# DISSERTATION

# DOSAGE MATTERS: THE ROLE OF COMMUNITY CORRECTIONS INTERVENTIONS ON CLIENT RECIDIVISM

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## ABSTRACT

# DOSAGE MATTERS: THE ROLE OF COMMUNITY CORRECTIONS INTERVENTIONS ON CLIENT RECIDIVISM

For the last 50 years, effective correctional programs and interventions have been defined by their ability to lower recidivism rates. There is considerable research about what works to reduce an individual's risk for recidivism, yet recidivism rates remain high. The revolving door within the criminal justice system comes with tremendous economic and social costs for individuals, their families, and communities and therefore understanding the impact that interventions have on long term outcomes has become a primary focus area for researchers in the justice space. Using risk/need/responsivity theory as a framework, this study examined the impact of the intensity of nonclinical and clinical interventions, clinical dosage hours, and case management meetings on one- and two-year recidivism outcomes. This study seeks to broaden our understanding of the dosage literature by examining a sample of offenders placed in an open (full access to community with expectations of employment and other responsibilities while in treatment), residential, community corrections (halfway house) setting. The final sample for this study includes 147 adult male and female offenders who successfully discharged from two community corrections (halfway house) programs in Colorado. Findings support prior research suggesting an inverse relationship between clinical dosage hours and recidivism. While the results demonstrated a lack of support for the relationship between nonclinical interventions and recidivism reduction, the intensity of clinical interventions provided to clients were statistically

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significant at both one- and two- years post program completion. Finally, the results indicate that regular case management meetings play an important role in recidivism reduction.

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## CHAPTER 1—INTRODUCTION

Since Robert Martinson published his "Nothing Works" report in 1974, criminologists, sociologists, and practitioners alike have actively worked to discover effective and efficient interventions and programs for reducing recidivism. Wide ranging changes to criminal justice policies and practices have led to rapid and substantial growth in the number of people under criminal justice supervision in the United States. As of 2015, one in every thirty-seven adults in the United States were under some form of correctional supervision (Kaeble & Glaze, 2016). More than 600,000 incarcerated offenders are returning to communities each year (Clear & Frost, 2015; Petersilia, 2003; Travis, 2005; Travis, Western, & Redburn, 2014) and there is considerable focus on assisting individuals to successfully complete correctional supervision and not return back to the system in the future. However, a recent report from the Bureau of Justice Statistics offers a dismal outlook on recidivism stating that 83% of state prisoners who are released from prison return within 9 years (Alper & Durose, 2018). This process of incarceration, and re-incarceration, costs taxpayers more than \$80 billion each year (DeVuono-Powell, Schweidler, Walters, & Zohrabi, 2015) and some scholars suggest that it costs considerably more than that when you add in collateral costs to incarcerated individuals themselves, their families, and the community (McLaughlin, Pettus-Davis, Brown, Veeh, & Renn, 2016).

To date, there is considerable research about what works to reduce an individual's risk for recidivism (Durose, Cooper & Snyder, 2014; Gendreau & Andrews, 1990; Gendreau, Little & Goggin, 1996; Kadela, 2003; Latessa, 2004; Lipsey & Vanderbilt, 2018; Ndreka, Listwan & Latessa, 2017), yet recidivism rates remain high (Alper & Durose., 2018). The scar of a criminal record can follow individuals for life (LeBel, 2017; Petersilia, 2003) and impact all facets of community living. It is more challenging for individuals with a criminal record to access

conventional opportunities (Clear & Frost., 2015; Clear, Rose & Ryder, 2001; Pogrebin, Stretesky, Walker, & Opsal, 2015; Travis, 2005) such as employment (Opsal, 2012; Petersilia, 2003), housing (Herbert, Morenoff & Harding, 2015; LeBel, 2017; Pleggenkuhle, Huebner, & Kras, 2016), and access to care (Mallik-Kane & Visher, 2008). In addition, considerable stigma prevents individuals from separating their current self from the former (Toch, 2010). The revolving door within the criminal justice system is economically and socially burdensome on individuals and communities alike. As a result, there is great interest in understanding the impact of policy, programs and practices on correctional populations and identifying effective interventions for reducing recidivism. More recently, the research has focused on exploring what works to include specificity of types and amounts of specific interventions that impact recidivism. This study examines how nonclinical, clinical, and case management interventions provided in a halfway house setting in Colorado impact one- and two-year recidivism rates.

#### **Statement of the Problem**

Risk-Need-Responsivity (RNR) theory, developed by Andrews and Bonta (1998), establishes a framework of principles for effectively addressing the needs of justice involved individuals and creating behavioral changes that reduce recidivism. Correctional practices derived from the RNR theory provide a foundation for the work of the criminal justice system and are widely accepted as the approach to working with justice involved individuals to reduce their risk of recidivism (Andrews & Bonta, 1998; Andrews, Bonta, & Hoge, 1990; Andrews, Dowden, & Rettinger, 2001; Cullen & Gendreau, 2000; Lowenkamp & Latessa, 2004; Chadwick, Dewolf & Serin, 2015; Lipsey & Vanderbilt, 2018). *Risk* is defined as the likelihood that an individual will commit another crime, or recidivate, in the future. Risk is not specific to the type of crime, but rather the likelihood that an individual will commit one, no matter the type. Criminogenic *needs* are those areas that drive an individual's risk to recidivate and are the target for interventions. In theory, when criminogenic needs are sufficiently addressed an individual's risk to reoffend will decrease. *Responsivity* is the way in which criminogenic needs, which make up an individual's overall risk, are responded to, both in terms of the interventions themselves, and the modalities by which they are delivered. Generally, RNR states that individuals should be supervised based on their level of risk to recidivate, and that individual criminogenic needs should be identified and targeted through tailored interventions.

