim #4. Similar to prior studies, ACE was found to be prevalent among youths in the current sample. On average, youth had experienced three adverse childhood events. A general theme was that almost all youths had experienced some forms of trauma, neglect, or abuse and grown up in disadvantage households and/or neighborhood.

Policy Implications

Prior studies have identified ACE as an important determinant of poor health (Dube et al., 2009; Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012). Because ACEs are prevalent among serious juvenile offenders (Baglivio et al., 2015), access to health services for this population is crucial for preventing public health concerns. Yet, the literature suggests that

justice involved youths are less likely than youths in the general population to use health services (Aalsma et al., 2012; White et al., 2019). Research aim #3A investigated this possibility for youths in the sample by assessing whether they had access to basic health services over the past year (within one year prior to admission date). The results suggested most youths reported receiving optical and dental care within the past year of being admitted into the program, but several youths explicitly mentioned these services were received in other juvenile residential facilities (e.g. detention centers). This is an important distinction because, in contrast to study reports (e.g. Allison et al., 2007), it highlights the possibility that some youths may not be receiving these services outside of the justice system (e.g. in their community or school).

Even though about half of the sample reported their oral health and vision were checked over the past year, most youths had significant dental and optical needs. This might suggest, although many youths received health services in juvenile residential facilities prior to their current placement, the quality of those health services is in question. This is because youths in the sample reported six prior placements. Yet, it is evident that most youths received extensive care related to dental and oral hygiene and many received prescription eyeglasses to address their abnormal vision within the first month of admission in the current placement. Even so, half of youths for whom the data were available (75% of the sample) refused receiving at least one type of health service that was offered to them (medication, vaccination, dental care). These results may call for reform in current practices, although further studies are needed to confirm these findings. Specifically, improving the quality of health services and introducing strategies that might encourage youths use of medical and other health related services appears to be important.

Similar to a recent study that concluded youth in correctional facilities are more likely to present unhealthy weight compared to their counterparts in the general population (Brown,

Davis, & Shlafer, 2020), the result of the current study—explored in research aim #3E—suggested that youths assigned to residential facilities might be at a higher risk for obesity. Further investigation of the data suggested that those who were identified as overweight or obese at intake gained weight during their time at the Facility. This might call for interventions that provide individualized diet planning for youths in residential facilities and incorporate appropriate physical activities that encourage obtaining healthy weight (Fock & Khoo, 2013; Zhou et al., 2012).

The Juvenile Justice system as a Health Agent

The central theme of the current study was that most youths in residential placements enter these facilities with pre-existing health conditions. Substance use early in life (research aim #1B), the high prevalence of emotional and mental health problems observed at intake (research aim #2A), as well as risky sexual behaviors and STDs (research aim #3D) all provided support for the importation health model discussed in chapters 3 and 4. Research aim #4 reinforced those findings by uncovering that adverse childhood experiences were common among the residents in this facility. Together, these findings highlight the urgency for introducing preventive interventions early in life to prevent health problems in the future. This is because, as discussed by the exportation health model and suggested by empirical evidence (Barnert et al., 2017, 2019; Teplin et al., 2014), poor health among this population is likely to be a lifelong problem in the absence of appropriate health-focused interventions (Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012).

The preventive efforts should focus on identifying vulnerable and at-risk children. Research has shown preventing interventions are capable of minimizing the impact of developmental deficits among this population. As one example, identifying and providing

disadvantaged pregnant women (soon-to-become mothers) with a nutrient-rich diet during pregnancy has shown to be an effective strategy in minimizing the risk of poor health in children (Olds et al., 1986). This is because prenatal nutrition has been found to be vital in a healthy development of an embryo. In fact, prenatal malnutrition during early weeks of pregnancy has been linked to antisocial personality disorder later in life among males (Neugebauer, Hoek, & Susser, 1999). Because one of the findings in the current study, as well as those reported by others (Wei, Loeber, & Stouthamer-Loeber, 2002), was that fathering a child among serious juvenile offenders is a major health crisis, the juvenile justice system might have a unique opportunity in identifying those who are expecting children but might not be fully prepared to provide for their child's basic needs—such as safe and proper food—that are essential in healthy development of a child.

