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Offender Participation in Multiple Rehabilitation Programs to Reduce Recidivism

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Walden University
2020

Abstract

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by

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MA, Leicester University, 1998

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Rehabilitation programs are critical for reducing recidivism rates and reintegrating offenders into the community. Despite the recognition that offenders face many challenges, few scholars have investigated the relationship between prisoners who receive more than 1 rehabilitation program and recidivism. The purpose of this quantitative, correlational cross-sectional study using archival data from a correctional facility in Barbados was to assess the relationship between age, education, employment, and multiple rehabilitation programs on recidivism. The conceptual framework of this study was grounded in the lifecycle theory, the social learning theory, the social cognitive theory, and the social disintegration theory. The primary research question examined how the variables of age, education, employment, and participation in more than 1 rehabilitation program predicted the dependent variable likelihood of recidivism at 1 year. Logistic regression was used to analyze data from 67 individuals. In this study, there were 3 major findings. First, participation in more than 1 rehabilitation program did not positively predict recidivism at 1 year. Second, the sociodemographic variables of age, education, and employment were not significantly related to recidivism at 1 year. Finally, the regression model was accurate in predicting nonrecidivism but was not correct in predicting who was likely to recidivate. The results of this study can contribute to positive social change as offenders receive help to overcome their psychological and social problems. At the community level, offenders who are employed are better able to find work and support their families. At the broader societal level, lower recidivism rates lead to reduced costs to maintain inmates and potential costs savings to the government.

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Dedication

I dedicate this dedication to the management and staff of the correctional facility in this study. They work to ensure that offenders leaving prison are better able to reintegrate into society and reduce their recidivism rates. Their work includes a range of rehabilitative services to offenders including educational, vocational and counselling programs that target the challenges offenders face in the community. By helping offenders to reintegrate into the society the efforts of the management and staff of the prison, therefore, represents a broader gesture of improving the life circumstances of a population.

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To my wife Deborah: Deborah, you never doubted my ability to complete this journey. Your support was steadfast, and it strengthened my mental resolve to continue in my moments of despair. You were always there when it mostly mattered.

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Chapter 1: Introduction to the Study

Over 700,000 exoffenders in the United States leave prison each year, and 300,000 of these individuals return to prison within 3 years of release (Orrick & Vieraitis, 2015). The recidivism rate in the United States is 67%, but many other countries have similar issues with the offending population (Fazel & Wolf, 2015). The recidivism rate of Japan is 43%, Australia is 39%, and the United Kingdom is 46%; Ireland and Scotland experience higher recidivism rates of 62% and 50% respectively (Fazel & Wolf, 2015). Smaller countries also face challenges. In Barbados, 68% of offenders recidivated (King, 2019). Efforts to reduce high recidivism rates are essential as a country's inability to reduce recidivism rates may lead to higher prison populations and fewer opportunities for offenders to return to the community as productive citizens.

Exoffenders face many obstacles in their return to society. The likelihood of recidivism is often tied to personal maturation and opportunities often summarized in terms of sociodemographic variables such as age, education, and employment (Hall, 2015; Nally, Lockwood, Ho, & Knutson, 2014). Recidivism also leads to an increase in the prison population, higher costs to maintain inmates, and a potential reduction in rehabilitative services (Orrick & Vieraitis, 2015; Osterman & Caplan, 2013).

Prison rehabilitation programs aim to prepare the offender to deal with the outside world, but they often concentrate on only one aspect of a person’s problems without sufficient attention to the complexity of the issues and cooccurring disorders that the individual may face. As a result, offenders often leave prison without the skills that help them reintegrate into the community (Byrne et al., 2015; Falco & Turner, 2014; Miller &

Miller 2015; Orrick & Vieraitis, 2015; Osterman & Caplan, 2013). Because of the poor rehabilitation success rates, attention is starting to shift toward the use of multimodal approaches to prison therapy (Cook, Kang, Braga, Ludwig, & O'Brien, 2015; Graffam, Shinkfield, & Lavelle, 2014).

In this study, I addressed the extent to which multiple offender rehabilitation programs can improve recidivism independent of known effects of sociodemographic variables that support or inhibit the reintegration of offenders into the community. I used archival data stored in case files that contain information pertinent to this study, including the dependent variable recidivism and the independent variables (IVs) related to the number of rehabilitation programs, age, education, and employment. This research contributes to the existing literature in two ways. First, researchers have found that offenders have a mix of psychological and social problems, but few studies exist to date in the area of multiple services to offenders and recidivism (Falco & Turner, 2014; Hall, 2015; Ramakers, Nieuwbeerta, Van Wilsem, & Dirkzwager, 2017). Second, there is almost no research on offender recidivism in Barbados.

Background of the Problem

Some prison rehabilitation programs do not match the needs of participating offenders (Rettinger & Andrews, 2010). Prison treatment often deals with one issue while neglecting others. For example, treatment of the behavior pathologies related to criminality might overlook comorbidities related to substance abuse and mental health (Morgan, Kroner, Mills, Bauer, & Serna, 2014; Wilson, & Farkas, & Gearhart, 2014). In addition, prison rehabilitation has often emphasized the attitudinal aspects of criminality

at the expense of social factors. According to the risk, need, and responsivity model, offenders at higher risk for offending should receive more intensive treatment, and those with low-risk should receive minimal or no intervention (Fortune, Ward, & Willis, 2012; Looman & Abracen, 2013; Ward & Durrant, 2011). Although penal systems worldwide have adopted the risk, need, and responsivity model over the last 4 decades, recidivism rates continue to increase because the model results primarily in implementing psychological interventions but ignores the social circumstances of offenders (Byrne et al., 2015; Looman & Abracen, 2013; Osterman & Caplan, 2013).

Among the issues that need addressing to reduce recidivism are age, education, and employment. Youth offenders tend to commit more crimes than older offenders (Carson & Sabol, 2016; Liu, 2015). According to age-graded crime theory, offenders tend to commit crime at an earlier age rather than as adults, but these offenders may experience lower recidivism rates if they gain stability in their lives through marriage, military training, and employment (Sampson & Laub, 1990). Lifecycle theory links crime to experiences during childhood, adolescence, and adulthood (Brannigan, 1997; Liu, 2015). Age-graded and lifecycle theories have implications for programming. The U.S. Sentencing Commission (2016) found that offenders released before age 21 had the highest rearrest rate at 67.6%, while offenders over 60-years-old at the time of release had a recidivism rate of 16.0%. Other factors, including offense type and educational level, were associated with differing rates of recidivism but less so than age and criminal history.

Inmates who lack education are at significant risk for recidivism (Chaple et al., 2016; Falco & Turner, 2014; Graffam et al., 2014; Hall, 2015). A significant number of offenders are less educated than the general population, and improving their ability to write, think, and solve problems will create more meaningful opportunities for them to find work (Hall, 2015). In many cases, a lack of work-related skills limits the ability of offenders to find jobs, and offenders who are unable to find work tend to recidivate at a higher rate than offenders who are employed. Because unemployed offenders are at a higher risk of recidivism, criminal justice practitioners have provided offenders with a range of academic and vocational courses that increase their marketable skills (Hall, 2015; Nally et al., 2014).

A significant number of offenders from lower socioeconomic communities return to prison because of financial liabilities and a lack of marketable skills (Cook et al., 2015; Orrick & Vieraitis, 2015). According to social disintegration theory, individuals who are unable to improve their financial situation tend to experience adverse economic conditions that may lead them to commit a crime (Barnetz & Vardi, 2014). Prisons should invest in employment-related services that increase the chances of an offender becoming employed (Jung, 2011; Ramakers et al., 2017).

In light of the problems posed by the limits of existing approaches to rehabilitation, the incorporation of multiple modalities in a prisoner's treatment plan is receiving increasing attention (Cook et al., 2015; Graffam et al., 2014). Offenders who receive cognitive behavioral therapy (CBT), a program designed to change thinking and attitudes known to contribute to crime, coupled with job training and subsidized

employment on release from prison were less likely to recidivate than those in the control group (Cook et al., 2015). Similarly, offenders who received a combination of life skills courses, housing, and drug and alcohol treatment experienced lower recidivism rates than prisoners who did not receive this combination (Graffam et al., 2014). Criminal justice practitioners who provide offenders with multiple services may help them to deal with a range of problems and lower their recidivism rate (Cook et al., 2015; Orrick & Vieraitis, 2015).

Reducing recidivism may require a focus on providing multiple services to offenders that target their sociodemographic characteristics (Chan, Wing, & Zhong, 2016; Graffam et al., 2014). Despite the knowledge that age, education, and employment contribute to recidivism, few researchers have conducted studies on the effect of sociodemographic variables on offenders who receive more than one rehabilitation service (Cook et al., 2015; Graffam et al., 2014). It is, therefore, vital to examine the impact of the sociodemographic factors of age, education, employment, and multiple rehabilitation services on recidivism (Graffam et al., 2014; Hall, 2015). By providing offenders with various programs, criminal justice practitioners create opportunities to address the social problems that emerge when offenders are unable to acquire the range of services that help them reintegrate into the community. A focus on multiple rehabilitation services may help criminal justice practitioners to identify the mix of programs that show significant reductions in recidivism among offenders.

Statement of the Problem

Offenders have various psychological and social needs, and by offering them multiple services, they may overcome these challenges and reduce their recidivism rates (Cook et al., 2015: Graffam et al., 2014). Nonetheless, few researchers have investigated the use of multiple services and recidivism (Deady, 2014; Institute for Criminal Policy Research, 2016). Despite sociodemographic variables such as age, education, and employment correlating with recidivism, few researchers have focused on the predictive relationships of these variables on offenders who receive more than one rehabilitation program and recidivism (Håkansson & Berglund, 2014; Welsh, Zajac, & Bucklen, 2013).

This study may aid in the delivery of offender rehabilitation programs by ensuring that offender rehabilitation programs incorporate multiple services and focus on the sociodemographic variables that reduce recidivism and reintegrate offenders into the community. The successful reintegration of offenders into society will lead to positive social change as offenders acquire the skills that improve their life circumstances. A positive social change also extends to the community as lower recidivism rates reduce the prison population, which results in lower costs to maintain inmates and the potential transfer of economic resources to other sectors of the economy.

Purpose of the Study

The purpose of this quantitative, cross-sectional study was to explore the predictive relationships between recidivism, participation in multiple rehabilitation programs, and the sociodemographic variables age, education, and employment. I used logistic regression. The first IV was the number of prison rehabilitation programs. The

second IV was the age of the offender. The third IV was education. The final IV was employment. Focusing on providing offenders with more than one rehabilitation program creates opportunities for offenders to become productive and return to the community.

Nature of the Study

I used a quantitative, correlational research design to assess the predictive relationship between offender participation in more than one rehabilitation program, select sociodemographic variables (age, education, and employment), and the likelihood of recidivism at 1 year. I used archival data from the case files of offenders maintained and stored in the case management unit of the prison. At the prison, controls are in place to ensure the accuracy of the information recorded in case files. Each offender admitted to the prison is identified by a particular number, and information regarding sociodemographic variables and use of rehabilitation programs is recorded in an Excel database and case files. Supervisory personnel check the information recorded in case files for accuracy against data recorded in the Excel database, and if data are missing, they instruct junior officers to make the necessary corrections. Because all the data for this study were stored in case files and located in one place, I was able to access the necessary information on offenders. For this study, I retrieved the archival data from the offenders' case files.

Theoretical Framework

Bandura's (1971) social learning theory, Bandura's (1986) social cognitive theory (SCT), Brannigan's (1997) lifecycle theory, and Barnetz and Vardi's (2014) social disintegration theory allowed for an in-depth explanation of the psychological and social

challenges offenders face. These theories were most appropriate for conceptualizing the mix of psychological and social factors that contribute to recidivism. Scholars have highlighted the correlation between crime and cognitive deficits (Bandura, 1986) and the effect of sociodemographic factors on recidivism (Barnetz & Vardi, 2014; Byrne et al., 2015; Wright & Cesar, 2013) and have recognized that offenders have multiple problems that may contribute to their recidivism (Håkansson & Berglund, 2014; Welsh et al., 2013).

Subsequent research and application of social learning theory, SCT, life cycle theory, and social disintegration theory may also inform the need for a range of services that help offenders reduce their recidivism rates and reintegrate into the community (Håkansson & Berglund, 2014; Welsh et al., 2013). Although offenders may need a range of services to reduce their recidivism rate and help them reintegrate into the society, few researchers have linked a theoretical framework supportive of multiple services to recidivism (Severson, Veeh, Bruns, & Lee, 2012; Welsh et al., 2013).

Research Question and Hypotheses

RQ: How well do the IVs of age, education, employment, and participation in more than one rehabilitation program predict the dependent variable likelihood of recidivism?

$H1_0$: $\mu 1 = \mu 2$. The number of rehabilitation programs, age, education, and employment are not statistically significant predictors of recidivism.

$H1_1$: $\mu 1 \neq \mu 2$. The number of rehabilitation programs, age, education, and employment are statistically significant predictors of the likelihood of recidivism.

Definition of Terms

The terms and definitions provide clarification for the reader. Although some terms and definitions are interchangeable, I primarily use terms and definitions drawn from the broad literature on offender rehabilitation. Presented below are the following terms and definitions.

Age of the offender: The age that an offender commits a crime (Hall, 2015; Liu, 2015). Researchers primarily report age as a continuous variable that takes on any value within some range (Alper, Durose, & Markham, 2018; Carson & Sabol, 2016; Hall, 2015; Nally et al., 2014). To allow for the measurement of age across a range of age groups, researchers created the ordinal variable age group from the continuous variable age (Carson & Sabol, 2016; Nally, Lockwood, Ho, & Knutson, 2012). For example, Nally et al. (2012) measured the age variable at the ordinal level using the categories 20 to 29 years old, 30 to 39 years old, 40 to 49 years old, and 50 years old and older. For this study, I measured age at the ordinal level by using categories under 20 years, 20-29 years, 30-39 years, 40-49 years, and 50 years and above.