Because treatment interventions are understood as the lynchpin to reducing recidivism (Andrews & Bonta, 2010; Bourgon & Armstrong, 2005; Kroner & Takahashi, 2012; Lipsey, 1999; Makarios, Sperber, & Latessa, 2014; Sperber, Makarios, & Latessa, 2013), delving deeper into their impact on recidivism and risk reduction has received considerable attention from academics and practitioners alike. Although there are a handful of studies in the extant literature that broach the relationship between intervention dosage, defined broadly as the number of hours of intervention received within a given timeframe, and risk reduction, a standardized definition of dosage has yet to be developed (Sperber et al., 2013). While some define dosage as the number of sessions (Kroner & Takahashi., 2012), others look at the number of hours (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013) or even the number of days (Hser, Grella, Chou & Anglin, 1998). Even with these definitional challenges, research points to a higher dosage of interventions leading to lower recidivism rates. While this is important, what is considered intervention dosage is up for debate.

According to Burrell and Rhine (2013), traditional supervision practices, such as case management meetings and life skills classes, have not been considered dosage because they are (1) not delivered by trained and certified clinicians and (2) do not follow a strict cognitive

behavioral modality. When cognitive-behavioral interventions are administered, reductions in recidivism are shown to occur (Andrews & Bonta, 2010; Bourgon & Armstrong, 2005; Kroner Takahashi, 2012; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013). To date, intervention dosage studies have almost exclusively looked at cognitive behavioral interventions delivered in a secure/closed setting (participants engage in treatment full time, start to finish, before accessing the community) and much of that is delivered by trained specialists and clinicians (Kroner & Takahashi, 2012; Makarios et al., 2014; Sperber et al., 2013). Unfortunately, much of what is done in correctional supervision is not considered cognitive behavioral in nature as gaining access to trained and certified staff is difficult and can be cost prohibitive (Burrell & Rhine, 2013). This is, in part, why a study of this nature, that includes interventions that are both clinical (cognitive behavioral) and nonclinical as dosage, is so important.

In addition, since the largest population of justice involved individuals are under supervision in the community on probation, parole or in halfway houses (Alper & Durose, 2018), research conducted on populations in closed settings is not generalizable. In community settings several factors can lead to individuals starting, stopping, and possibly restarting their course of dosage and they experience a variety of competing priorities (employment, family, etc.). Traditional interventions have been siloed, focused on one criminogenic need at a time. Consequently, while there is substantial guidance in the literature on how to identify an offender's risk and criminogenic needs (Andrews et al., 1990) many questions remain about the *intensity, types, and amounts* of interventions that lead to reductions in recidivism (Sperber et al, 2013). Because of the diversity of needs within the justice involved population, recent literature indicates that intervention dosage should be combined or created to address comorbid criminogenic needs that compound risk considerations (Taxman & Caudy, 2015). Also, while

high risk individuals were targeted early on in the dosage literature, a recent study failed to find support for the interaction between risk and dosage, with results suggesting more intervention dosage may be better for all risk groups (Sperber et al., 2013). In several studies on dosage researchers examined participants from closed groups, where individuals would start and finish the treatment modality in a linear fashion, from a secure setting where the individual remains there until the intervention dosage is fully administered (Andrews & Bonta, 2010; Bourgon & Armstrong, 2005; Kroner & Takahashi, 2012; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013). Therefore, a broader understanding of how correctional practices and interventions impact recidivism is necessary.

#### **Research Questions and the Methodological Design**

The purpose of this study is to contribute to the intervention and dosage literature by investigating the impact of different types and amounts of interventions (including traditional correctional practices such as case management meetings) on recidivism outcomes for individuals who reside in a community corrections (halfway house) setting. Specifically, this study examines three independent variables: (1) the intensity of clinical and nonclinical types of interventions received, (2) the amount of clinical dosage received in hours, and (3) the number of case management sessions received by clients. Using the RNR theory as the framework for this study, the primary goals of this research are to identify the relationship between the intensity, dosage, and type of interventions and recidivism and contribute to the dosage literature by exploring what interventions are most effective in recidivism reduction.

The following specific research questions guided this study:

- To what degree was the *intensity* of interventions (defined as the total number of different types of clinical and nonclinical interventions) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?
- To what degree was the *dosage* of clinical intervention (defined as hours of clinical intervention<sup>1</sup>) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?
- To what degree was the *amount of case management meetings* provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

This study employs data from two sources to address the above research questions. These sources include recidivism data from the Division of Criminal Justice, Office of Community Corrections, and individual offender data related to interventions received from two community corrections facilities in the state of Colorado. Using existing literature on intervention dosage and recidivism, along with theoretically relevant control variables, this research seeks to expand our understanding of the types and amounts of interventions that reduce recidivism and further refine the definition of what works with community based, justice involved populations. More specifically, this study will examine how intensity of intervention types, clinical intervention dosage, and case management sessions provided to community corrections clients in fiscal year 2011 in Colorado impacted one- and two-year recidivism outcomes.

<sup>&</sup>lt;sup>1</sup> Data on nonclinical intervention hours was not available during the study timeframe in a consistent way across client files and thus could not be reliably examined as a separate variable.