The promising long-term result of preventive programs might emerge after birth. For instance, when the Nurse Home-Visiting were continued two years after the child's birth, their positive impacts on cognitive functioning and behavioral health of children were observed at age 6 years (Olds et al., 2004). Together, these findings serve as powerful evidence for the effectiveness of preventive strategies.

Because ACEs are consequential for health, identifying at-risk children serves as an important step in promoting public health. The result of research aim #4 revealed that approximately 60% of youth in the sample lived with someone who had gone to prison and about 20% reported they had experienced neglect and abuse in childhood. Working with child welfare agencies, the juvenile justice system has a unique opportunity for identifying at-risk children and providing appropriate treatments that might prevent future health problems. Although health-focused services are offered in detention facilities, the extend of these treatments are limited and

these interventions are often not preventive in nature (Teplin et al., 2014). In short, adding preventive treatment interventions to the current practices that were found effective with mentally ill youths—such as carefully designed substance abuse programs—has the potential of improving the health of at-risk children. Identifying at-risk and vulnerable population—such as children of incarcerated parents or children with a history of abuse and neglect—is a challenge that could be initiated by the juvenile justice system through work with other agencies that are in a close contact with children.

Once children at-risk of developing poor health are identified, preventive interventions might be able to effectively reverse some of the developmental deficits. Several preventive programs have recently emerged that have shown positive results, although this line of research is still in its infancy. One is the Head Start program, which began in response to the War on Poverty and aimed to provide low-income children—ages 3- to 5-years-old—with educational opportunities and address their developmental needs. Importantly, health and nutrition were part of the program and ideas were centered around engaging parents in the administration of the program (U.S. Department of Health and Human Services, 2010).

Using a representative sample of programs across 23 states that included 4,667 children, a randomized control trial evaluated the impact of Head Start program on children's school readiness and parental practices (Puma et al., 2010). Similar to the current study, one goal of that evaluation study was to identify specific characteristics of children that may benefit the most from Head Start. The result indicated that children who were assigned to Head Start program performed better on cognitive domains, socio-emotional outcomes (such as reduction in hyperactive behavior), and overall behavioral domains compared to children who were assigned to other programs chosen by their parents, including stay-at-home and pre-school programming.

These differences were statistically significant. Strong evidence also emerged to support that children who were assigned to Head Start program were presented with improvements on dental care and overall health status (Puma et al., 2010). Once again, these discussions are to suggest that the juvenile justice system has the potential to improve behavioral and mental health among the vulnerable population by identifying and delivering preventive and health-focused interventions early in life.

Residential Placements as the Last Resort

Residential facilities are considered the juvenile court's "last resort" (Frensch & Cameron, 2002). Generally, considering the cost (approximately $240 a day; Barnert, Perry, & Morris, 2016), residential facilities have not shown to be more effective than community-based sanctions (Bontrager Ryon et al., 2013). In fact, youth's placement in a residential facility has been linked to increased odds of further involvement in the justice system (Leiber, Brubaker, & Fox, 2009). Importantly, a deeper involvement in the justice system has shown to be associated with worse mental health. One study found that suicidal ideation increases with deeper involvement of youth in the juvenile justice system (Stokes et al., 2015).

However, a few studies have suggested some residential facilities could be effective for certain offenders (for an overview, see Bettmann & Jasperson, 2009). Proponents of the RNR model, discussed in chapter 2, would argue that those interventions are therapeutic in nature and focused on criminogenic needs of the offenders (Andrews & Bonta, 2014; Lipsey, 2009). Although the RNR model (as well as developmental perspectives) is focused on reducing recidivism, this guideline is still applicable and has proven important for improving health among juvenile offenders. This is because serious juvenile offenders are exposed to risk factors that might be the driving force of both offending and poor health—such as ACEs (Baglivio et al., 2015). Although the two (RNR model and health) might overlap, addressing juvenile offenders'

health needs to be defined as a specific goal of a treatment program and needs to be targeted with precise planning.

Research aim #2 was a step in that direction because it attempted to identify who might benefit the most from the residential program that was the focus of this study. This was in light of earlier discussions on substantial variation in philosophies and practices exercised in juvenile residential programs (Helgerson et al., 2007). Because the focal site adapts therapeutic philosophy and closely follows the principles of the RNR model, substance abuse and individual therapies that incorporate multisystemic interventions (e.g. cognitive behavioral therapy and family therapy; Bourdin et al., 1995) are central to practices exercised at the Academy. These results, when juxtaposed with findings from prior studies, call policymakers for taking individual characteristics and mental health into account prior to placing youths at residential facilities.