Education level of the offender: The stages of schooling achieved by an offender, including before high school, at the high school, tertiary, and university (Nally et al., 2014).

Education programs received by the offender: The range of educational and vocational services provided to offenders that increase their marketable skills (Cook et al., 2015; Graffam et al., 2014).

Employment on leaving prison: Finding a job after leaving prison (Cook et al., 2015; Graffam et al., 2014; Newton et al., 2018).

Multiple services: Providing offenders with more than one rehabilitation program while incarcerated (Cook et al., 2015; Graffam et al., 2014).

Nonrecidivist: An offender who does not return to prison in the period under review (Severson et al., 2012).

Offender rehabilitation: Any program that attempts to reduce recidivism for offenders by helping them to improve their education and work skills and their ability to cope with stressful situations (Cook et al., 2015; Duwe, Hallet, Hays, Jang, & Johnson, 2015; Graffam et al., 2014).

Recidivism: Commission of a crime by an offender after release from prison resulting in a return to prison at 1 year (Cook et al., 2015; Graffam et al., 2014; Langan & Levin, 2002; Visher & Travis, 2003).

Recidivism rate: The percent of offenders who commit a crime after release from prison and return to prison at 1 year (Cook et al., 2015; Graffam et al., 2014; Langan & Levin, 2002; Visher & Travis, 2003).

Significance of the Study

The findings from this study have practical significance for criminal justice practitioners working with offenders who have recidivated in Barbados. The primary

purpose of the prison is to maintain offenders in a secure and safe environment and to provide them with rehabilitative services that help them reduce their recidivism rate and reintegrate into the community. Researchers have found that prisoners experience a range of psychological and social problems that lead to high recidivism rates. Reducing offenders' high recidivism rates are linked to targeting their sociodemographic factors and providing them with multiple rehabilitation programs. The correctional facility houses several hundred inmates each year, which means that lower recidivism rates would present a significant opportunity to affect social change for offenders they maintain.

However, in Barbados there are few studies in the area of offender rehabilitation programs' relationship to recidivism (Brathwaite & Harriot, 2004; National Task Force on Crime Prevention, 2005). As a result, it was difficult to know the extent to which offenders' age, education, employment, and number of rehabilitation programs lowers their recidivism rates and helps them reintegrate into the community (Håkansson & Berglund, 2014; Welsh et al., 2013). The findings from this study could allow human services and other professionals in Barbados to advocate for therapeutic and social interventions that help offenders reduce their recidivism rate and reintegrate into the community.

Assumptions and Limitations

I made some assumptions to conduct this study. The first assumption was that archival data provides accurate information. These data include data retrieved from the case files of offenders. Because there was no way to further verify the accuracy of the

information in the case files, I assumed that the data in the offenders' case files were accurate. Second, I assumed that offenders were justifiably convicted and not incarcerated because of their race, nationality, or reasons not linked to the crime committed. Third, I assumed that permission to view the case files of offenders was given by the relevant authorities in Barbados and controls were put in place to ensure the accuracy of the data.

A limitation of the study was the use of archival data. I did not have control over the variables measured in the research and accepted these variables as valid. Confounders also presented another limitation. These included the history of offending, history of attendance at programs, and length of time incarcerated for offenders who serve long sentences versus prisoners who serve short sentences that may affect the outcome of the study. An additional limitation of the study was that I relied on quantitative metrics rather than in-depth, qualitative perspectives of offenders. Although obtaining the views of offenders would have led to a broader study, such an approach was considered unattainable due to the time and extent of work required. In this study, I examined only recidivism, participation in the offender programs, and the contribution of sociodemographic variables and not the opinions and beliefs of offenders about how rehabilitation services help them to reintegrate into the community. Knowledge of this information might otherwise influence their participation in these programs.

Scope and Delimitations

The study assessed the relationship between four measures of sociodemographic data, more than one rehabilitation program, and recidivism at 1 year. To accomplish this

objective, all data for this study came from records kept by the prison as part of their record-keeping requirements. Therefore, all documents pertained to inmates who entered the prison between January 1, 2014 and December 31, 2018 (Severson et al., 2012). Thus, caution should be used when attempting to generalize results from this study to prisoners who entered the prison before January 1, 2014 and after December 31, 2018, as well offenders who received rehabilitation programs before January 1, 2014 and after December 31, 2018.

Summary

In this chapter, I provided a detailed examination of the issues addressed in the research, with an emphasis on the concerns about the varied needs of offenders and the use of multiple rehabilitation services to help them reintegrate into the community. Although researchers link the challenges offenders face in the community to their inability to deal with a mix of psychological and social issues, providing offenders with multiple offender services receives little attention. Investigating the changes in recidivism rates when recidivism correlates with an offender receiving more than one program and sociodemographic variables can increase knowledge on how to improve rehabilitative services to offenders. Understanding the link between recidivism and multiple rehabilitation programs and sociodemographic variables supports research focused on recidivism, multiple offender rehabilitation programs, and sociodemographic variables.

In this quantitative study, I focused on the factors linked to recidivism drawn from the literature on offender rehabilitation and archival research. All of the data were collected from the prison. The dependent variable was recidivism, which was measured

as a dichotomous outcome based on an offender returning to prison within 1 year. The four IVs were the number of rehabilitation programs, age, education, and employment. The study was correlational with a logistic regression analysis conducted to assess how well the measures of the number of rehabilitation programs and sociodemographic factors predict recidivism.

In Chapter 2, I present an overview of the related literature and the relevant areas of the study. I also summarize the position of the research on several issues including (a) defining recidivism, (b) the theoretical basis for the study, (c) the need for multiple rehabilitation programs, (d) the literature related to critical variables in the study, and (e) the penal system and offender rehabilitation in Barbados. In Chapter 3, I present the research methodology and information on the research design, study sample, and data analysis. Chapter 4 includes a review of the data with a focus on establishing correlations between variables and their ability to predict recidivism among offenders who received multiple services. Logistic regression analysis determined the predictive value of age, education, employment, and more than one rehabilitation programs on recidivism. Finally, in Chapter 5, I present a summary of the research, conclusions drawn from the literature, and the results of the study followed by recommendations for incorporating multiple offender services to modify the delivery of programs for participants and to contribute to a significant drop in recidivism.

Chapter 2: Literature Review

Offenders' lack of marketable skills and their inability to cope with stressful situations affects their reintegration into society (Cook et al., 2015; Hall, 2015). Many exoffenders recidivate because of a lack of education (Hall, 2015), vocational training (Graffam et al., 2014), or underdeveloped cognitive skills (Palmer & Humphries, 2016). Penal systems worldwide are concerned about high incarceration rates and the costs to maintain prisoners despite a focus on improving the work skills of offenders (Byrne et al., 2015; Orrick & Vieraitis, 2015). Australia spends $4 billion each year on the construction and operation of their prisons (Bushnell & Wild, 2016) while in the United Kingdom, it costs approximately £3 billion to house prisoners (Ministry of Justice, 2018). In 2010, of the approximately 1.6 million prisoners incarcerated in state and federal prisons in the United States, 1.4 million were under the jurisdiction of state authorities at an annual cost of over $50 billion (Falco & Turner, 2014).

A significant number of offenders return to prison within 3 years of leaving prison and without the skills to help them reintegrate into the community (Byrne et al., 2015; Miller & Miller, 2015; Nally et al., 2014). Criminal justice systems worldwide have focused on reforming their penal systems to support rehabilitation services that help offenders reintegrate into the community (Byrne et al., 2015; Orrick & Vieraitis, 2015). In particular, policymakers have linked efforts to reduced prison populations to laws that support alternatives to incarceration. Knowledge of the relationship between support for rehabilitative services and the laws of a country suggests the need for a discussion of the penal issues pertinent to offender rehabilitation in Barbados.

In this study, I investigated the likelihood of recidivism for offenders who lack multiple services by exploring predictive relationships among age, education, and employment. If offenders who receive many services reduce their recidivism rate, opportunities may be created that allow criminal justice practitioners and policymakers to modify rehabilitative services to increase the potential for offenders to reduce their recidivism rates (Chaple et al., 2016; Graffam et al., 2014).

This chapter includes a detailed literature review on the literature search strategy and the literature on offender rehabilitation, measurement of recidivism, and a theoretical framework that focuses on social learning theory, SCT, lifecycle theory, and social disintegration theory. Highlighted are the literature related to the variables of the study and the efficacy of multiple rehabilitation services. I discuss the impact of recidivism on the penal systems in Barbados and then consider the need to provide offenders with various rehabilitation services.

Literature Search Strategy and Definition of Recidivism

I reviewed 96 scholarly articles located in several databases at Walden University. These databases included ProQuest, PsycINFO, Science Direct subject collections, and Sage Premier. For this search, the keywords and phrases selected covered *offenders, offender rehabilitation, treatment programs and offenders, recidivism, employment and recidivism, correctional education and recidivism, reintegration of offenders, income and crime, incarceration*, and *the cost of incarceration*. From these databases, I identified the various theories and practical approaches in the areas of offender rehabilitation as they relate to recidivism, the use of rehabilitation, age, education, and employment. It was

necessary to conduct more searchers on various services for offenders because they were not in the literature as multiple services for offenders. A further search of these databases also provided data on the costs of maintaining offenders.

The definition of recidivism itself was a matter for discussion (Hall, 2015). A large body of the literature identified three measures of recidivism: rearrests, reconvictions, and reincarceration. Rearrest, as a measurement of recidivism, indicates that an exoffender commits another crime after release and is rearrested. Although rearrest demonstrates that a person is answerable to a criminal charge, it is an incomplete measure of recidivism as the persons arrested may not be guilty of a particular crime and, therefore, may not be convicted and sentenced to serve time in prison (Hall, 2015; Langan & Levin, 2002).

The use of reconviction as a measure of recidivism is also problematic (Farabee, Zhang, & Wright, 2014; Linhost, Dirks-Linhost, & Groom, 2012). An offender reconvicted of an offence may receive noncustodial sentences such as probation and fines rather than incarceration. Reconvictions may fail to differentiate between violent and nonviolent prisoners as an offender may return to prison because of a lack of compliance with correctional supervision rather than committing a serious offence (Hall, 2015; Miller & Miller, 2015). Finally, reconvictions may not reflect the actual level of reoffending as all crimes are not documented (Mounteney, Stooves, & Haughland, 2011). The nonrecording of offences is a particular concern as, despite committing a crime, an individual tends to avoid conviction.

The challenges associated with the use of rearrests and reconvictions have led criminal justice practitioners, researchers, and policymakers to focus on reincarceration as the primary indicator of recidivism (Hall, 2015; Severson et al., 2012). Given that incarceration focuses on offenders who recidivate and the data from offenders can be obtained from offenders' records, reincarceration is a practical measure for assessing the recidivism rate of offenders.

Theoretical Framework

Since the 1960s, the medical model has been the dominant framework for informing approaches to offender rehabilitation (Andrews & Bonta, 2010; Andrews, Zinger, Hoge, & Bonta, 1990; Brody, 1976; Looman & Abracen, 2013; Martinson, 1974). Offenders have problems that are a direct cause of their criminal behavior for which criminal justice practitioners can reduce further problematic behavior through a particular intervention. Rather than being seen as a prisoner, the offender is viewed as a patient or client in need of treatment.

An essential aspect of the medical model is that offenders experience psychological challenges, and providing them with the appropriate treatment should reduce their recidivism rate (Andrews & Bonta, 2010; Orrick & Vieraitis, 2015; Palmer & Humphries, 2016). Andrews and Bonta (2010) linked the appropriate psychological treatment to offenders' risk of recidivating, and since the 1960s, the risk, need, and responsivity model has emerged as a leading framework for reducing recidivism and reintegrating offenders into the community (Andrew & Bonta, 2010). According to the risk principle, offenders with a higher risk of offending should receive more intensive

treatments, whereas low-risk offenders should receive minimal or no intervention; the need principle relates the challenges offenders face to factors that are supportive of crime, and if changed, offenders may experience lower recidivism rates (Looman & Abracen, 2013). Researchers have linked the factors that vary with interventions as dynamic risk factors and those who cannot change with interventions as static risk factors (Andrews & Bonta, 2010; Chan et al., 2016). According to the responsivity principle, offenders have different styles of learning that may hinder their ability to benefit from rehabilitation (Rettinger & Andrews, 2010).

In conjunction with the development of the medical model and the principles of risk, need, and responsivity, offenders face a mix of psychological and social challenges that impact their ability to reduce their recidivism rates and reintegrate into the community (Bandura, Ross, & Ross, 1961; Merton, 1957). These issues suggest the need to explore the theoretical framework that supports the problems offenders face in the community. Because I aimed to address the factors that predict recidivism rates, an explanation of the theories that inform the use psychological and social services is needed.

Social Cognitive Theory and Its Antecedents

SCT is built on social learning and cognitive behavioral theories. For over 4 decades, social learning theory has played a role in informing psychological interventions (Bandura, 1971). The basis of the approach was in the Bobo doll experiment, which showed that children are more likely to imitate the observed behaviors of aggressive adults (Bandura et al., 1961). The research involved exposing children to the action of

aggressive and nonaggressive adults and, after witnessing the adult's behavior, the children were placed in a room without the adults and were observed to see if they would imitate the actions they had seen earlier. Bandura et al. (1961) showed that children exposed to aggressive actions tended to be more physically aggressive to the Bobo doll than children not exposed to aggression. Moreover, the researchers illustrated that people not only learn by being rewarded or punished, but they can also learn from watching somebody else being rewarded or punished.