## **Contribution to the Literature**

The heterogenic nature of needs of the justice involved population can be used to illustrate the challenges presented to those who intervene and supervise people under correctional supervision. Supervision agents must be diversely skilled in a multitude of interventions to address convergent criminogenic needs while allowing for individuals to manage the requirements of daily life (e.g., employment, family responsibilities, etc). There is no onesize-fits-all approach to recidivism reduction which can lead to doing all things with all people which is financially burdensome and shown to have iatrogenic impacts (Andrews & Bonta, 2010). The more understanding there is of what contributes to reductions in recidivism, the more focused and efficient practices can be employed. This study will further inform the field on how to intervene in the most effective way. This study can provide additional insight into interventions that could be utilized more, and most importantly, those that could be deprioritized. By reducing an individual's risk to recidivate, whether it be while in prison or upon their release onto community supervision, their likelihood of success increases as does their ability to impact their families and communities in a positive way.

As mentioned earlier, most of the existing intervention dosage literature was conducted in closed settings, where individuals received a specific amount of intervention over a specific amount of time and upon completion were released into the community. While these studies have contributed greatly to our understanding of how intervention dosage impacts outcomes, programs are not always available and can be cost prohibitive. Community corrections, also referred to as halfway houses, offers a unique way of studying a population that has full access to the community, along with all of the requirements of daily living such as employment, family obligations, etc. and is designed to identify and address criminogenic needs through clinical and

nonclinical interventions. In this study, all individuals were able to access the community while engaging in interventions to include working, spending time with support people, and exposure to both positive and negative influences which broadens our understanding of what works in community-based settings, where most of the justice-involved populations reside (Alper & Durose, 2018).

The sociological contribution of this work stems from the link between recidivism reduction and the impact on communities. The reentry community is dynamic and complex, with individuals ranging in age, skill level, housing status, access to networks and support, treatment needs, and more. Even still, the reentry literature is clear that most individuals leaving prison, whether they go to community corrections or are placed on parole, are characterized by numerous social and economic disadvantages that place additional strain on their families and communities (Morenoff & Harding, 2014; Petersilia, 2003; Travis, 2005; Visher & Travis, 2011). Incarceration separates individuals from their primary support systems and can adversely impact an individual's ability to reenter successfully. Geographic distance (Hallinan, 2003), costly communication options (Lynch & Sabol, 2004), and time away can estrange individuals from their loved ones and leave them out of touch with their community. According to Rose, Clear, and Ryder (2001), there are several unintended consequences of incarceration, many of which are experienced by extended family members and communities.

Community reentry over the last thirty years has been primarily focused on surveillance and deterrence, instead of rehabilitation and support, resulting in many individuals returning to prison (Alper & Durose, 2018; Petersilia, 2003; Seiter & Kadela, 2003; Travis, 2005; Visher & Travis, 2011). Underfunded and understaffed parole agencies and limited support services in communities saturated with justice involved individuals make reentry more a descriptor than a

systematic process for reintegrating people into the community (Cullen, Jonson, & Mears, 2017; Travis, 2005). Supervising agencies have become increasingly less tolerant of individuals who make poor decisions once released (Seiter & Kadela, 2003) and without identified interventions to address needs, prison ends up being the presumed answer (Mowen, Wodahl, Brent & Garland, 2018). The literature suggests the neighborhood, and community, where an individual returns can be just as impactful to their success as their individual level characteristics which can be even more important when there are high concentrations of individuals returning to a given community (Rose et al., 2001; Lynch & Sabol, 2004). Employing effective interventions to reduce recidivism within justice involved populations can put an end to the revolving door of the criminal justice system. The creation of a menu of effective interventions allows for the ability to better utilize state resources for supervision and programming. By further identifying what reduces recidivism, there is the potential to positively impact a multitude of social challenges within our communities. This work will help to identify interventions that support individuals in successfully completing correctional supervision and staying out of the system for good.

#### **Outline of the Dissertation**

This dissertation will center on the research questions discussed above. Chapter two provides an overview of relevant theoretical orientations along with a discussion of the current state of the literature on dosage and its impact on recidivism. Specifically, the risk/need/responsivity theory (Andrews & Bonta, 1998; Andrews & Bonta, 2010) will be used to highlight the importance of dosage and the movement of the correctional field toward utilization of evidence-based practices.

Chapter three offers a detailed overview of the study's methodological design. It begins with a brief description of the data collection and analysis phases, followed by an overview of

the data set provided by the Division of Criminal Justice, and the data collection process at two community corrections facilities in Colorado. The chapter concludes with a description of the statistical modeling procedures used to test hypotheses associated with each research question.

Chapter four covers the results of stepwise logistic regression models for each research question. The dissertation concludes in chapter five with a summary of findings, a discussion about the meaning of study results, and an assessment of the strengths and limitations associated with the research. This chapter also includes an overview of the impact of this study on community corrections in Colorado with suggestions for future research.

## CHAPTER 2—LITERATURE REVIEW

The purpose of this study is to examine how clinical and nonclinical intervention types, clinical intervention dosage, and the number of case management meetings provided in a community corrections setting (i.e., halfway house) impact recidivism outcomes. Such a contribution to the existing literature broadens our knowledge of 'what works' and furthers our understanding of how the expectations of the existing social and behavioral structures that exist at the intersection of community corrections and general society impact overall outcomes. This study also expands the definition of dosage to include the number of case management meetings and nonclinical interventions in an open, community-based setting. Using Risk/Need/Responsivity (RNR) theory as a framework for the research questions, the primary goals of this research are to: (1) better understand the effectiveness of interventions with justice involved individuals who are in community based settings, (2) contribute to the dosage literature by exploring the effectiveness of these practices, and (3) explore if the impact of interventions on recidivism differs in an open, community-based setting.