Future Directions

Future studies can fruitfully extend this line of work by investigating the impact of other mental health symptoms, such as bipolar disorder (Yampolskaya, Mowery, & Dollard, 2014), and how they might affect responsivity to treatments in residential facilities. Other studies have identified mental health symptoms and individual characteristics that were not considered in the current study (for an overview, see Bettmann & Jasperson, 2009). The result also suggested that continuous measures of mental health might be useful in understanding how variation in symptoms affects responses to treatment.

In terms of receiving health services in residential facilities, future studies should more closely explore individual cases to better understand why some individuals may not have received basic health services offered to them. In the present study, a close review of the medical files revealed that the delivery (or lack of delivery) of medical services were more complicated

than what prior studies had revealed. In many cases, lack of access to medical services at a residential facility was due to the resident's refusal in receiving these services. A related issue centers around the possibility that a resident may leave a residential facility earlier than expected (e.g. runaway) and therefore the residential facility did not have the opportunity to provide medical services as originally planned. The bottom line is that these possibilities need to be accounted for in future studies to illustrate a true picture of availability and use of medical services in residential facilities.

Studies that assess youths' access to health services prior to placement should account for the possibility that youths had been provided with health services in other juvenile justice facilities. The current study identified several youths who had reported receiving dental and optical care within the past year of admission, but further investigation suggested that they had received those services in other facilities (such as short-term detention centers). This suggests that a binary measure of service availability/lack of availability could be misleading. Thus, future studies would ideally account for a possibility that youths had received these services through other contacts with the justice system.

The result of the current study suggested that individual characteristics and mental health symptoms are likely to interact with program features (e.g. substance abuse treatment program and individual therapy). This suggests future studies should clearly define the type of residential programs (e.g. treatment center, short-term detention facilities, long-term secure facilities) (Butler & McPherson, 2007) and then identify specific features that are exercised in those facilities. Only then will studies be capable of identifying what programs might work based on specific individual characteristics.

Limitations

The results of the current study should be interpreted in the context of its limitations. First and foremost, the sample size was small. A small sample size poses threats to external validity, which reflects on generalizability of the study results. A related issue was that the sample included youths from only one facility. Although for the most part the descriptive statistics and findings were in line with previous studies, collecting data on more than one facility would have allowed for an examination between facilities that might affect individual-level responses.

Second, the models did not include all variables that might be theoretically important in explaining treatment outcomes. One example is family therapy. Treatments that are centered on family involvement have shown positive results in reducing recidivism (Palmer, 1996; Gendreau & Ross, 1987). Above and beyond positively affecting recidivism, family therapies have been found to improve mental health among juveniles with mental and behavioral problems (Hartnett, Carr, & Sexton, 2016). Indeed, family contact has shown to be associated with a reduction in depressive symptoms among incarcerated juvenile offenders (Monahan, Goldweber, & Cauffman, 2011). Almost all residents received family therapy at the focal site, but I began recognizing the availability of this information after starting the data collection. As such, approximately 30% of cases had a missing value on the number of family therapies. Accounting for the number of family therapies could have been important for several reasons. For example, separating youths from their social bonds may have had a more pronounced impact on youths with mental health disorder, and thus family engagement may have counterbalanced these mechanisms by re-introducing social bonds into the youth's life, thereby having a positive impact on mental health and overall treatment outcomes. However, these possibilities were not directly investigated in the present study.

Third, some of the variables analyzed in the current study were self-reported data. Studying juveniles in residential facilities is generally difficult (Mulcahy et al., 2008), but part of this difficulty might be related to validity and reliability of the available data. The inconsistency between the documented reports and the residents' self-reports—particularly those related to substance use, STDs, and abuse and neglect in childhood—was an inevitable challenge. Fact-checking the data with case managers and medical staff was an important part of the current study, but generally staff comments on students' refusal in providing or revealing valid information were commonly observed in the archived files.