Bandura (1971), in explaining social learning theory, suggested that the way children think and respond to different situations is related to their interactions with their peers. Young people who bond with other delinquent youths also may become delinquent (Henneberger, Durkee, Truong, Atkins, & Tolan, 2013). Offenders without critical thinking skills are unable to make positive decisions and tend to be influenced by others to commit a crime. Offenders' cognitive deficits are learned, and programs based on this premise focus on teaching offenders to confront their past experiences, understand their motives, and develop new ways of coping and desisting from delinquent behavior (Davis, Doherty, & Moser, 2014; Looman & Abracen, 2013; Windsor, Jemal, & Alessi, 2015).

Concurrent with the rise and spread of social learning theory, criminal justice practitioners have used CBT to guide treatment aimed at reducing recidivism among offenders (Antonio & Cossett, 2017; Van Voorhis, Spiropoulos, Ritchie, Seabrook, & Spruance, 2013). CBT assumes that offenders' delinquency is related to a lack of thinking skills and that helping them to make better decisions reduces their criminal behavior. Rehabilitation programs guided by the principles of CBT can achieve

reductions in recidivism rates. For example, Van Voorhis et al. (2013) reported a 49% reduction in recidivism, while programs evaluated by practitioners achieved a lower mean decrease of approximately 11%. Despite the variations in recidivism rates among offenders who participate in CBT programs, several scholars found CBT effective in reducing recidivism rates among offenders who abuse drugs (Davis et al., 2014; Smock, Forerer, & Blakelee 2011), sex offenders who commit sexual crimes (Aos, Miller, & Drake, 2006; Hall, 1995), and prisoners with mental illness (Morgan et al., 2014).

In proposing SCT, Bandura (1986) attempted to merge social learning theory and CBT with the claim that criminal behavior stems not only from poor thinking skills but also the inability of offenders to regulate their conduct (Beauchamp, Crawford, & Jackson, 2019; Young, Plotnikoff, Collins, Callister, & Morgan, 2016). The inability of offenders to regulate their conduct reduces their chances to set goals that include desisting from crime (Davis et al., 2014; Van Voorhis et al., 2013). Because social learning theory informs CBT but CBT primarily focuses on primary cognitive skills to the exclusion of social influences, combining social learning theory and CBT into SCT may strengthen the ability of offenders to achieve their goals and desist from crime.

The social learning theory and SCT have informed the use of CBT among offenders. A significant drawback to CBT is its reliance primarily on addressing the psychological issues that offenders face (Graffam et al., 2014; Hall, 2015). Because social learning theory addresses the cognitive deficits of offenders and their inability to achieve goals, researchers can use this theory to reduce recidivism rates. Overall, a focus on social learning theory has allowed criminal justice practitioners to apply the

psychological interventions to a range of offenders. However, other researchers have suggested that the ability of offenders to desist from crime is linked to their age and follows a life cycle (Liu, 2015; Sampson & Laub, 1990).

Lifecycle Theory

Researchers have studied the concept of the life cycle to its relationship to the reactions of individuals to different life situations overtime (Brannigan, 1997; Liu, 2015). Brannigan (1997), in describing lifecycle theory, has found that patterns of offending follow an age curve with peaks throughout adolescence and declines in criminal activity during adulthood. Proponents of lifecycle theory advocate that the criminal behavior of offenders relates to the different life situations that occur during childhood, adolescence, and adulthood (Brannigan, 1997; Liu, 2015). Sampson and Laub (1990) noted that both continuity and change exist throughout the life course, and modifications in individual behavior may occur through new experiences or social circumstances. According to Sampson and Laub, job stability and marital attachment in adulthood increased some individuals' social capital, leading to resistance from most types of deviant behavior. The involvement of individuals in crime may reflect the degree of their community-based involvement with social institutions during childhood, adolescence, and adulthood (Brannigan, 1997; Datchi, Barretti, & Thompson, 2016; Sampson & Laub, 2005).

The importance of the life cycle to crime, therefore, lies in the recognition that crime is related to the age of the individual (Liu, 2015; Sweeten, Piquero, & Steinberg, 2013). Although the magnitude of the crimes committed during adolescents may vary by age, researchers have found that patterns of offending follow an age curve with peaks

throughout adolescence and declines during adulthood (Liu, 2015; Sweeten et al., 2013). Because researchers linked the inability of prisoners to desist from crime to their past experiences during childhood and adolescence, the concept of the life cycle has implications for the approaches to changing the criminal actions of offenders (Looman & Abracen, 2013). Efforts that help offenders reduce their criminal conduct may, therefore, require providing offenders with programs and services that take into consideration the age of the offender.

According to the lifecycle perspective, people tend to commit fewer crimes as adults in comparison to when they were teenagers. Recognizing that a person's experiences in childhood may influence his or her decisions to commit a crime suggests that intervening in the lives of offenders at a young age may reduce their tendency to recidivate. Efforts to reduce recidivism rates may, therefore, require introducing programs in the prison that target young offenders. Because the lifecycle theory also includes the importance of social networks at an early age, a discussion on the theories that inform the social challenges offenders face is required.

Social Disintegration Theory

In describing social disintegration theory, Barnetz and Vardi (2014) suggested that adverse economic climates create financial hardships for individuals and families. Researchers have found that a significant number of offenders come from impoverished communities where high levels of unemployment exist, creating economic difficulties for their families (Orrick & Vieraitis, 2015; Osterman & Caplan, 2016). An essential approach to addressing high recidivism rates is the development of programs that lead to

the successful reintegration of offenders into the community. Employment is a social factor that, if addressed, may lead to lower recidivism rates among offenders (Graffam et al., 2014; Nally et al., 2014).

Over the last 4 decades, criminal justice practitioners have focused on providing offenders with programs that help them find work and reduce recidivism (Bouffard, Mackenzie, & Hickman, 2000; Graffam et al., 2014; Hall, 2015; Nally et al., 2014). By linking employment to social factors and high recidivism rates, social disintegration theory was applicable to this study as improving the financial situation of offenders is vital to their ability to reduce their recidivism rates.

Brannigan's (1997) lifecycle theory, Bandura's (1971, 1986) social learning and social cognitive theories, and Barnetz and Vardi's (2014) social disintegration theory allowed for an in-depth explanation of the psychological and social challenges offenders face. Subsequent research and application of these theories may also inform the need for a range of services that help offenders reduce their recidivism rates and reintegrate into the community (Håkansson & Berglund, 2014; Welsh et al., 2013). There is a need for a broad theoretical framework that incorporates social factors such as age, education, and employment. A further discussion of the variables age, education, and jobs and their relationship to offender rehabilitation and recidivism is needed.

Multiple Rehabilitation Services

Offenders have a mix of psychological and social needs that may require them to receive multiple services, but few scholars have investigated the link between recidivism and multiple services (Cook et al., 2015; Graffam et al., 2014). Wright and Cesar (2013)

suggested that integrating existing knowledge on ways to reduce crime would allow criminal justice practitioners to provide the essential services to offenders that help them lower their recidivism rates. However, a limitation to the integration of existing knowledge is the absence of a theory that informs the delivery of multiple services. Despite the absence of a theory on recidivism and multiple services, in this study, I drew on the theoretical perspectives of a range of theories that explained the role of psychological and social factors on recidivism.

Multiple offender rehabilitation shows positive outcomes on recidivism. Morgan et al. (2014) investigated the impact of nine therapeutic modules (including CBT and vocational and housing development) among 47 incarcerated male offenders with mental illness. Although the small sample limited the ability to generalize the findings to a larger population of offenders, Morgan et al. showed positive outcomes in improving the psychiatric status and criminal thinking; these factors are linked with criminal recidivism (Andrews & Bonta, 2010). Overall, Morgan et al suggested a link between multiple services and crime among offenders with drug addiction and mental issues and the need for a framework that targets psychological and social factors

Cook et al. (2015) conducted a randomized controlled trial among 236 high-risk offenders who received CBT, remedial education, vocational skills, and job training, along with alcohol and drug treatment. Cook et al. showed that offenders' employment rates and earnings increased and prisoners who received treatment were less likely to recidivate than offenders in the control group. Miller and Miller (2015) found that recidivism rates were 29% among program participants compared to 73% for the control

group. Graffam et al. (2014) found that life skills, housing, and drug and alcohol treatment had a significant impact on recidivism. However, offenders who receive a range of services may not experience lower recidivism rates (Grommon, Davidson, & Bynum, 2013). Grommon et al. (2013) conducted a study among 511 eligible male offenders and found that although offenders received a mix of services including substance abuse treatment, traditional housing, case management oversight, and exposure to established referral networks in the community, there was no significant difference in recidivism rates between paroles in the treatment and control group.

A limited number of studies in the area of multiple rehabilitation services and recidivism present challenges to drawing conclusions about whether providing offenders with more than one program reduces their recidivism rates (Cook et al., 2015; Miller & Miller, 2015). As such, uncertainty exists as to the impact of multiple rehabilitation programs on recidivism (Grommon et al., 2013). Perhaps other factors are significant in explaining recidivism. Researchers have linked offenders' sociodemographic factors such as age, education, and employment to crime (Hall, 2015; Liu, 2015). It is essential to provide a fuller explanation of the contribution of age, education, and employment to recidivism.

Sociodemographic Variables

Education

Other theorists have indicated that the causes of crime are related to the social structure rather than the age of the offender (Barnetz & Vardi, 2014; Merton, 1957). Barnetz and Vardi (2014) suggested that a society declines because of severe economic

hardships and a lack of opportunities to improve life circumstances. Researchers have found that a significant number of offenders are less educated than the general population and recidivate at a higher rate than people with marketable skills (Nally et al., 2014; Travis, Western, & Redburn, 2014). Educational programs are delivered as part of a mix of services that include a range of certificate and noncertificate academic courses and acquiring the trade skills of carpentry, plumbing, masonry, and auto mechanics (Davis, Bozick, Steele, Saunders, & Miles, 2013; Hall, 2015).

Offenders who lack marketable skills tend to be unemployed and experience adverse economic conditions (Barnetz & Vardi, 2014; Hall, 2015). Social disintegration theorists link economic wealth to improved life circumstances and lower crime rates (Barnetz & Vardi, 2014). Improving the ability of offenders to write, think, and solve problems creates opportunities for them to find work, cope with financial problems, and lower their recidivism rates. Because offenders who are better able to cope with financial challenges may experience lower recidivism rates, education is needed to reduce recidivism (Chaple et al., 2016; Hall, 2015; Nally et al., 2014). Although a significant body of literature has reported positive outcomes of correctional education on recidivism, some concern exists as to the methodological rigor used to assess these programs.

Steurer, Linton, Nally, and Lockwood (2010) conducted a quasi-experimental design study among 3,170 inmates currently incarcerated and ready to be released between 1997 and 1998 with a follow-up period of 3 years to measure the effect of correctional education on recidivism. Steurer et al. found that inmates who participated in some form of correctional education had higher rates of reduced recidivism. Nally et al.

(2012, 2014) showed positive correlations of correctional education on recidivism. Nally et al. (2012) showed that an offender who had not attended correctional education programs during incarceration were approximately 3.7 times more likely to become a recidivist offender after release from prison when compared to an offender who had participated in a variety of correctional education programs during incarceration. Another study among a cohort of 6,561 released offenders showed that an offender's education and postrelease employment was significantly and statistically correlated with recidivism (Nally et al., 2014).

Correctional programs are subject to methodological challenges (Brazell, Crayton, Mukamal, Solomon, & Lindhl, 2009; Bouffard et al., 1995; Hall, 2015). First, uncertainty exists as to whether a particular education program reduces recidivism rates. The mix of academic and vocational services creates difficulties in attributing which service led to an offender's lower recidivism rate. Second, quasi-experimental designs may omit controls for attrition from the program group resulting in an inability to establish the effect of the program on recidivism (Newton et al., 2018). Third, the possible contamination of the comparison and control group in quasi-experimental designs creates challenges for reporting only differences in recidivism rates (Bouffard et al., 2000). A control group may include offenders who never began a program and those who started but did not complete an intervention (Hall, 2015).

Given that experimental designs include comparing offenders who receive an intervention with prisoners in the control group that did not receive a service, a failure to separate offenders of the control group from prisoners who receive a service leads to

inconclusive results (Newton et al., 2018; Hall, 2015). Finally, correctional education programs are voluntary and not mandatory, leading to smaller rather than larger samples of program participants (Brazell et al., 2009; Hall, 2015; Steurer et al., 2010). Despite methodological differences among educational programs delivered in prison, education appears to be an indicator of recidivism (Hall, 2015; Newton et al., 2018; Ramakers et al., 2017). Education is a factor that may predict recidivism rates.

Although the social disintegration theory links to improved life circumstances to the ability to find work, equally important are offenders who find a job after receiving education in prison. Offenders who find work after leaving prison tend to experience lower recidivism rates than offenders who are unemployed after leaving prison (Cook et al., 2015; Graffam et al., 2014; Newton et al., 2018). By suggesting that offenders need to become employed, social disintegration theorists also highlight the importance of employment as an indicator of recidivism.

Employment

Nally et al. (2014) found that offenders' education and postrelease employment were significantly statistically correlated with recidivism, regardless of offenders' classification. The importance of employment to lower recidivism rates is crucial as a significant number of offenders are from lower socioeconomic communities (Cook et al., 2015; Travis et al., 2014). Linking recidivism to employment creates opportunities for prisons to invest in employment-related services that increase the chances of an offender becoming employed (Jung, 2011; Ramakers et al., 2017).