Within the following chapter, I present an in-depth review of the RNR theory which is the foundation of current dosage and 'what works' literature. Recognized as an integrated theory, this study contributes to the RNR literature generally and, to the risk and responsivity subsets specifically. This chapter begins with a brief overview of four primary psychological, sociological and criminological theories that comprise the RNR theory. Next, RNR is applied to the justice involved population. I then draw from the sociological literature regarding reentry and critique RNR to provide a broader social context to our understanding of risk and needs. The chapter concludes with a review of the current state of the literature on dosage and its impact on

recidivism. Part of this review includes an overview of risk and the Level of Supervision Inventory (LSI) to provide context to the link between dosage and risk reduction.

## **Theoretical Foundations**

#### **Psychodynamic Theory**

Andrews and Bonta (2010) acknowledge the importance of the Freudian perspective in understanding the human psyche, which ultimately drives a significant portion of behavior. Psychodynamic theory argues that an individual's personality is controlled by unconscious mental processes that are grounded in early childhood. According to Freud, all human behavior is a function of four structures, three of which are internal and one that is external (1963). By understanding these four structures, one can better understand what drives human behavior, which is imperative to understanding how to change it.

The internal structures that drive behavior are the id, the ego, and the superego, while the external structure is the environment, or context, in which actions occur. According to Freud, the id is the unconscious, childlike, pleasure principle which is always seeking immediate gratification (Freud, 1963). Left unregulated by the ego, the id can lead to behavioral issues, including criminal behavior. The ego is developed through positive and negative reinforcement in the environment and, when fully formed, is able to regulate the desires of the id. Once fully formed, a high-performing ego can balance the demands of the id with the realities of the environment. The ego is both conscious and unconscious. Where the conscious ego allows for critical thinking and effective decision making, the unconscious ego is responsible for one's defense mechanisms and the ability to justify the wants and needs of the id. Finally, the superego, whose demands are also managed by the ego, is where someone's morals exist. Both

conscious and unconscious, the superego is developed through interactions with authority figures, especially at a young age, and is the opposite of the id (Freud, 1963).

Proper development of these three structures leads to mature adults who can, "...delay immediate gratification...love and be loved in the context of a long-term sexual relationship, and...be socially productive" (Andrews & Bonta, 2010, p. 86). This process of emotional development is critical to an individual's ability to refrain from negative behavior including low impulse control, instability within personal relationships, and a lack of consistent employment, which "are each well-established predictors of criminal conduct in adult samples" (Andrews & Bonta, 2010, p. 86-87). Furthermore, these behaviors may develop as a result of an individuals' inability to manage the competing demands of their psyche. Psychodynamic theory purports that criminals are frustrated from past events and because of a weak ego, are more prone to engage in criminal acts (Freud, 1963). Referred to as antisocial personality pattern, weak ego development is one of the Big Four risk/need factors discussed by Andrews and Bonta (2010). Defined as personality factors such as impulsiveness, sensation-seeking, fearlessness, egocentrism, and coupled with, "...a pattern of law violating and problematic behaviors, often evidenced early in life" (2010, p.218), antisocial personality pattern can be directly attributed to weak ego development. Practitioners deploy interventions, both clinical and nonclinical, to address risks derived from antisocial personality patterns. It is for this reason that research into what interventions, both clinical and nonclinical, have the greatest impact on risk and recidivism is so important in reentry. While this study will not shed light on issues that led to an underdeveloped ego, it will examine if interventions designed to address the consequences of a weak ego (e.g., employment services, case management, and clinical treatment services) can be used to reduce

recidivism. Additionally, this study will examine how social and emotional expectations and structures can impact overall outcomes.

Understandably, weak ego development alone is not enough to explain the complex trajectory to criminality for many individuals; therefore, RNR also relies on strain theories to explain criminal behavior.

#### **Strain Theories**

Risk-Need-Responsivity draws a considerable amount of its theoretical basis and understanding from sociological perspectives on crime and delinquency. Specifically, Andrews and Bonta (2010) explored how strain theories contributed to the understanding of social class as a major variable in criminal conduct. Strain theories assert that criminal behavior is a reflection of where individuals are located within the social structure. Their location within that structure can directly affect levels of stress (strain), access to resources, and an ability to achieve culturally supported goals due to a lack of access to the means to achieve those goals (Cloward & Ohlin, 1960; Merton, 1932).

At the core of strain theory is the notion that society's social structure is designed in a way that blocks opportunities for certain individuals to legitimately achieve the American dream. Within society, the structure determines who experiences more strain and how. While everyone experiences strain, there are certain individuals more likely to have restricted access to means (Merton, 1932) and/or are blocked from legitimate opportunity structures (Cloward & Ohlin, 1960) to address them. Those that are more likely to experience increased strain are individuals in lower socioeconomic classes and those strains can lead to an increased propensity to commit crime (Cloward & Ohlin, 1960; Merton, 1932). While the cultural narrative is that the American Dream is a possibility for all, the reality is often quite different. This discrepancy can create