Fourth, the current study used the self-reported version of BASC for some of the mental health symptom measures. Although this provided the opportunity to investigate variation in mental health symptoms, there were several limitations that should be considered when interpreting the results. For instance, BASC questionnaires should ideally be completed in the presence of an evaluator and the individual questions be discussed with the respondent (Reynolds & Kamphaus, 2015). However, it was not clear whether these guidelines were closely followed at the focal site. Furthermore, BASC was not exclusively designed for serious juvenile offenders. This could be problematic, because serious juvenile offenders may have a higher degree of risk than youths in the general population. Symptoms of ADHD observed among this population, for example, could affect the accuracy of the responses. The BASC questionnaire includes approximately 180 questions, which may make it difficult for youth with ADHD to read each statement carefully and answer accordingly.

This is to note that potential limitations associated with measuring mental health presented in the current study may be embedded in the practices applied at the focal site, and perhaps, in a broader sense, by the juvenile justice system. It appears to be crucial to introduce a

reliable measure that is administrated consistently across the juvenile justice facilities, so that a more realistic and comparative picture of behavioral, emotional, and mental health of the residents could be achieved. Although some studies have reported that the self-reported BASC is a useful and valid measurement tool in evaluating the socio-emotional functioning of behaviorally disruptive adolescents (Weis & Smenner, 2007), no study has compared BASC with other self-report tools in residential facilities to assess which more accurately predicts the symptoms.

Fifth, the sample consisted of only males. The literature has clearly established that female offenders are exposed to risk factors that differ from those that males are exposed to (Chesney-Lind & Pasko, 2012). Because these risk factors are likely to be affecting health, the results presented here might not be broadly generalizable to female offenders in residential facilities.

Sixth, the measure of treatment outcome used in the current study is subject to staff rating and judgement. The residents' treatment outcome was based on their performance at the Academy, which was decided by staff at the focal site. It might be the case that staff adjust their rating and decisions based on individual characteristics or that they might account for individuals' mental health when they score the FFA forms.

Lastly, individual characteristics and mental health should ideally be explored in the context of program features. This consideration appears to be crucial in understanding the interaction between program features and individual characteristics, but the current study did not fully account for the program features. For instance, youths with higher substance use disorder were more likely to successfully graduate from the program. However, it was not entirely clear what specific features of the program might have contributed to their success.

Conclusion

The juvenile justice system has a social welfare role of protecting disadvantage youths that come to its attention and it plays a crucial role in the lives of this vulnerable population. To play this role properly, it is important to understand how its practices might affect those under its jurisdiction. To that end, research studies are needed to highlight whether the system is performing as expected and how to capitalize on positive features it offers that might maximize the efficiency of the system. It is also equally important to recognize its limitations and identify approaches to minimize potential harms that might unintentionally be affecting the lives of juvenile offenders. This urgency might be even more pronounced for serious and chronic juvenile offenders because most of them have been exposed to a set of risk factors that is likely affecting their health and overall well-being.

Evidence presented here, coupled with the literature reviewed in this document, shed light on these aspects. Specifically, it appears that many serious and chronic offenders with a history of violent offending enter residential facilities with pre-existing health conditions that had been initiated early in life. The therapeutic nature of the focal site, along with the treatment interventions it offers, appeared to be effective for some youths (but not for others). The current study found evidence that youths with more symptoms of substance use disorder may benefit the most from the program, but this appeared to be due to specific interventions that the residents received at the Academy. Although more studies are needed to confirm these findings, the evidence presented here suggests that juvenile courts need to take individual characteristics and program features into account when assigning youths to residential placements.

Findings also suggested many youths entered the facility with basic health needs (dental and optical care). Although several residents reported receiving these services within one year

prior to admission at the focal site, the quality of those services merits further investigation because many youths were presented with dental and optical needs that required immediate attention. It was also evident that some youth do not take advantage of health services they are offered. The juvenile justice system might benefit from introducing strategies that promotes health service utilization. Such strategies might be seen as an investment in the future in terms of both crime and public health.