Despite the importance of postrelease employment to recidivism, researchers have found that employers are reluctant to employ offenders because of a criminal record (Cook et al., 2015; Graffam et al., 2014; Newton et al., 2018; Swensen et al., 2014). Because an offender who is more at risk for committing a crime tends to be unemployed, employers play a role in lowering recidivism rates. Increasing the skills of offenders in prison alone will not reduce recidivism rates, but more employers should be encouraged to provide jobs to offenders in the community. Employment is a factor that may predict recidivism rates.

Age

Researchers define age as the age that an offender commits a crime (Hall, 2015; Liu, 2015). Proponents of the lifecycle theory indicate that patterns of offending follow an age curve with peaks throughout adolescence and declines in criminal activity during adulthood (Brannigan, 1997; Carson & Sabol, 2016; Datchi et al., 2016; Liu, 2015; Sampson & Laub, 1990). Offenders experience a mix of psychological and social challenges that lead to high recidivism rates. Young offenders experience mental and social problems that lead to high recidivism rates (Chan, Wing, & Zhong, 2016; Looman & Abracen, 2013). Therefore, efforts to reduce recidivism will require providing young offenders with the services that help them lower their recidivism rates.

The variables of education, employment, and age provide evidence of the contribution of social factors to recidivism. Although the knowledge about the role of social factors to recidivism is essential, offenders experience a mix of psychological and social factors when they leave prison (Abracen, Gallo, Looman, & Goodwill, 2016;

Mennicke, Tripodi, Veeh, Wilke, & Kennedy, 2015; Nally et al., 2014). Assessing a more extensive range of factors on recidivism is vital as increasing an offender's time spent in prison and subsequent access to a rehabilitative service may have only a marginal effect on recidivism rates (Byrne et al., 2015). A 50% increase in treatment capacity is estimated to reduce incarceration rates by only 5.5% over 9 years (Byrne et al.2015). Because global recidivism rates remain high and offenders continue to be unprepared to reenter society, criminal justice practitioners may need to explore a mix of psychological and social services to reduce recidivism.

The Penal System and Offender Rehabilitation in Barbados

Barbados is a small island state of 166 square miles with a predominantly Black population of 270,000 (Griffith & Cohall, 2018). It is the only English-speaking Caribbean island colonized by Britain. Before 1945, its criminal laws were oppressive and led to harsh sentences (Brathwaite & Harriot, 2004). Simmons (2005) noted that a young person under 16 years found begging was incarcerated in a juvenile facility for 3 to 5 years. Since 1945, efforts were made to make the penal system less severe and to divert offenders away from prison (Simmons, 2005).

One of the features of the direction towards diverting offenders away from prison has been less reliance on custodial sentencing (Brathwaite & Harriot, 2004). The Probation of Offenders Act of 1945 made provisions for offenders to be supervised by a probation officer in the community rather than receiving a custodial sentence (Simmons, 2005). Although the act helped offenders to stay out of prison, it was not linked to a particular program that helped offenders reintegrate into the community (Brathwaite &

Harriot, 2004). Similarly, the Penal Labour Act of 1945 made provision for short-term prisoners to be employed on public works outside the prison and focused primarily on rewarding offenders for good behavior (Simmons, 2005).

Overall, the Probation of Offenders and Penal Labour Acts of 1945 made attempts to provide offenders with work-related skills, but these attempts were not related to efforts to rehabilitate offenders (Simmons, 2005). As such, the penal system remained largely nonrehabilitative and relied primarily on incarceration to change criminal behavior (Brathwaite & Harriot, 2004). However, the Penal Reform Act of 1998 modified Barbados's approach to punishing offenders (Simmons, 2005). This act allowed offenders to receive community punishments along with absolute and conditional discharge rather than incarceration. Although the Penal Act of 1998 reflected a movement away from incarceration, offenders generally were unprepared to enter the community on release from prison (Simmons, 2005).

Legislation Supportive of Reintegration

The Rehabilitation of Offenders Act of 1997 increased the potential for offenders to reintegrate into the community by removing all criminal offences from their criminal record if they receive no felony convictions within 5 to 10 years after release from prison (Criminal Records Rehabilitation of Offenders Act, 1997). The deleting of an offender's criminal history is of particular importance as exconvicts tend not to be employed by employers because of their criminal record (Nally et al., 2014). In Barbados, the Criminal Justice Research and Planning Unit found that 84% of local employers said they would not hire someone who had a criminal record, while 45% said they required a Police

Certificate of Character as a prerequisite for employment (Criminal Justice Research and Planning Unit, 2013). Removing the criminal records of offenders, therefore, reduces the need for offenders to notify offenders of their criminal record and improve their chances of finding work (Thornhill, 2017).

Linking offenders' record to employment may indicate that employers may have a role in reducing the recidivism rates and helping offenders to reintegrate into the community (Smith, 2017). However, the absence of legislation against discrimination against offenders may hinder their efforts to find work. Because an unemployed offender is at a higher risk for recidivating than an offender who is employed, it is essential that legislation in Barbados supports the nondiscrimination of offenders by employers.

Government Policy Towards the Rehabilitation of Offenders

One of the setbacks of government policy towards the rehabilitation of offenders was that offenders were leaving prison without having had their offending behavior addressed (Smith, 2017). A core strategy for reducing recidivism in Barbados should include good rehabilitation programs in the community and institutions, estimating the risk to recidivism, targeting the risk factors linked to crime, and improving the literacy and cognitive skills of offenders (*Green Paper on Government Proposals for Crime Reduction*, 2001). In examining the role of the prison in providing rehabilitative opportunities, since 1997 the prison has shifted from primarily a custodial sentence to more emphasis on delivering the rehabilitative services that help offenders address their offending behavior and reintegration into the community (Smith, 2017).

Over the past 2 decades, governments worldwide have provided increased funding for rehabilitative services; despite these efforts, the prison populations increased (Byrne et al., 2015). Because offenders face social challenges, a significant setback to penal reform worldwide is, therefore, the inability of governments to establish a model that addresses the mix of services that offenders need to reduce their recidivism rate and reintegrate into the community (Wright & Cesar, 2013). Although efforts were made to provide alternatives to custodial sentencing in Barbados, the penal system appears largely punitive and lacks a legal and social framework that supports the reduction of recidivism and the reintegration of offenders into the community (Brathwaite & Harriot, 2004; Simmons, 2005).

Government Policy on Recidivism

There are policy considerations for reducing recidivism in Barbados. Since 2008 Barbados has achieved only modest economic growth, reaching 1% by the end of 2017 (Giles, Schmid, & Waithe, 2018). Because high recidivism rates increase the prison population, the achievement of low economic growth may hinder the country's ability to maintain offenders. Barbados spends $32,000 annually to keep a single prisoner a year and to maintain 850 inmates (Mounsey, 2020). Spending in Barbados compares favorably to larger countries. The average cost of incarceration for the fiscal years 2016 and 2017 for federal inmates in the United States was $34,704.12 and $36, 2999.25, respectively (Federal Bureau of Prisons, 2018). The high recidivism rates and increasing costs to maintain offenders may impact the development of other critical sectors of the economy

(Giles et al., 2018; International Monetary Fund, 2019). Reducing spending on prisons should, therefore, become a key policy consideration.

A key implication for high recidivism rates in Barbados is the impact on tourism (Ministry of Finance and Economic Affairs, 2017). Barbados is heavily reliant on tourism; in 2017, 12.4% of its growth domestic product (GDP) was allocated to tourism three times more than the GDP allocated to education (4.6%; Ministry of Finance and Economic Affairs, 2017). Barbados relies on revenues from tourism for economic stability, and small increases in crime can harm the tourist industry (Ministry of Finance and Economic Affairs, 2017; International Monetary Fund, 2019). As such, high recidivism rates may improve the chances that a tourist becomes a victim of crime. Tourists who become victims of crime may deter another tourist from visiting Barbados, resulting in potential losses of revenue.

Current efforts to reduce the prison population in Barbados primarily focused on providing offenders with rehabilitative services (Greaves, 2019). Prisoners who are poorly educated and lack job skills return to economies where unemployment is high and few opportunities for finding work (Travis et al., 2014; Wright & Cesar, 2013). The correctional facility identified employment, family support, and housing as critical to reducing recidivism rates (Greaves, 2019). Efforts to reduce reducing in Barbados are, therefore, linked to social services. Recognizing that crime is related to social issues may require Barbados to focus on prevention programs in the community rather than a reliance on rehabilitation programs in prison (Travis et al., 2014; Wright & Cesar, 2013).

Policymakers should, therefore, consider providing more significant investment in job creation opportunities in the community.

Reducing recidivism may also lie transitioning from prison to the community (Chaple et al., 2016; Miller & Miller, 2015). Researchers have found that although offenders may have received employment-related skills in prison, the skills they receive do not adequately prepare them for the labor market (Cook et al., 2015; Miller & Miller, 2015). Offenders whose skills are not relevant to the labor market are less likely to find a job and are more likely to recidivate (Graffam et al., 2014; Hall, 2015). A policy that focuses on establishing a link between prisons and the job market may create opportunities for offenders to lower their recidivism rates.

Overall, efforts to reduce recidivism in Barbados appear to center on improving the social services that offenders receive. Providing offenders with the skills to find work contributes to their ability to desist from crime and also allows them to support their families (Travis et al., 2014). Policies that are driven by social issues, therefore, allow the government of Barbados to invest in job creation in economically depressed communities. A focus on job creation should, consequently, be a consideration for government policy in Barbados.

Need for Multiple Rehabilitation Programs

Scholars have linked the psychological and social factors that offenders face to recidivism (Chaple et al., 2016; Johnson, 2013; Osterman & Caplan, 2013; Ramakers et al., 2017). The inability to deal with a range of problems results in offenders leaving prison without the skills to find work and deal with stressful situations. Cook et al. (2015)

indicated that prison-based employment programs consist mainly of vocational training programs and do not incorporate other services that help offenders cope with stressful situations. Providing offenders with a broader array of services in prison may, therefore, lower their recidivism rates and help them reintegrate into the community.

Although few studies exist in the area of multiple rehabilitation programs and recidivism, it remains unclear whether an offender who participates in numerous offender rehabilitation programs recidivates at a lower rate than a prisoner who receives a single service (Hall, 2015). Despite the uncertainty of the correlation between recidivism and multiple rehabilitation programs, evidence exists that the IVs of age, education, and employment may influence recidivism rates, and these sociodemographic factors must be considered because of the way they can aid or inhibit reentry. Linking the variables of age, education, and employment to recidivism has created opportunities for criminal justice practitioners to emphasize these variables when developing rehabilitation services. Because of the limited studies in the area of recidivism and multiple rehabilitation services, investigating the link between recidivism, offender rehabilitation programs, and the sociodemographic variables of age, education, employment is needed.

Summary

Recognizing that offenders face a range of psychological and social challenges in the community suggest the need for a theoretical framework that supports the various services offenders need to stay out of prison and improve their life circumstances. Such a conceptual framework should focus on the range of services provided to offenders that address their psychological problems as well as the social factors of age, education, and

employment (Håkansson & Berglund, 2014; Welsh et al., 2013). Because limited studies exist in the area of multiple rehabilitation programs and recidivism, a focus on reducing recidivism in Barbados creates opportunities to explore the relationship between recidivism; multiple rehabilitation programs; and the sociodemographic variables of age, education, and employment.

Chapter 3: Research Method

The purpose of this quantitative, cross-sectional survey design was to explore the predictive relationships among recidivism, participation in multiple offender rehabilitation programs, age, education, and employment. In this chapter, I present the research design and rationale for this study. I also describe the methods, data collection procedures, presentation of descriptive statistics, and data analysis procedures. The final section covers the research questions and hypotheses, threats to validity, and ethical considerations. The chapter ends with a summary and a transition to Chapter 4.

Research Design and Approach

I based this study on a quantitative, cross-sectional analysis of archived data. The goal of the study was to examine the predictive relationships between recidivism, the number of rehabilitation programs, age, education, and employment among offenders in Barbados. Discussion of the research design and approach of this study includes a review of quantitative designs, cross-sectional designs, and archival data.

Quantitative Designs

Quantitative designs primarily focus on numeric data that allow researchers to measure and analyze relationships between variables (Chaple et al., 2016; Graffam et al., 2014; Miller & Miller, 2015). One advantage of using quantitative designs is that researchers can use large or small sample sizes in the data analysis (Nally et al., 2014). Large samples allow for findings to be generalized to a broader population while small samples may allow for controlled studies that focus on causation (Cook et al., 2015; Nally et al., 2014). Finally, researchers who use quantitative approaches use statistical

software such as the SPSS to analyze the data (Son, Friedman, & Thomas, 2012). Although the use of small samples may lower the potential for generalizing the results of a study to a broader population, researchers primarily use quantitative approaches to investigate the relationship between the IVs and an outcome of interest (Hall, 2015; Nally et al., 2014).

Researchers typically rely on qualitative approaches to provide a more in-depth explanation for a phenomenon of interest (Miller & Miller, 2015). However, qualitative methods cannot be used to investigate the statistical relationship between variables and, therefore, were not appropriate for this study. For this study, the quantitative approach was appropriate because these designs allow for measurement and statistical analysis to examine the relationships between variables (Hall, 2015; Nally et al., 2014). The primary goal of this study was to assess how the IVs age, education, employment, and the number of rehabilitation programs predict the likelihood of recidivism. Therefore, the quantitative research design was most appropriate for addressing the research question for this study.

Cross-Sectional Designs

The cross-sectional study is a quantitative approach (Graffam et al., 2014). Levin (2006) defined a cross-sectional design as a study carried out at one point in time for a given population. One of the advantages of conducting cross-sectional studies is that collecting data at a single point in time reduces the resources and costs associated with the research (Basto-Pereira, Comecanha, Riberoa, & Maia, 2015; Bubeck & Botzen, 2013). Another advantage of cross-sectional designs is that researchers can use large samples and provide a comparative analysis between variables (Chaple et al., 2016;

Miller & Miller, 2015; Nally et al., 2014). Finally, using cross-sectional designs allow researchers to collect data on individual characteristics and their relationship to a particular outcome of interest (Levin, 2006).