strain and requires individuals to adapt to meet their ambitions. At times, ambitions and adaptations may follow in line with social expectations but in other instances can be outside of acceptable norms. For example, the strain experienced when individuals cannot obtain monetary success through legitimate channels, like additional employment or raises, may result in an individual pursuing illegitimate means of success to meet their needs. Sociologists Robert K. Merton (1968) and Richard Cloward and Lloyd Ohlin (1960) argued that strain is unlikely to lead to crime unless individuals blame the social order for their failures to achieve success goals. Individuals who succumb to criminal means often have a weak commitment to institutional norms, have weak external social control, and are likely surrounded by delinquent others who can strongly influence their behavior (Cloward & Ohlin, 1960; Merton, 1968). Merton (1968) adapted the concept of anomie from Durkheim (1973) to describe the imbalance between cultural goals and institutional means. Merton (1968) argued that such imbalances created anomie, or strain between one's goals and means, which could lead to criminal behavior. Those individuals who experience strain and choose to stay within the guardrails outlined by society will adapt their ambitions in a manner that complies with the existing network of rules and social norms. For others, the guardrails become optional and the adaptations are not limited by social norms and rules. According to Merton (1968), criminals are innovators responding to their inability to achieve success in a conventional way by creatively cultivating opportunities for goal achievement. This could include illegitimate employment such as selling drugs or cheating on their taxes. When faced with strain, others respond through ritualism. For example, when faced with an inability to get ahead, an individual might reject the conventional norm of economic success while still going to work every day. In this example, individuals continue to engage in the conventional expectation of going to work but are not concerned with financial success or

promotional opportunities. Another possible response to strain is retreatism. Individuals who retreat when faced with strain, reject both the cultural goals and means to obtain them. These individuals may, for example, choose to live 'off the grid' or find other ways to drop out of goal achievement. Finally, Merton (1968) described individuals who, when faced with strain, choose to rebel, replacing conventional goals and means with their own version. This could lead to creating alternative communities with their own set of rules, illegal protesting or even political violence.

Robert Agnew, professor of Sociology at Emory University, developed General Strain theory (GST) and substantially revised the assumptions underlying prior Strain theories (2002). Until their revision, Strain theories focused primarily on the inability to achieve conventional success goals such as autonomy and status. General Strain theory purports that stress and strain cause negative emotions such as frustration, anger, depression and despair. When individuals experience these feelings, they are compelled to address what is causing those negative feelings, and in some cases that leads to criminal behavior. Stress and strain, according to GST, come from several types of goal blockage to include: (1) Merton's original conception of strain due to the disjuncture between goals and means to obtain those goals, (2) the loss of positively valued stimuli (e.g., a significant relationship or the loss of property); and (3) the introduction of negative stimuli (e.g., verbal or emotional abuse). More recently, GST has been expanded to include vicarious and anticipated strains (Agnew, 2006). Vicarious strains are those experienced by family and friends and are considered collateral consequences of that individual's actions. An example of this includes the pain a parent feels when their child is struggling. Anticipated strains are those that the individual believes will develop in the future, or their belief of how long the current strain will exist. While anticipated strains may have some effect on the commission of

crime, the primary three strain types will ultimately have a more significant influence (Agnew, 2006).

Drawing from Strain theories, RNR purports that individuals with increased levels of strain related to such things as their relationships, employment, finances, and housing situation are at higher risk for resorting to criminal behavior to address negative emotions (Andrews & Bonta, 2010). According to Andrews and Bonta, "Historical, geographic, and political-economic factors influence individual behavior primarily by way of the contingencies that they produce within settings and communities" (2010, p.140). The RNR theory purports that the structure of social systems, environmental settings, and social and cultural expectations impact how individuals weigh their options (to include the commission of criminal acts) when experiencing strain. The existence of strain creates a wide range of negative emotions about oneself as an individual and their position in the social structure. This creates pressure for corrective action. That pressure can come from the person themselves, their peers, family, or society at large. When a strain is "1) ...seen as unjust; 2) ...high in magnitude; 3) ...associated with low social control; and 4) create some pressure or incentive to engage in criminal coping," then strains are more likely to result in crime (Agnew, 2006, p. 102-103).

There are multiple factors that impact how each person develops and changes as society changes around them. Agnew (2002) suggested that biological, psychological, and environmental factors lead to individuals developing negative characteristics such as a difficult temperament, hyperactivity, impulsivity, insensitivity, limited problem-solving skills, and limited prosocial skills. The more negative characteristics and emotions that an individual possesses, the less likely an individual can handle strain and the more likely they are to employ antisocial coping mechanisms. The negative emotion of anger plays a primary role in GST

research (Agnew, 2006). When someone is angry, they are less likely to utilize problem-solving skills and may not think through potential consequences. Anger also may cause an individual to believe their reaction is not only necessary but justified. Strain can weaken the effect of social control factors such as an individual's connection to their family or job. Strain can also reduce an individual's desire to conform to social norms and weaken one's acceptance of conventional values. Ultimately, strains can lead to the development of personality traits conducive to crime such as low self-control, anger, and depression. The development of negative personality traits, such as those listed above, play out in several criminogenic needs identified within the RNR theory, such as antisocial personality pattern and antisocial cognitions. These negative personality traits are associated with a higher risk to commit crimes (Andrews & Bonta, 2010).