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Appendices

Appendix A

Adverse Childhood Experiences (ACE) Measure

	Items
ACE Questions	While you were growing up, during your first 18 years of life…:
Question 1	Did a parent or other adult in the household often… Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?[b]
Question 2	Did a parent or other adult in the household often… Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?
Question 3	Did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have oral, anal, or vaginal sex with you?
Question 4	Did you often feel that… No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?
Question 5	Did you often feel that… You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Question 6	Were your parents ever separated or divorced?
Question 7	Was your mother or stepmother: Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
Question 8	Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?
Question 9	Was a household member depressed or mentally ill, or did a household member attempt suicide?
Question 10	Did a household member go to prison?

Appendix B

IRB Approval Letter

University of CINCINNATI
Institutional Review Board
IRB Registration #: 00000180 FWA #: 000003152

APPROVAL

May 21, 2019

Shahin Tasharrofi
CECH SOCJ E-Learning
tasharsn@mail.uc.edu

Dear Shahin Tasharrofi:

Type of Review:	Initial Study
Title:	Understanding Health Consequences of Incarceration
Investigator:	Shahin Tasharrofi
IRB ID:	2019-0131
Documents Reviewed:	• Shahin Tasharrofi~ waiver-of-consent.pdf • Hillcrest HIPAA Form.pdf • Shahin Tasharrofi- CV.pdf • HIPAA Waiver Request (1).pdf • Hillcrest Letter of Support.pdf • Shahin Tasharrofi~ Revised HRP-503.pdf • Data Collection Sheet.pdf
Review Type:	Expedited
Review Category:	(5) Data, documents, records or specimens

On 5/21/2019, the IRB reviewed and approved the above submission using an EXPEDITED review procedure in accordance with 45 CFR 46.110(b)(1).

§46.110. *Expedited review procedures for certain kinds of research involving no more than minimal risk, and for minor changes in approved research.*
§46.110(b) *An IRB may use the expedited review procedure to review either or both of the following:*

1. *some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk,*
2. *minor changes in previously approved research during the period (of one year or less) for which approval is authorized.*

Under an expedited review procedure, the review may be carried out by the IRB chairperson or by one or more experienced reviewers designated by the chairperson from among members of the IRB. In reviewing the research, the reviewers may exercise all of the authorities of the IRB except that the reviewers may not disapprove the research. A research activity may be disapproved only after review in accordance with the non-expedited procedure set forth in §46.108(b).

The IRB approved the protocol from 5/21/2019 to 5/20/2022. Thirty days before 5/20/2022, you are to submit a completed continuing review and required attachments to request continuing approval or closure. You can

submit a continuing review by navigation to the active study and clicking Create Modification/CR. If continuing review approval is not granted before the expiration date of 5/20/2022, approval of this study expires on that date.

Your research study is approved by the UC IRB and has received an extended approval period. Your study is subject to the following requirements during the approval period.

- You must submit a continuing review report 30 days prior to end of the 3-year approval period.
- Changes and modifications to research must continue to be submitted as amendments via RAP as needed, during the extended approval period.
- Research receiving an extended approval period continues to be subject to all applicable UC policies including Non-compliance reporting, HIPAA, COI, etc.
- It is the responsibility of the PI to report to the IRB changes in contractual obligations that preclude extended approval times as well as funding or sponsoring status that involve federal agencies.

The IRB has determined the following consent requirements:
Per 45 CFR 46.116 the IRB has waived the requirement to obtain informed consent for all adult participants.

HIPAA
Per 45 CFR 164.512 the IRB has granted a waiver from the requirement to obtain an authorization for the use and/or disclosure of protected health information (PHI)

- The Board determined that this study meets the criteria for enrollment of prisoners as described in UC Human Research Protection Program Policy V.01 and Procedure 331.
- The Board determined that this study meets the criteria for enrollment of minors as described in UC Human Research Protection Program Policy V.01 and Procedure 332.

PI Notifications
This approval is through the IRB only. You may be responsible for reporting to other regulatory officials. Please check with your institution and department to ensure you have met all reporting requirements.

Statement regarding International Conference on Harmonization and Good Clinical Practices
The Institutional Review Board is duly constituted (fulfilling FDA requirements for diversity), has written procedures for initial and continuing review of clinical trials: prepares written minutes of convened meetings and retains records pertaining to the review and approval process all in compliance with requirements defined in 21 CFR Parts 50, 56 and 312 Code of Federal Regulations. This institution is in compliance with the ICH GCP as adopted by FDA/DHHS.

Thank you for your cooperation during the review process.