Although the benefits of cross-sectional designs are well documented (e.g., Basto-Pereira et al., 2015; Bubeck & Botzen, 2013), researchers may be unable to make inferences about the data for some time before or after the study (Levin, 2006). For example, offenders may have found a job before or after the cross-sectional survey, but because cross-sectional studies reflect recidivism rates at the time of the study, researchers would be unable to assess the impact of unemployment on recidivism before or after the cross-sectional study. Despite the limitations of cross-sectional designs, they allow researchers to collect large samples of data at low cost and create opportunities to explore the relationship between variables (Hall, 2015; Nally et al., 2014). Cross-sectional designs were, therefore, appropriate for this study.

Archival Data

I extracted the data for this study from archived records. Archival data refer to raw data in files that researchers could utilize for secondary analysis in research (Cheng & Philips 2014; Shon & Lee, 2016). Andrews, Higgins, Andrews, and Lalor (2012) noted that archival data allows researchers to address original research questions without collecting new data. Utilizing archived data also enables researchers to complete studies in a timely and cost-effective manner (Andrews et al., 2012; Johnston, 2014). Despite the advantages of using archival data, some concerns may exist with how the information was initially originally collected (Cheng & Philips, 2014). For example, poor record

keeping may create challenges for the analysis and interpretation of data from a particular set of variables in the data set. Also, the lack of adequate human resources to adequately maintain files may lead to incomplete data in case files (Choi, Reddy, & Spaulding, 2012). Despite some potential limitations and concerns of archived data, archived files tend to contain existing information on the variables of interest (Basto-Pereira et al.. 2015; Bubeck & Botzen, 2013). Many of the limitations were addressed predating analysis procedures. The use of archival data, therefore, was a valuable source of information for this study**.**

Population and Sample

The targeted population of interest for this study was offenders incarcerated at an adult correctional in Barbados (Severson et al., 2012). There were approximately 800 prisoners detained in prison from January 2014 through December 2018 (National Council on Substance Abuse, 2016; Institute for Crime & Justice Policy Research, 2018). The records from offenders' case files in Barbados provide the data related to the variables pertinent to the study.

Sample Size

Assuming that logistic regression is the statistical procedure for the data analysis, I used the following input parameters: an alpha or level of significance (α) of 0.05, the power of .80, and an anticipated odds ratio of 2.33 to calculate the optimum sample size needed to detect real differences in the data if it exists. An odds ratio of 2.33 allows for reduced bias in the odds ratio and improved estimates of the actual population effect of this study's sample (LeBlanc & Fitzgerald, 2000; Reed & Wu, 2013). Data analyses

predicated upon binomial logistic regression analysis mostly use an odds ratio to provide accurate statistical results.

Studies in regression analysis tend to use an odds ratio of 1.33 to detect differences in the data (Faul, Erdfelder, Lang, & Buchner, 2009). For this study, the odds ratio was generated from the literature that showed that the sample size is inversely related to the odds ratio and changing the odds ratio changes a priori sample size (LeBlanc & Fitzgerald, 2000; Reed & Wu, 2013). Therefore, lowering the odds ratio changes the sample size. As the sample size decreases, the bias in the odds ratio produced by that sample away from the actual odds ratio becomes larger. A small sample may, therefore, lead to a poor estimate of the actual population effect. Increasing the size of the odds ratio to 2.33, therefore, allowed for reduced bias in the odds ratio and improved estimates of the actual population effect of this study's sample (see Reed & Wu, 2013). Using G*Power for adequate power of analysis, and based on the input parameters, the computed minimum sample size needed to detect actual differences in the data if they existed was 67. The sample of 67 reflected the records that have complete information on the variables of interest. Because some of the data may have missing information, I aimed to oversample the data by pulling 200 records.

A sample of 200 records more than adequately covered the minimum sample size provided by G*Power. I did not believe that additional time was needed to include all of the possible cases. Also, it was unlikely that all 800 cases in the sample frame would have complete data sets. The study was not predicated on a major survey but from archival records. Therefore, the rationale for the sample size was that the time and

potential for error with entering 800 cases were not necessary, particularly if there is little to gain from oversampling (see Reed & Wu, 2013). G*Power gives the minimum sample size to have adequate power for detecting differences if there are differences in the data set. For this study, G*Power produced an estimated minimum sample size of $n = 67$, given the parameters entered.

Data Collection

Procedures

This study was subject to an institutional review process because the research involved accessing inmate files and personal information. I requested permission to conduct this research the Walden University Institutional Review Board (IRB). After permission to conduct the study was granted, I contacted the Ministry of Home Affairs in Barbados for authorization to collect the data. I then obtain a signed letter of cooperation from a senior officer of the prison who had the authority to grant me access to the data. I submitted the signed letter of cooperation to the Walden University IRB along with the proposal and any additional information required by the IRB. Because I used archival data in the form of case files, I did not interview offenders.

I obtained the data for the number of rehabilitation programs, age, education, and employment of offenders from their case files at the prison. As the researcher, I neither recruited nor interacted with any human subjects. Therefore, procedures for recruitment and participants were not a concern for this study as the data came from archived records.

The case management unit stores the case files of offenders, and I obtained from the case management unit the file numbers of all inmates who were admitted to the prison

in January 1, 2014 through December 31, 2018. The year 2014 was used because it was the most recent year from which complete data were available (National Council on Substance Abuse, 2016). Only records for offenders who were admitted to the prison from January 1, 2014 through December 31, 2018 were used in this study (see Severson et al., 2012).

To draw the sample, I used Microsoft Excel's random number generator to randomly assign numbers between 1 and 200. Next, I pasted the values of the random numbers into a new column, so they did not change. Then I sorted the database based on the value of the randomly assigned number to each case file identified. I selected 200 files and randomly assigned the digits between 0 and 1 to each case file.

Instrumentation and Operationalization of Constructs

Instrumentation

The data collected for this study were archival from the prison. The information I received came from the case files prepared on each offender admitted to the prison. However, I used a data sheet to collect information from each case file regarding the IVs of age, education, employment, and the number of rehabilitation programs. I entered information on the data sheet on an Excel database. Before I saved the data in the Excel database, I restricted the cells to accept only ordinal and nominal values. After entering the data in the Excel database, I conducted a visual check to ensure that the data entered were correct.

To select the number of programs, I identified them by their names and then by a manual count. If offenders participated in the same program more than once, I treated

their participation as one program. For the dependent variable recidivism, I collected data on the number of times incarcerated within 12 months of leaving prison. The calculation of the recidivism rate included the data of the date that the offenders were released from prison and the date they returned to prison within 12 months of leaving prison.

Reliability of Prison Data

In this study, reliability pertains to whether the data collected are accurate and can be accurately used to support the statistical conclusions drawn from the analysis of the data (see Wells, Tremblay, & Graham, 2013). At the correctional facility, controls are in place to ensure the accuracy of the records. First, the admissions and discharge unit is responsible for providing each prisoner admitted to the prison with a number, and they collect information about the offender's age, gender, date of admission to the prison, and the date of release from the prison. Information on offenders is then entered into an Excel database. Information on each offender admitted to the prison is also placed into a case file identified by the offender's name and prison number. Second, to verify that the information in the offender's case file is accurate, an officer of supervisory rank checks the data in the Excel database against the information entered in the case file. If information is incomplete because of missing data, the senior instructs the junior officer to make the necessary corrections. Third, the case management unit records additional information on offenders' education, employment, and their participation in offender rehabilitation programs. The manager of the case management unit checks the accuracy of the data recorded in the case files. The case management unit records additional information on an offender's education, employment, and participation in offender

rehabilitation programs. The case management unit also stores the case files of offenders admitted to the prison.

By including additional information on education, employment, and rehabilitation programs, the case files of offenders contain more information than the data entered at admission to the prison. Also, as the case management unit of the prison stores the case files of offenders, I was able better able to access the necessary information on offenders. For this study, I retrieved the archival data from the offenders' case files. Because there was no way to further verify the accuracy of the information in the case files, I assumed that the data in the offenders' case files were accurate.

Operationalization of Constructs

Operationalization refers to how researchers define and measure variables procedures used in a study (Petursdottir & Carr, 2018). The operationalization of a particular variable provides a clear and objective definition of that variable. By clearly defining the variables in study, researchers are better able to explain the concept the variable is attempting to capture and to measure the extent that an IV influences a dependent variable (Hall, 2015; Nally et al., 2014). For this study, I defined the variables used in the study by their conceptual definitions used in the broader literature on offender rehabilitation. I then indicated how the variable was measured.

Variables

Dependent Variable: Recidivism

Recidivism has been defined as an offender who commits a crime after being released from prison and returns to prison (Cook et al., 2015; Graffam et al., 2014;

Langan & Levin, 2002; Visher & Travis, 2003). An essential component of recidivism is the time to offending (Davis et al., 2013). Although researchers used time periods of 3 months to 20 years through which they have followed offenders released from prison, some scholars frequently use the time period of 1 year before returning to prison (Davis et al., 2013; Nally et al., 2014; Severson et al., 2012). For this study, I defined recidivism as the committing of crime by an offender while on release from prison and returning to prison within 1 year of committing that crime.

Multiple Rehabilitation Programs

Efforts have been made to provide offenders with more than one rehabilitation program. In the literature on offender rehabilitation, there is no specific definition of multiple services. Moreover, only a few scholars report that offenders received more than one rehabilitation program to help them reduce their recidivism rate and reintegrate into the society (Cook et al., 2015; Graffam et al., 2014). For this study, I defined multiple services as offenders who participated in more than one rehabilitation program.

Age

In the literature on offender rehabilitation, researchers define age as the age that an offender commits a crime (Hall, 2015; Liu, 2015). Researchers primarily report age as a continuous variable that takes on any value within some range (Alper et al., 2018; Carson & Sabol, 2016; Hall, 2012; Nally et al., 2014). However, to allow for the measurement of age across a range of age groups, researchers created the ordinal variable age group from the continuous variable age (Carson & Sabol, 2016; Nally et al., 2012). For example, Nally et al. (2012) measured the age variable at the ordinal level using the

categories 20 to 29 years old, 30 to 39 years old, 40 to 49 years old, and 50 years old and older. For this study, I measured age at the ordinal level by using categories under 20 years, 20-29 years, 30-39 years, 40-49 years, and 50 years and above.

Education

Education is defined as any educational activity that occurs inside a prison that helps offenders find a job (Davis et al., 2013; Hall, 2015). Education services in prisons include a range of academic courses, vocational programs, and services to improve their ability to cope with stressful situations including drug addiction and a lack of cognitive skills. A large body of research on offender rehabilitation measures education at a particular stage (Hall, 2015; Nally et al., 2012, Nally et al., 2014). The stages of education include before high school, at high school, tertiary, and university. For this study, I measured education at the ordinal level at the stages of before high school, at high school, tertiary, and university.

Employment

Scholars have defined employment as the ability of an offender to find a job after leaving prison (Cook et al., 2015; Graffam et al., 2014; Newton et al., 2018). Many studies in offender rehabilitation report employment as a dichotomous variable: employed and unemployed (Cook et al., 2015; Nally et al., 2012; Newton et al., 2018). For this study, I measured employment as a dichotomous variable of employed coded as 1 and unemployed coded as 0.

Table 1 below shows how each variable was coded for analysis in SPSS.

Table 1

Coding Schema for Variables

Dependent variable		
Recidivism	Recidivist (1) Nonrecidivist (0)	Binary

Independent variables	Coding	Level of measurement
Rehab programs	More than one rehabilitation program (1) Less than more than one rehabilitation program	Discrete
Offender age	Under 20 years (1) 20-29 years (2) 30-39 years (3) 40-49 years (4) 50 years or above (5)	Ordinal
Education	Below high school (1) Secondary school (2) Tertiary (Other than university) 3 University (4)	Ordinal
Employment	Employed (1) Unemployed (0)	Nominal

Data Analysis Plan

Predata Analysis

After data entry and coding, I analyzed all data with a logistic regression using the SPSS software. To ensure the data are appropriate for statistical analysis using logistic regression, I checked for the assumptions for logistic regression analysis (see Lin, Foster, & Ungar, 2011; Reed & Wu, 2013). I assessed the data for missing data. I reported the demographic information on the sample as descriptive statistics and provided a summary analysis of the data (see Miller & Miller, 2015; Spence & Hass, 2015). The descriptive statistics included demographic data on age, education, employment, and more than one rehabilitation program and recidivism. I used frequencies and percentages to describe each of the variables.

Assumptions for Logistic Regression

Researchers use logistic regression to predict the relationship between one dependent binary variable and one or more IVs (Lin et al., 2011; Reed & Wu, 2013). By using logistic regression, I was able to investigate the predictive relationship between the IVs age, education, employment, and multiple offender rehabilitation programs on the dependent variable recidivism. Logistic regression was, therefore, appropriate for this study. Hilbe (2011) noted the following assumptions of logistical regression:

Level of measurement for the dependent variable. Binary logistic regression requires the dependent variable to be dichotomous. In this study, I met the condition of the dichotomous dependent as the dependent variable or the likelihood of recidivism had only two responses, which were yes and no.

ρ(*y*=1) is the probability of the event occurring. It was necessary that I code the dependent variable. In this study, the likelihood of recidivism was the outcome of interest. I met this assumption by coding one as "yes" = 1 as the likelihood of recidivism and 0 as "no" likelihood of recidivism. Therefore, for this study, I met the assumption regarding the level of measurement for the dependent variable.