Similar to how actions and ambitions impact behavior in society, strain can have a direct effect on the delivery and effectiveness of interventions with individuals during their correctional sentence. During the community reentry phase, individuals can present with any number of sociological and criminological needs such as addiction, impulse control, educational and employment deficits, and social support deficits, among others (Lipsey & Vanderbilt, 2018). It is also not uncommon for individuals to experience considerable strain as their disenfranchised social status blocks their ability to positively achieve goals in the community. Entrenched social structures, such as a lack of felon friendly employment or housing options, can magnify the disenfranchisement experienced by individuals during the reentry process which can further amplify strain. Some examples of this include rejection from employers or social supports, the inability to remain fiscally solvent, and failure of their family or peers to accept them and their history (Opsal, 2012; Pogrebin, Stretesky, Walker & Opsal, 2015). From this lens, GST provides insight into how the society's social structure fosters and reinforces barriers that impede offender

success. This is captured within the need principle of RNR, where deficits in areas such as employment, education, and relationships can have a deleterious impact on an individual's ability to be crime free in society (Andrews & Bonta, 2010). General Strain theorists argue that these strains have a significant effect on recidivism and sustainability in the community (Agnew, 2002; Agnew, 2006) and explains why current reentry research is almost entirely focused on service provision to address these strains, and is less focused on the quality of delivery (Taxman, 2018). While important, many scholars would argue that the quality of service provision is of critical importance (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Taxman, 2018). Even still, many of the interventions examined in the literature are designed to alleviate strain such as employment assistance, life skill training to help individuals navigate their day-to-day activities, and substance abuse treatment. Community corrections programs are designed to alleviate the strain associated with a lack of housing, resources, treatment and support while creating an environment where individuals address barriers linked to their criminality (Wong, Bouchard, Gushue, & Lee, 2019).

While Strain theories can explain why individuals in certain socioeconomic classes or groups may engage in criminal activity, Differential Association and Social Learning theories provide additional insight into how behavior is learned.

### **Differential Association and Social Learning Theory**

Differential Association theory states that behavior is influenced by exposure to procriminal and anti-criminal individuals. This theory seeks to examine how exposure to different types of individuals, and the quality of their interactions, can influence attitudes, thoughts, and actions. For those who are exposed to primarily pro-criminal individuals, their behavior reflects those tendencies, while those who are exposed to primarily anti-criminal individuals display a

different behavioral pattern. Differential Association theory was created by sociologist Edwin Sutherland in 1947 who purports that the learning that occurs in intimate relationships or close groups can have a direct effect on one's attitudes, values, and beliefs, ultimately influencing an individual's behavior. Revised in 1966 by Burgess and Akers, Social Learning theory emerged as a blending of Sutherland's work with key components from B.F. Skinner's Operant Conditioning. Social Learning theory identifies how individual behavior is learned and reinforced by those around you. Therefore, criminal behavior can be understood as a set of motives, drives, rationalizations, and attitudes, reinforced by intimate relationships where criminal activity is supported (Sutherland, Cressey, & Luckenbill, 1995). These theories provide for the inclusion of two of the, "…best validated correlates of criminal conduct…antisocial attitudes and antisocial associates" (Andrews & Bonta, 2010, p. 121-122).

Learning through association occurs regardless of background and can persist across a lifetime or phase out as people age. When individuals learn definitions that are more favorable toward criminal attitudes, beliefs and actions, the scales are tipped and engagement in criminal activity is more likely to ensue. These types of behaviors are often reinforced through social or intrinsic reinforcers such as encouragement from peers or feelings of bravado. For some, any reaction positive or negative is better than no reaction. For example, consider an individual whose closest associate is involved in, and supportive of, criminal activity. In the absence of other influential, pro-social relationships, their pro-criminal relationship would likely lead an individual to engage in criminal activity.

In accordance with RNR theory, the presence of antisocial associates has consistently been shown as one of the strongest correlates to criminal behavior (Andrews& Bonta, 2010; Gendreau & Goggin, 1996). In addition, family/marital associations can also have great

influence on an individual's behavior (Andrews & Bonta, 2010). Social Learning theories help illuminate how relationships impact an individual's cognitive awareness and decision making.

As an extension of Sutherland's work, Social Learning theories can be used to further understand how people learn behavior (Bandura & Walters, 1977). Combining behavioral and cognitive theories, Social Learning states that learning is a cognitive process that occurs within a social context. It is not limited to one context but will occur in multiple contexts and can even include conflicting messages. Social learning can be used to explain how individuals learn criminal thinking and behavior patterns from others as well as how that behavior is maintained over time. It can also be used to explain how criminal thinking can be unlearned if that individual's social context changes. A prominent characteristic of pro-criminal individuals is distorted cognition, which can include self-justification, misinterpretation of social cues, projecting blame, deficient moral reasoning, and thoughts of dominance and entitlement (Andrews & Bonta, 2010; Beck, 1999; Walters & White, 1989). These characteristics are often supported by ones inner circle and, as a result, Social Learning theories were used as the basis for developing cognitive behavioral treatment interventions (also called CBT). CBT interventions are considered to be the preferred response to criminality and method for the reduction of risk (Andrews & Bonta, 2010; Landenberger & Lipsey, 2005; Nagin, Cullen, & Jonston, 2009; Wilson, Bouffard, & MacKenzie, 2005). RNR relies heavily on Differential Association and Social Learning theories in its understanding of risk factors that lead to future criminality. As such, three of the top four criminogenic needs, those factors that are most significantly correlated with future criminal behavior, are attitudes/thoughts/beliefs, antisocial peers, and antisocial personality characteristics (Andrews & Bonta, 2010).

What follows is an in-depth overview of the RNR theory which provides a foundation for my research questions. This theory provides the groundwork for how to address individual risk and need through the provision of interventions. While most research is focused on the provision of CBT interventions, this research will broaden our knowledge base by looking at the intensity of both clinical and nonclinical interventions that may or may not be cognitive behavioral in nature and includes an examination of case management meetings as a risk reduction strategy.

#### **Risk-Need-Responsivity**

Risk-Need-Responsivity (RNR) theory (Andrews & Bonta, 1998; Andrews & Bonta, 2010; Andrews et al., 1990; Gendreau & Andrews, 1990) is recognized as the principal rehabilitation theory (Polaschek, 2012). It is used almost exclusively in Canada, Britain, Europe, Australia, and New Zealand as the framework to prepare individuals for reentry into the community and increase the likelihood of a permanent exit out of the criminal justice system. Created in response to the 'nothing works' perspective originating from Martinson's (1974) report, RNR is holistic and interdisciplinary, integrating psychological, sociological and criminological theories into a cohesive framework. At the foundation of RNR is the assumption that no one theory can be used to explain individual differences in human behavior. The RNR framework for offender rehabilitation is the only empirically validated guide for criminal justice interventions that aims to help offenders get out and stay out of the justice system (Polaschek, 2012). Considerable research exists in the field of corrections suggesting that adherence to the RNR theory results in a reduction of risk and recidivism in individual offenders (Andrews et al., 1990; Andrews, Bonta & Wormith, 2006; Andrews & Dowden, 2006; Andrews & Bonta, 2010; Landenberger & Lipsey, 2005; Lipsey, 2009; Lipsey & Wilson, 1998; Lowenkamp, Latessa, & Holsinger, 2006; Newsome & Cullen, 2017; Serin & Lloyd, 2017). This study contributes to this

literature by further exploring how interventions within community-based corrections can impact overall recidivism outcomes.

The RNR theory has three core principles: risk, need, and responsivity (Andrews, Bonta, & Hoge, 1990). The risk principle states that validated risk assessment tools should be used to assess offenders for their level of risk to reoffend and that higher risk offenders should be targeted for more intensive interventions (Andrews et al., 1990; Andrews et al., 2010; Landenberger & Lipsey, 2005; Lipsey, 2009; Lipsey & Wilson, 1998; Lowenkamp et al., 2006). Additionally, providing lower risk offenders with intensive treatment interventions can increase their likelihood of recidivism (Andrews et al., 1990; Andrews et al., 2010; Lowenkamp & Latessa, 2004; Lowenkamp et al., 2006; Makarios et al., 2014; Newsome et al., 2017; Serin et al., 2017; Sperber et al., 2013). In a meta-analysis conducted by Andrews and Dowden (2006), researchers investigated how client risk classification affected treatment effectiveness. In 225 of the 374 studies examined, support for the risk principle was found. By demonstrating that an individual's risk level should be matched with the appropriate amount of intervention, this metaanalysis provided significant insight into how to supervise justice involved individuals and further supported that a one-size-fits-all approach to supervision does not suffice when working with this dynamic population. Lowenkamp et al. (2006) also found strong evidence to support the risk principle and its effect on recidivism. They concluded that higher risk individuals should be prioritized for treatment and provided with more intensive services to address their underlying needs that resulted in their incarceration. These studies helped practitioners consider how to align limited resources with burgeoning caseloads in the most effective manner.

Later, in a comprehensive study of 243 drug treatment programs, Prendergast, Pearson, Podus, Hamilton, and Greenwell (2013) found that residential drug-treatment interventions were

more effective on outcomes when treating higher-risk participants than those that treated lowerrisk participants. If you consider individuals with an identified criminogenic need of substance abuse, someone with lower risk scores in this area is likely at lower risk of relapse than their higher risk counterparts. As a result, individuals with high substance abuse risk scores should receive extra intervention in this area from treatment providers and have more to gain from engagement. Ensuring that individuals with high substance abuse scores are prioritized for interventions, resources and skill development during their reentry process can have profound benefit to overall outcomes (Andrews et al., 1990; Andrews & Bonta, 2010; Lipsey & Vanderbilt, 2018; Lowenkamp & Latessa, 2002; Lowenkamp et al., 2006; Makarios et al., 2014; Newsome & Cullen, 2017; Serin & Lloyd, 2017; Sperber et al., 2013). Additionally, more recent studies have demonstrated the interaction between an individual's level of risk to recidivate and the specific dosage of treatment provided on recidivism outcomes (Bourgon & Andrews, 2005; Lipsey & Vanderbilt, 2018; Makarios et al., 2014). Despite these insights into the risk principle, the literature has not yet distinguished what types of offenders benefit from specific treatment interventions and programming (Polaschek, 2011; Travers, Mann, & Hollin, 2014).

As previously discussed, the risk principle states that treatment and interventions are most effective when provided to the highest risk offenders (Andrews et al., 1990; Andrews & Bonta, 2010; Lipsey & Wilson, 1998). In fact, when intensive services are provided to low risk offenders the likelihood of recidivism can increase (Andrews et al., 1990; Lowenkamp & Latessa, 2002; Lowenkamp et al., 2006). The reasons for this become clear when you consider the differences between low and high-risk offenders. Individuals with more needs or higher risk factors are in need of more support services and intervention than individuals are who low risk. Low risk offenders have less criminogenic needs and therefore are more prosocial in nature.
High risk offenders have more criminogenic needs and therefore are less prosocial in nature. When low risk offenders are placed with higher risk offenders, or are put through interventions designed for higher risk offenders, iatrogenic impacts can occur as they could be influenced, manipulated, or convinced to engage in behavior that they would not have engaged in on their own. This requires that supervision agencies accurately identify an individual's risk level prior to engagement in interventions (Andrews & Bonta, 2010; Latessa, 2004; Lipsey & Vanderbilt, 2018; Lowenkamp & Latessa, 2002; Lowenkamp, et al., 2006; Makarios, et al., 2014; Newsome & Cullen, 2017; Serin &Lloyd, 2017; Sperber, et al., 2013).