The logistic regression is sensitive to outliers. Therefore, I checked all of the data for outliers using a box plot generated by SPSS (see Peng & So, 2002). This method was appropriate to test for univariate outliers. If I found outliers, I rechecked them against the data in the (Microsoft Excel spreadsheet) to ensure it was transcribed to the spreadsheet correctly (see Osborne & Overbay, 2004; Peng & So, 2002). Any errors I made in data entry were corrected. If the data point identified by the box plot analysis as a potential outlier reflects correct data, I retained it in the study.

I also conducted a sensitivity analysis using the classification table (see Maroco et al., 2011). In binary logistic regression, the higher value of the dependent variable is the category whose probability is predicted by the model or the target category. There is a percentage correct column with the percentage of correct classifications for each of the dependent variable categories; the percentage correct for the target category is the sensitivity, expressed as a proportion. By default, if the probability of the target event is greater than or equal to .5, I classified that case as the target category; otherwise, I identified the case as the nontarget event. For this study, the percentage of correct classification figures represented the sensitivity when the cutoff value for the predicted probability = .5 by default.

Absence of multicollinearity. Multicollinearity occurs when an explanatory variable within a multivariable regression model can be linearly predicted by another explanatory variable (Lavery, Acharya, Sivo, & Xu, 2017). For example, highly correlated IVs create difficulties of whether the IV in the study influences the dependent variable rather than another variable. I used the coefficient to measure the strength of the interrelatedness of the variables of the study (see Peng & So, 2002). Using the coefficient *r* helps to ensure that the statistical interpretations formed about the relationship between variables are reasonable. Values at or above $r = .8$ were considered evidence of multicollinearity and were excluded from the final analysis (see Peng & So, 2002).

Missing Data

To address the problems of missing data, I entered the data on the data sheet into an Excel database. I created restrictions on the Excel database that require all of the information to be placed in the appropriate cells before I save the data. I preformated the cells to indicate written text or numbers by selecting the Excel commands text or number respectively. After entering the data in the Excel database, I conducted a visual check to ensure that the data entered into the database from the datasheet were accurate. To reduce the errors of missing data, I rechecked the data for accuracy against the original case file and the data sheet. In the unexpected event that one of the study variables was missing from the records, I deleted the affected records from the final analysis.

The statistics that I reported included the significance level, the odds ratio, the classification accuracy of the regression model, and the reduction in errors due to the regression model. For the significance level, the significance of the overall model was

assessed to determine the combination of the IVs age, education, employment, and more than one rehabilitation program significantly predicted the outcome, the likelihood of recidivism at 1 year. The overall fit of the model was assessed using the goodness-of-fit statistics. The -2 Log likelihood methods indicated how well the data fit the model. The chi-square statistic showed the degree that the regression model predicts the likelihood of recidivism at 1 year. The Cox and Snell statistic indicated how much of the variability in the occurrence of the dependent variable, risk of recidivism, was accounted for by the predictor variables, age, education, employment, and multiple rehabilitation programs (Peng & So, 2002). The classification table indicated the total number of cases accurately predicted by a regression model (Hosmer, Lemeshow, & Sturdivant, 2013). I addressed the overall fit of the model by the reduction in errors due to the regression model (see Peng & So, 2002).

The significance level for each IV was reported based on the *p*-value of the Wald statistic. The Wald statistic indicated which IV (ie., age, education, employment, and more than one rehabilitation program) were significant in predicting the dependent variable, the likelihood of recidivism (see Hosmer et al., 2013). The odds ratio was reported using the Exp (β) statistic. The Exp (β) was included because it indicates how the likelihood of recidivism changes for every one unit of change in the IVs' number of rehabilitation programs, age, education, and employment. Frequent counts and percentages were reported for the other variables.

Research Question and Hypotheses

RQ: How well do the IVs of age, education, employment, and participation in more than one rehabilitation program predict the dependent variable likelihood of recidivism?

$H1_0$: $\mu 1 = \mu 2$. The number of rehabilitation programs, age, education, and employment are not statistically significant predictors of recidivism.

$H1_1$: $\mu 1 \neq \mu 2$. The number of rehabilitation programs, age, education, and employment are statistically significant predictors of recidivism.

Statistical test: A logistic regression analysis was used to analyze the data. The forced-entry method was used to enter all of the variables into the logistic regression equation at once. The forced-entry method was useful in this study because there is no basis in the literature to establish the order for entering variables (see Peng & So, 2002).

Threats to Validity

Threats to validity are a concern in quantitative studies (Bleijenbergh, Korzilius, & Verschuren, 2010; Garcia-Perez, 2012). The threats to validity to quantitative studies lie in the ability of the researchers to make conclusions. Researchers have indicated that threats to quantitative studies are primarily external and internal.

External Validity

External validity reflects the extent to which results of from a study can be generalized to other populations, settings, and times (Heggestad, Rogelberg, Goh, & Oswald, 2015; Wing & Bello-Gomez, 2018). Researchers have linked the inability to generalize the findings from a study to broader populations to the threat of nonresponse

bias (Berger, Bayarri, & Peicchi, 2013). Dealing with nonresponse bias is crucial as not everyone researchers attempt to include in a survey responds. The extent that nonrespondents are different from respondents could alter the estimates the survey was designed to make (Davern, 2013).

For this study, nonresponse bias was not a concern as the data collected were archival, and there was no interaction with participants in the study. The data for this study were obtained from the case files of offenders located at the prison, and all data collected were based on the number of rehabilitation programs, age, education, and employment and recidivism. However, missing data could be an issue if data that are missing in the case files are nonrandom (Bennett, 2001). I conducted a visual check of each case file for missing data, and if more than 10% of the study variables were missing from that file, I removed the affected file from the final analysis. Because I focused on specific variables, there was no reason to assume that the different characteristics of offenders affected the results of this study.

Internal Validity

Checks for internal validity allow researchers to determine that a cause and effect relationship exists between the IV and the dependent variables (Petursdottir & James, 2018; Shadish, Cook, & Campbell, 2002). Cause and effect relationships are linked to experimental studies using a pre-post and post-test. One of the threats to the internal validity of experimental designs is selection. Shadish et al. (2002) defined selection as the possibility that preexisting differences between groups of participants exposed to

different conditions account for an observed effect. Selection was not a concern of this study as archival data were used and there was no interaction with offenders.

Another threat to internal validity is history. Shadish et al. (2002) defined history as a measurement of behavior at different points in time that influences the IV over which the researcher has no control. For example, events that occur between the beginning of the treatment and the posttest could have produced the observed outcome in the absence of that treatment. Because I did not focus on the pre and post results of a particular treatment and data were collected at one time rather than over an extended period, history was not a concern of this study (see Basto-Pereira et al., 2015; Bubeck & Botzen, 2013).

Another threat to internal validity is statistical regression (Garcia-Perez, 2012). Petursdottir and James (2018) referred to statistical regression as the tendency for extreme scores on one observation to be closer to the mean on the following observation. Because extreme scores are likely to contain more significant measurement error than scores closer to the mean, statistical regression threatens the internal validity of an experiment by selecting scores that result from a single rather than multiple measurements. In this study, statistical regression was not a concern as I used archival data rather than a reliance on pre and posttest scores.

Researchers also recognize the importance of mortality and maturation as threats to internal validity (Cook & Campbell, 2002; Petursdottir & James 2018; Shadish et al., 2002). Researchers define mortality as individuals dropping out of experiments before they finish the experiment. Maturation refers to the changes in the behavior of participants in the study as a result of their age and maturity. Participants in the study

who grow older and mature during the data collection process may improve their performance regardless of the intervention, and researchers who conduct experiments may be unable to attribute changes in behavior to the intervention alone. Overall, threats of mortality and maturation are significant to quantitative studies, but researchers primarily link mortality and maturation to experiments; therefore, mortality and maturation were not a concern of this study.

The threats to internal validity also relate to reverse causation and covariates (Friedrich, Byrne, & Mumford, 2009; Krug & Ebert, 2018). Krug and Ebert (2018) defined reverse causation as the IV becoming the dependent variable rather than the dependent variable. However, this study was a nonexperimental design, and because experimental designs focus on a cause and effect between variables, reverse causation was not related to this study.

Covariates refer to confounding variables that influence the dependent variable (Friedrich et al., 2009). Understanding the threat of covariates to internal validity is essential as other variables may predict the dependent variable other than the variables identified by the researcher. The IVs of age, education, employment, and the number of rehabilitation programs are the primary variables used by researchers to predict recidivism (Cook et al., 2015; Graffam et al., 2014; Hall, 2015; Nally et al., 2012, 2014). In this study, limited evidence exists of intervening variables that influence the dependent variable recidivism other than the IVs of age, education, employment, and income; as such, covariates were not a concern for this study.

Statistical Conclusion Validity

Another threat to external validity is statistical conclusion validity (Kratochwill & Levin, 2014). Garcia-Perez (2012) defined statistical conclusion validity as the degree to which conclusions about the relationship among variables based on the data are correct or reasonable. There are two kinds of errors about relationships between variables (Garcia-Perez, 2012; Kratochwill & Levin, 2014). First, there is no relationship between variables when in fact there is a relationship, and second, there is a relationship between variables, and there is none. In regression analysis, efforts to reduce the threat of statistical conclusion validity include the use of sound statistical power (80%) and meeting the assumptions of logistic regression before conducting the data analysis (LeBlanc & Fitzgerald, 2000; Reed & Wu, 2013).

In this study, before undertaking the statistical analysis, I addressed the threat of statistical conclusion validity by computing the adequate statistical power (80%) and meeting the statistical assumptions of logistic regression. These assumptions include a focus on the level of measurement for the dependent variable, coding of the IV, adequate sample size, and tests for multicollinearity. In Chapter 4, each statistical assumption was tested, and the results are presented.

Ethical Procedures

To ensure that data collection procedures are of high ethical standards, I submitted the data collection process of this study to the members of the Walden University's IRB for review. The review of the data collection process is essential as it may involve the unethical interaction with human subjects. In this study, I did not

conduct interviews with prisoners; therefore, the data collection process did not affect any offender's mental or physical wellbeing. After I obtained approval from the Walden University IRB to conduct this study (approval number 01-02-20-0308203), I submitted a request to the Minister of Home Affairs to access offenders' files. The Minister of Home Affairs oversees the general policy guidelines of the prison.

For data security, the spreadsheet containing the compiled data from offenders' case files was stored on a flash hard drive and stored in a locked filing cabinet. I transferred the data from the flash drive to the SPSS database on my computer, which was only assessed when my computer was not connected to the Internet. My computer is password protected, and I was the only person who had access to the password. To prevent loss or corruption of the data, I maintained a backup copy of the spreadsheet on a separate flash hard drive that was also stored in the locked filing cabinet. After 7 years, I will destroy both copies of the data by data sanitization. The program I will use conforms to the US Department of Defense DoD 5220.22 for erasing data.

Summary

In Chapter 3, I provided a detailed overview of the research design, target population, data collection instruments, and the plan for the analysis of data. Efforts were also made to ensure the confidentiality and protection of the participants. The purpose of this study was to explore the predictive relationships between the IVs (ie., age, education, employment, and participation in multiple offender rehabilitation programs) and the dependent variable recidivism. This study was a quantitative, cross-sectional study based on nonexperimental research design using archival data obtained from case files of

offenders at the prison. The data collected for this study included the IVs (ie., age, education, employment, and the number of programs the offender receives), the date the offender first was incarcerated, and the date the offender returned to the prison. The targeted population for this study was offenders who received multiple offender rehabilitation programs and who recidivated between January 2014 and December 2018. I conducted a logistic regression analysis to test the null hypothesis for the research questions. In Chapter 4, the research findings and analysis of data are presented.

Chapter 4: Results

In this quantitative, correlational study, I examined the predictive relationships between recidivism at 1 year and age, education, employment, and participation in more than one rehabilitation programs among offenders in Barbados. There were four IVs included in this study. I analyzed data with a binary logistic regression using the SPSS software package Version 25.

This chapter presents results from the data analysis. The first part of this chapter addresses the data collection process. The second part of this chapter provides the results of the data analysis. The last part of the chapter, the discussion of results, includes an evaluation of the statistical assumptions and the results of the statistical analysis.

Research Question and Hypotheses

RQ: How well do the IVs of age, level of education, employment status, and participation in more than one rehabilitation program predict the dependent variable, likelihood of recidivism?

$H1_0$: $\mu 1 = \mu 2$. The number of rehabilitation programs, age, education, and employment are not statistically significant predictors of recidivism.

$H1_1$: $\mu 1 \neq \mu 2$. The number of rehabilitation programs, age, education, and employment are statistically significant predictors of recidivism.

Data Collection

The data that were analyzed in this study were extracted from files of the correctional facility in Barbados. The correctional facility gave me access to the data, which I first compiled on an Excel spreadsheet that contained the following information:

name of offender, date offender admitted to the prison, age of offender admitted to the prison, employment of offender before incarceration, education level of offender before incarceration, number of rehabilitation programs in which the offender participated, date of release of offender from prison, date offender readmitted to the prison, and whether the offender recidivated in the first year after release ("recidivism at year 1"). The prison permitted me to collect data starting on January 6, 2020. I collected the data necessary for this study between this date and January 29, 2020. I entered the data on an Excel database on February 4, 2020. I visually checked the data for outliers. I then manually entered the data in the SPSS database on February 6, 2020.

Issues in Data Collection

The only discrepancy between the original data collection plan and the actual data collection process was that the prison also stored case files on offenders in the admissions department of the prison. In the original data collection plan, I planned to obtain case files for the study from the case management unit of the prison. Of the 116 case files obtained from the case management unit, only 50 case files had complete data. I obtained an additional 18 case files from prison admissions department. Overall, I used 68 case files of offenders with complete data for the statistical analysis for this study.

The number of cases was far less than originally anticipated in the design of this study. With only 68 cases, the study was at the low end of what is acceptable according to the G*Power analysis described in Chapter 3 and moves the study into the heart of a debate over the interpretation of statistically insignificant effects with small sample sizes (see Levine, Asada, & Carpenter, 2009). As a result, findings in this study can be labeled

exploratory at best. To establish effect sizes, an additional calculation beyond the SPSS output was needed to convert the odds ratio into *r* (Borenstein, Hedges, Higgins, & Rothstein, 2009). Following Cohen (1988), the effect was regarded as small if the value of *r* reached a threshold of 0.1, medium if *r* reached 0.3, and large if *r* reached 0.5. Because of the instability of effects with small sample sizes, an effect was regarded as noteworthy only if it was large.

Descriptive Statistics

Table 2 shows the frequency counts for recidivism. Data in the table reveals that the majority of offenders did not recidivate (70.6 %), while a smaller number of offenders recidivated (29.4%).

Table 2

Summary of Descriptive Statistics Recidivism

Recidivism at Year 1	Category	#	%
No	Nonrecidivist	48	70.6
Yes	Recidivist	20	29.4
Total	Total	68	100.0

Table 3 presents a summary of the results of the descriptive statistics for the demographic data. The results revealed that the majority of offenders were in the 20-to 29-year-old category (32.4%) at the time of incarceration. The smallest number of

offenders were 50 years old and over at the time of incarceration (6%). In terms of education level, the majority of offenders had a secondary level education (80.9%) while

Table 3

Summary of Descriptive Statistics Demographic Data

Variable	Category	Frequency	Percent of sample	Cumulative percent
Age in years	Under 20 years	13	19.1	19.1
	20-29 years	22	32.4	51.5
	30-39 years	17	25.0	76.5
	40-49 years	10	14.7	91.2
	50 years and over	6	8.8	100.0
	Total	68	100.0	
Education	Below high school	12	17.6	17.9
	Secondary	55	80.9	100
	Subtotal	67	98.5	
	Missing System	1	1.5	
	Total	68	100	
Employment before incarceration	Employed	47	69.1	69.1
	Unemployed	21	30.9	30.9
	Total	68	100.0	100
More than 1 Rehabilitation program	Yes	22	32.4	
	No	46	67.6	
	Total	68	100.0	

offenders who obtained a tertiary education other than university were the smallest group (1.5%). Within the sample most offenders were employed before prison (69.1%), while a

lower number of offenders were unemployed before prison (30.9%). The majority of offenders did not participate in more than one program (67.6%) while a smaller number of offenders participated in more than one program (29.4%).

Testing Statistical Assumptions

To make sure that data were appropriate for statistical analysis using logistic regression, I tested the assumptions for logistic regression analysis. I assessed the data for outliers, multicollinearity, and missing data before the regression analysis (Field, 2009).

Outliers. I checked for outliers by using a box plot generated by SPSS. For the IVs, any data points that existed below 1.3 box lengths or above 3 box lengths I identified as a potential outlier (see Peng & So, 2002). After a careful analysis of the box plots, I did not find any outliers for each IV.

Missing data. I assessed the Excel data set for missing data, and I did not find missing data in the dataset. I also assessed the data by visually reviewing each variable for missing data. I found no missing data in the SPSS data set. However, I took a look at the coding for the variable education, and it looked like there was only one situation where the case file had greater than a tertiary education. This single case created some quirkiness in the data analysis as I cannot have any variance with a single case. Therefore, the case needed to be either deleted or combined with another category. I deleted the item.

Table 4

Bivariate Correlation Matrix of Independent Variables

		Age offender admitted to prison	Level of Education	Employment before prison	More than 1 program
Age offender admitted to prison	Pearson correlation	1	-.273*	-.238	-.330**
	Sig. (2-tailed)		.025	.051	.006
	N	68	67	68	68
Level of Education	Pearson correlation	-.273*	1	.064	.078
	Sig. (2-tailed)	.025		.608	.531
	N	67	67	67	67
Employment before prison	Pearson correlation	-.238	.064	1	-.054
	Sig. (2-tailed)	.051	.608		.662
	N	68	67	68	68
More than 1 program	Pearson correlation	-.330**	.078	-.054	1
	Sig. (2-tailed)	.006	.531	.662	
	N	68	67	68	68

Note. *. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Multicollinearity. I used the bivariate correlation procedure to assess the data for multicollinearity among the IVs (Table 4). When a bivariate analysis was run to check for correlations, the variables did not exhibit multicollinearity as evidenced by significant levels greater than .05 and in bivariate correlations that were below r = .8 level. Therefore, age of offender, level of education, employment before prison, and participation in more than one program were included in the final analysis. There were some statistically significant correlations between some variables, but the correlations did not approach or exceed .80. In particular, age of offender at incarceration was negatively correlated with each of the other three IVs. This meant that as age of offender at time of incarceration increased, the level of education, likelihood of employment, and participation in more than one program decreased.

Results

The data in this study were analyzed in order to answer the research question and the related correlations. I used statistical testing to analyze the data and present the findings. Tables are included in the results section to illustrate the findings of the data after data analysis using SPSS software.

Table 5

Unadjusted Logistic Regression Results

Variables	*B*	Wald	Sig.	Exp(B)	ES (r)
Age offender admitted to prison	-.221	.919	.338	.801	-.06
Level of Education	.889	1.158	.282	2.432	.24
Employment before prison	-.405	.456	.499	.667	-.11
More than 1 program	.790	2.028	.154	.314	-.30

Results from the unadjusted logistic regression (Table 5) showed that none of the individual variables yielded statistically significant results, and there were no large effects that could be used to claim a finding in an exploratory sense. As indicated in Table 6, results from the adjusted logistic regressions indicated that the overall model was not significant in predicting recidivism within 1 year as indicated by the lack of statistical significance of the chi-square $\chi 2$ (2.453, $df=7$, $p> .05$). The Cox and Snell R^2 further indicated that the model accounted for 4.8% of the variance of the dependent variable. Additionally, the Nagelkerk pseudo R^2 indicated that the model only accounted for 7.9% of the variance in the dependent variable. Consistent with the unadjusted results, the model showed that none of the IVs were statistically significant in predicting the likelihood of recidivism at 1 year based on the significance level of their coefficients ($p>.05$). The Hosmer and Lemeshow Test was not significant ($p=.931$), which indicated that the model was good fit for the data, so the lack of statistical significant or effect can be imputed to irregular patterns in the data.

Table 6

Logistic Regression: Predicting Recidivism

Variables	B	Wald	Sig.	Exp(B)	Es(r)
Age offender admitted to prison	-.153	.323	.570	.858	-.04
Level of Education	.766	.800	.371	2.151	.21
Employment before prison	-.546	.716	.397	.579	-.15
More than 1 program	.575	.904	.342	1.776	.16
Constant	-1.380	.396	.529	.251	

The results from the 2x2 classification table indicated that the model correctly classified 68.7% of all cases using a 50% cut point (Table 7). Overall, the model was accurate in predicting nonrecidivism (95.7%), but the model was not accurate in predicting who were likely to recidivate for the sample (5%). The findings revealed that other things should be taken into consideration when attempting to determine who is likely to recidivate in 1 year.

Table 7

Regression Classification Table

		Predicted recidivism at year 1		
		No	Yes	Percentage correct
Observed Recidivism at year 1	No	45	2	95.7
	Yes	19	1	5.0
Overall percentage				68.7

Conclusion

This chapter presented the results of the study. The demographic information indicated that the sample of offenders from the majority of offenders were between 20 and 29 years, received secondary school education, were employed before incarcerated, did not participate in more than one rehabilitation program, and did not recidivate. I found no interactions between variables violating the assumption of independence, and I removed no variables from the final analysis.

Results from the logistic regressions led me to accept the null hypotheses, which indicated that in the population, the odds that change in the IVs increased the likelihood of the dependent variable, recidivism of offenders at year 1. Results from the chi-square test indicated that the model did not show differences in the probability of the dependent variable occurring based on the occurrence of the IVs. Additionally, the adjusted model explained 7.9% of the variance in the occurrence of the dependent variable, recidivism at year 1.The results revealed that age of offender, education, employment before prison,

and participation in more than one rehabilitation program were not significant predictors for this group of individuals in terms of reducing recidivism, and there were no effect sizes large enough to indicate that an effect could be labeled exploratory.

Chapter 5 will discuss how these findings fit within the current literature on recidivism and the social change implication of the study. I will also outline recommendations for future research in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative, correlational study was to assess the predictive relationships between the likelihood of offender recidivism based on the age, education, employment, and participation in more than one rehabilitation program. Results from the logistic regression analysis indicated that none of the IVs were significant predictors of recidivism for at least 1 year. In this chapter I discuss the interpretations of the findings, the limitations of the study, recommendations for future research, and implications of the study.

Interpretation of Findings

There were three major findings in this study. First, participation in more than one rehabilitation program did not positively predict recidivism at 1 year. The correctional facility provides rehabilitation programs to offenders to reduce recidivism and help them reintegrate into the community (Byrne et al., 2015; Orrick &Vieraitis, 2015). The importance of providing offenders with more than one rehabilitation program stems from the fact that offenders who receive a single service did not experience lower recidivism rates. Although the impact of a particular rehabilitation program and recidivism is studied extensively, I located a few studies that showed a link between participation in multiple rehabilitation programs and recidivism. The findings from these studies were inconclusive as to whether providing offenders with opportunities to participate in more than one rehabilitation program reduced their recidivism rates (Chaple et al., 2016; Graffam et al., 2014). The findings from this study showed that offenders who participated in more than one rehabilitation program did not positively predict recidivism

at 1 year, which is consistent with the research literature, which is inconclusive on the link between multiple rehabilitation programs and recidivism.

The second major finding was that the sociodemographic variables of age, education, and employment were not significantly related to recidivism at 1 year. In regard to age, younger offenders tend to commit more crimes than older offenders (Carson & Sabol, 2016; Datchi et al., 2016; Liu, 2015). However, there was no significant relationship between the offenders' age and recidivism. Although the findings from this study do not support the literature regarding age and recidivism, this study provided a unique opportunity to assess the extent to which age impacted recidivism.

Offenders who have received an education that prepares them for the job market tend to recidivate at a lower rate than offenders who do not have job training (Chaple et al., 2016; Hall, 2015). A significant challenge to offenders finding work is the ability of the prisons to provide work-related skills that are relevant to the job market (Ramakers et al., 2017). In this study, the findings showed no significant relationship between offenders' education and recidivism or any meaningful relationship between offenders who were employed and recidivism.

Finally, the model was accurate in predicting nonrecidivism. However, the model was not correct in predicting who was likely to recidivate for the sample (5%). The findings indicated that other things should be taken into consideration when attempting to determine who is expected to recidivate in 1 year. Information of this sort is essential as current models may not adequately explain the issues offenders face (Bushnell & Wild, 2016; Byrne et al., 2015; Wright & Cesar, 2013). For example, current strategies to

reduce recidivism may fail to incorporate social support services into offender rehabilitation programs. Future studies should, therefore, focus on exploring a more comprehensive range of social factors that impact on recidivism rates.

The theoretical frameworks for this study were the life cycle theory (Brannigan, 1997), the social learning theory (Bandura et al., 1961), SCT (Bandura, 1986), and social disintegration theory (Barnetz & Vardi, 2014). Each of the theories had major premises that may have potentially been useful. The IVs were linked to the conceptual framework of the study (Bushnell & Wild, 2016; Byrne et al., 2015).

The characteristics and experiences of the correctional-facility sample indicates that there was an opportunity to adequately test the theories used to frame this study. The life cycle theory indicates that offenders tend to commit more crimes when young than as adults (Liu, 2015). The findings of the study revealed that the majority of offenders were between 20 and 29 years old and; therefore, my study supported the results of Liu (2015) that offenders desist from committing a crime as they near adulthood. Understanding the offending patterns of young people is essential to reducing recidivism rates. Efforts to reduce recidivism rates may, therefore, require providing offenders with programs and services that take into consideration the age of the offender. The life cycle theory is consequently relevant to this study.

Bandura (1971), in promoting social learning theory, hypothesized that people learn through interacting with others. An adolescent who lacks positive role models is more likely to commit a crime than individuals who have positive role models (Henneberger et al., 2013). If the programs focus on reducing recidivism through

promulgating principles of social learning theory, then such programs would provide mentors and role models who provide positive images and examples of the behaviors that former offenders need to learn. In this study, just over half of the sample (51.5%) was less than 29 years old. Because social learning theory suggests that people influence others, it is possible that the prison may reduce recidivism rates by investing in programs that help offenders make better decisions on leaving prison.

Bandura (1986) suggested that a fuller explanation of crime lies in the social environment rather than improving the ability of offenders to make better decisions. Bandura (1986) was of the view that people also commit a crime because of the social challenges they face. As such, Bandura (1986) promoted SCT, which incorporated social learning theory. By advocating the social cognitive approach, Bandura (1986) recognized that offenders might need a broader range of programs to help them reduce their recidivism rate. The findings from the study showed that 67.6% of offenders did not participate in more than one rehabilitation program. However, there was no significant relationship between offenders who participated in more than one rehabilitation program and recidivism. Few studies show that offenders who receive more than one program experience lower recidivism than offenders who receive a single program (Chaple et al., 2016; Graffam et al., 2014). Because the literature is inconclusive on offenders who participate in more than one rehabilitation program and recidivism, the findings from the study are consistent with existing studies of life cycle theory with regard to the research on offenders who receive more than one rehabilitation program and recidivism.

One of the critical aspects of social disintegration theory is the link between economic hardships and recidivism (Barnetz & Vardi, 2014). Many offenders come from depressed communities with high unemployment rates and will recidivate because of their inability to find work and support their families (Cook et al., 2015; Travis et al., 2014). The offender's ability to find work is related to the relevance to the job market of the training they receive in prison (Ramaker et al., 207). Providing offenders with the skills increased their potential to find work and may reduce their recidivism rates. The findings from the study showed that 30.1% of offenders were not employed before incarceration while 67.1% were employed before incarceration. However, there was no significant relationship between offenders employed before incarceration and recidivism. Offenders being better prepared to find work on leaving prison are linked to their economic circumstances; this suggests social disintegration theory still might be useful to consider in continuations of this work.

Limitations of the Study

The primary limitation of this study was that I used secondary data. Therefore, I had no control over the methodology used to collect the data (see Cheng & Philips, 2014). This lack of control proved especially troublesome in this study. The case management unit of the prison had clear guidelines for their staff regarding entering data into the casefiles used for this study. These guidelines pertain to information that allows an assessment of offenders' suitability for rehabilitation programs. Case management staff designed these guidelines to help ensure the accuracy of their case files because the management of the prison relies on case files for recommendations for participation in

rehabilitation programs (National Task Force on Crime Prevention, 2010). However, the existence of the guidelines does not guarantee that all staff followed the procedures for entering data. Therefore, data entered incorrectly could affect the accuracy of the data used in the data analysis (Cheng & Philips, 2014). Also, the Admissions Department of the correctional facility maintains a database on all offenders entering prison, which allows for the verification of data entered into the case files.

Because of the inadequacy the initial data collection, the study ended up with a smaller than expected sample size, which limited the ability to establish stable results and to generalize to a wider population of offenders. As such, statistical tests would not allow the identification of significant relationships within the data set.

Using G*Power for adequate power of analysis, and based on the input parameters, the computed minimum sample size needed to detect actual differences in the data, if they existed, was 67. The sample of 67 reflects the records that have complete information on the variables of interest. Because only 68 cases files were available for the study with 67 having complete data, I was only able to achieve the minimum sample for detecting differences in the data if they existed. A larger sample size could have generated more accurate results. The restricted range of IVs may have impacted on the outcome of the study. The IVs used in this study were age, education, employment, and participation in more than one program.

Beyond the issue of sample size, the prison data could also be regarded as incomplete to some aspects of the discussion of recidivism. The literature indicates a more extensive range of IVs that may influence the dependent variable recidivism. These

variables include marital status, income, and completion of the program (Hall, 2015). Because the case files produced by the prison only contained complete data regarding the age, education, employment, and participation in more than one program, these IVs were used in the study. However, using only the variables age, education, employment, and participation in more than one program restricted the range of possible IVs and reduced the chances of establishing significant relationships between the IVs and recidivism.

Confounders also presented another limitation. These included the history of offending, history of attendance at programs, and length of time incarcerated for offenders who serve long sentences versus prisoners who serve short sentences that may affect the outcome of the study.

An additional limitation of the study was that I relied primarily on quantitative metrics rather than in-depth, qualitative perspectives of offenders. Although obtaining the views of offenders would have led to a broader study, such an approach was considered unattainable due to the time and extent of work required. In this study, I examined only recidivism, offender participation in programs, and the contribution of sociodemographic variables and not the opinions and beliefs of offenders about how rehabilitation services help them to reintegrate into the community. Knowledge of this information might otherwise influence their participation in these programs.

Generalization of Results

The study assessed the relationship between four measures of sociodemographic data, more than one rehabilitation program, and recidivism at 1 year. To accomplish this objective, all data for this study came from records kept by the correctional facility as

part of their record-keeping requirements. Therefore, all documents pertained to inmates who entered the prison between January 1, 2014 and December 31, 2018. However, 27 offenders were excluded from the study because they entered the prison before January 1, 2014. Three offenders entered the prison during the period from which data were drawn, but were scheduled to leave after December 31, 2018. Because the recidivism rate estimated the time offenders entered and leave prison in the period between January 1, 2014 and December 31, 2018, offenders scheduled to complete their sentences after December 31, 2018 were not included (see Severson et al., 2012). The exclusion of potential participants limited the possible number of participants in the study and could impact on the significance of the results. Thus, caution should be used when attempting to generalize results from this study to prisoners who entered the prison before January 1, 2014 and after December 31, 2018, as well offenders who received rehabilitation programs before January 1, 2014 and after December 31, 2018**.**

Recommendations for Future Studies

Results from this study revealed that participation in more than one rehabilitation program, along with sociodemographic variables, were possible predictors of the likelihood of recidivism. Results from the data analysis showed that participation in more than one rehabilitation program and that age, education, employment and age, education, employment did not predict recidivism of at 1 year. I recommend that additional studies for further research that are grounded in the strengths and limitations of the current research as well as the literature reviewed.

A useful submission is to increase the sample of offenders for the study. Because a large number of offenders were excluded from the study, it is essential to repeat this study with a larger sample of offenders. Future studies should consider including offenders admitted before January 1, 2014 to increase the number of eligible participants for the research and an improved prediction of the likelihood of the IVs on recidivism.

Another practical suggestion is to increase the number of case files to ensure offenders receive a sentence plan that includes a recommendation for a rehabilitation service. The low number of case files with recommendations for sentence planning and program recommendation is a concern. Ensuring that the adequate staff is provided to produce case files may increase opportunities for offenders to obtain a sentence plan that includes rehabilitation services.

Researchers could also identify and test moderator variables that may help to better explain the effect of more than one rehabilitation program on the likelihood of recidivism of at least 1 year. For example, it is not logical to assume that all offenders recidivate for the same reasons. The premise of social disintegration theory suggests that some potential moderators may include a broader range of social factors including mental illness (Abracen et al., 2016), substance abuse (Davis et al., 2014), family support (Datchi et al., 2016), and low-income incarceration (Jung, 2011). Therefore, future studies could focus on determining whether other potential moderators contribute to predicting the likelihood of recidivism. An area researchers could consider for future studies is qualitative research on offender rehabilitation and recidivism (see Crewe, 2013; Kendall, Redshaw, Ward, Wayland, & Sullivan, 2018).

Researchers could conduct qualitative studies to ask former offenders about the variables that helped keep them from recidivating. Qualitative studies focus on eliciting individuals' feelings, opinions, and perceptions. Researchers could use findings from such studies to potentially guide larger scale quantitative studies to determine if those variables were significant predictors of nonrecidivism for other offenders.

Lastly, although offenders may have acquired work-related skills in prison, the findings revealed that there was no significant relationship between employment and recidivism; as such, offenders may continue to recidivate despite receiving an employment-related ability. Evidence suggests that critical to offenders obtaining employment is whether the skills they receive in prison adequately prepares them to achieve long-term employment (Ramakers et al., 2017). Future studies should focus on the extent to which offenders' skills match the needs of the labor market.

Implications for Practice

The purpose of the study was to determine which variables predicted the likelihood of recidivism. Evidence exists that offenders who receive rehabilitation programs tend to recidivate at a lower rate than offenders who do not receive rehabilitation services (Chaple et al., 2016; Hall, 2015). A lower recidivism rate results in a lower prison population that reduced the costs to maintain offenders (Byrne et al., 2015). The results revealed that offenders' age, education, and employment are not likely to predict recidivism at 1 year. The results of the study have practical implications for offender rehabilitation in Barbados. Management and staff of the prison can use the findings from this study to further explore whether the current programs offered at the

prison create opportunities for offenders to reduce their recidivism rate and reintegrate into society. Examining the relevance and applicability to the job market of rehabilitation programs at the prison may allow for policies that could improve knowledge regarding best offender rehabilitation practices for long-term reduction in recidivism (Byrne et al., 2015; Orrick & Vieraitis, 2015).

One practical suggestion that emerged from the results of this study indicated the need to reduce the high number of offenders who did not receive a rehabilitation program. Offenders who participate in rehabilitation programs experience lower recidivism rates (Graffam et al., 2014; Hall, 2015). The correctional facility may have to ensure that higher number offenders receive rehabilitative programs. The findings revealed that other factors should be taken into consideration when attempting to determine who is likely to recidivate in one year. There is a need for researchers to explore a broader range of factors that linked to recidivism (Abracen et al., 2016; Wright & Cesar, 2013). Reducing recidivism is related to broader factors that will have implications for positive social change at the individual, community, and policy levels (Wright & Cesar, 2013).

At the individual level, some offenders are at higher risk for recidivating than others (Looman & Abracen, 2013). For example, offenders who abuse drugs tend to recidivate than offenders who do not abuse drugs (Abracen et al., 2016). The treatment of offenders who abuse drugs is more challenging as these offenders may also experience mental illness. Providing more intensive services to offenders with substance abuse and

psychological problems may, therefore, achieve positive social change as offenders are better able to overcome the challenges of drug abuse and mental illness.

Improving conditions of economically depressed communities can also lead to positive social change (Travis et al., 2014). Living in financially depressed communities increases the likelihood that offenders will recidivate. To reduce recidivism rates, the correctional facility may need to focus efforts on the circumstances offenders face in the community. Researchers have suggested that more significant investment in job training opportunities in communities and assistance in finding employment improves the chances of members of those communities to overcome economic challenges (Newton et al., 2018; Wright & Cesar, 2013). An investment in community resources will, therefore, lead to positive change as communities become economically viable offenders are better place to find work.

An exploration of broader factors linked to recidivism also has implications for positive social change at the level of policy (Byrne et al., 2015). The high costs of maintaining prisoners in Barbados has created challenges for financing rehabilitation programs aimed at reducing recidivism and reintegrating offenders back into the community (BPS, 2016). The Government of Barbados may, therefore, need to pursue a policy of research that examines the impact of a range of factors that impact on offenders' recidivism. The focus on broader social factors is even more critical, given that prisons worldwide have been unable to address the high rates of recidivism (Deady, 2014). A policy framework works that emphasizes an investigation of a broader range of factors that impact on recidivism may, therefore, create opportunities to focus on the

psychological and social factors that help offenders reduce their recidivism rates and achieve positive social change.

Conclusion

This quantitative, correlational study examined the predictive relationships between recidivism at 1 year, the number of rehabilitation programs, age, education, and employment among offenders in Barbados. There were four IVs included in this study. These four were age, education, employment, and multiple rehabilitation programs.

Prisons provide services to offenders who are at risk for recidivism. Reducing recidivism offers financial benefits as the prison does not have to incur costs to maintain offenders (Byrne et al., 2015; Bushnell & Wild, 2016). Evidence links offenders' age, education and employment to their recidivism rate (Hall, 2015; Liu, 2015; Nally et al., 2014). However, few studies exist on whether offenders who receive more than one rehabilitation program experiences lower recidivism rates. Providing offenders with more than one rehabilitation program may be crucial to reducing recidivism (Cook et al., 2015; Graffam et al., 2014). As such, this study is unique because it examines the impact on recidivism at 1 year of more than one rehabilitation program, age, education, and employment. Overall, the results from this study showed that offenders who receive more than one program and the variables age of the offender, level of education, and employment before prison are not likely to determine recidivism. The findings revealed that other factors should be taken into consideration when attempting to determine who is likely to recidivate in 1 year.

Knowledge of offenders who are likely to recidivate is vital for any correctional facility that specializes in preparing offenders for reentry into society. Specifically, the correctional facility should consider exploring an investment in the psychological and social issues that increase the tendency for an offender to recidivate. Such an approach to offender rehabilitation would improve knowledge regarding best rehabilitation program practices for long-term recidivism reduction. Improving the long-term decrease in recidivism may contribute to more robust social gains for offenders leaving prison.

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Appendix A: Confidentiality Statement

DATA USE AGREEMENT

This Data Use Agreement effective as of December 8, 2015, is entered into by and between (Jonathan Yearwood, Data Recipient and [redacted] Data Provider. The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set ("LDS") for use in research in accord with the HIPAA and FERPA Regulations.

1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.

2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations

Data Fields in the LDS. **No direct identifiers such as names may be included in the Limited Data Set (LDS).** The researcher will also not name the organization in the doctoral project report that is published in Proquest. In preparing the LDS, Data Provider or designee shall include the **data fields specified as follows,** which are the minimum necessary to accomplish the research: case files records pertaining to number of rehabilitation programs, age, education and employment for prisoners incarcerated in the period January, 01, 2014 through December 31 2018.

3. Responsibilities of Data Recipient. Data Recipient agrees to:

a. Use or disclose the LDS only as permitted by this Agreement or as required by law;

b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;

d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and

e. Not use the information in the LDS to identify or contact the individuals who are data subjects.

4. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its research activities only.

5. Access to Research Data ,

Access to the Research Data is limited exclusively to the investigator and to colleagues who signed the Terms of Agreement on file with Walden University

b. The investigator will protect the Research Data from loss, theft, or unauthorised access.

c. The investigator has followed the policies; procedures for conducting research that is in place at the investigator institution.

d. All records from the case files of offenders are considered the property of the [redacted]

e. Records are not available for review by individuals or organisations other than the BPS.

f. The Investigator will share Research data with other individuals or organisations only on presentation of "consent" to release information form appropriately signed by a designated official of the [redacted]. The nature and extent of the information given will be at the discretion of the [redacted]

6. Term and Termination.

. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.

a. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

b. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

c. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

d. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

7. Miscellaneous.

e. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

f. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

g. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

h. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

i. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER

Signed: [redacted]

Print Name: [redacted]

Print Title: [redacted]

DATA RECIPIENT

Signed: Jonathan Yearwood

Print Name: JONATHAN YEARWOOD

Print Title: RESEARCHER