To accurately identify an individual's risk for recidivism, an actuarial risk assessment is required. Standardized, actuarial assessments are objective tools that enhance decision making and provide a safeguard against discretionary bias. Four generations of risk assessment tools exist for use with correctional populations. First generation assessments use unstructured professional judgement to identify risk. While professional judgement is important, individuals tend to overemphasize risk and therefore using a more robust tool with objective measures to help make decisions has been shown in the literature to help practitioners make better decisions (Harris, 2006). Second generation risk assessments include primarily static factors, such as criminal history, that are linked to future criminal behavior. Third generation risk assessments identify components of both risk and need and include static (e.g., age at time of offense, conviction type) and dynamic (e.g., employment, support system) factors. Finally, fourth generation risk assessments build on past tools by incorporating responsivity factors such as mental health considerations (Andrews, Bonta, & Wormith, 2004; Andrews et al., 2006). The Level of Supervision Inventory (LSI) is an empirically validated, actuarial risk and needs assessment instrument that has been consistently found to predict recidivism across a variety of

correctional settings and offender populations (Andrews, Bonta, & Wormith, 2004; Gendreau, Goggin, & Smith, 2002; Labrecque, Smith, Lovins, & Latessa, 2014; Lowenkamp & Bechtel, 2007; Lowenkamp, Lovins, & Latessa, 2009). In a meta-analysis of 131 studies using the LSI to predict recidivism results supported the predictive accuracy of both the LSI composite and subscale scores (Gendreau & Goggin, 1996). Most of the subscales on the LSI represent dynamic factors that can change over time. Research also shows support for predictive validity with marginal groups such as females and ethnic minorities (Kroner & Mills, 2001; Olver, Stockdale, & Wormith, 2014; Simourd, 2004; Smith, Cullen & Latessa, 2009; Van Voorhis, Wright, Salasbury, & Bauman, 2010), and individuals of all age groups (Brennan & Chenane, 2016).

In the state of Colorado, adult offenders are assessed using the Level of Service Inventory (LSI or LSI-R), a third-generation assessment. Included in the current research as a control variable, the LSI is used by practitioners to tailor supervision, treatment and intervention strategies for individuals in community corrections. The LSI includes both static and dynamic risk factors. A recent study of two samples of justice involved individuals showed that static risk factors are most predictive of recidivism when compared to dynamic risk factors (Caudy, Durso, & Taxman, 2013). However, dynamic risk factors are critical for identifying effective risk reduction strategies. Interventions, such as treatment and case management meetings, can be shown to reduce risk, and ultimately recidivism, through reassessment. Ideally, if an intervention is effective, the dynamic items and subscale scores will be reduced over time. While this is a critical component of feedback to supervision agents about an individual's responsiveness to interventions, the inclusion of dynamic risk factors has been scrutinized. Critics argue that some individual items, such as whether an individual is currently in mental health treatment, have been found to have little or no direct impact on recidivism (Austin, Coleman, Peyton & Johnson,

2003; Baird, 2009; Flores, Travis, & Latessa, 2004; Gottfredson & Moriarty, 2006). Others found that while several dynamic risk factors were shown to be correlated to recidivism over a three year follow up period, the inclusion of dynamic risk factors did little to improve the overall predictive validity of the LSI-R (Caudy et al., 2013). Despite these studies, dynamic factors are important in the assessment of risk. Without the inclusion of dynamic factors, one's risk score would either remain static or increase and progress as a result of intervention and treatment would be unmeasurable. Static factors provide a snapshot of an individual's life up to that point and the future risk that certain circumstances, such as being arrested at a young age, can have on future reoffense. They neglect, however, to include many of the theoretically relevant factors to criminal conduct such as criminal peers and antisocial attitudes. The inclusion of dynamic factors allow practitioners to assess the impact of programming and adjust interventions as necessary (Andrews & Bonta, 2010). They also support the development of strengths and reinforce the change process for individuals on supervision.

Despite empirical support for the LSI, several scholars have criticized its use, suggesting that it does not account for the role that gender, racial, and ethnic differences play in the differing social, economic and political contexts of individuals. For instance, as it relates to gender, because the LSI is based on male-derived theories of crime, scholars argue that it is not gender responsive, that it over classifies women into higher risk categories, and does not take into account risk and need criteria most relevant to women (Bloom Owen, & Covington, 2003; Hannah-Moffat, 2009). Critics argue that the LSI fails to account for differences in a woman's path to crime, the complexities of their criminal justice experience, and how they manage the reentry space (Hannah-Moffat, 2009). "Research has empirically demonstrated differences in the motivational factors that lead to women's use of violence, involvement in drug and property

crimes, and patterns of substance abuse, as well as how factors such as drug use are connected in gender-specific ways to initial and continued prostitution and other crimes" (Hannah-Moffat, 2009, p. 212). Despite extensive critique of actuarial risk assessments used with the female offender population (Andrews, Guzzo, Raynor, Rowe, Rettinger, Brews, & Wormith, 2012; Bloom, 2000; Hannah-Moffat, 2009; Reisig, Holtfreter, & Morash, 2006), several scholars (Brusman-Lovins, Lowenkamp, Latessa & Smith, 2007; Lowenkamp, Holsinger, & Latessa, 2001; Ostermann & Herrschaft, 2013), found that the LSI-R accurately predicts recidivism among the female offender population. The LSI is used in much of the dosage literature to delineate the amount of dosage necessary to reduce recidivism among different risk groupings. For the purposes of this study, the LSI will be used as a control variable to better understand the impact of interventions on recidivism outcomes.

The need principle refers to identifying criminogenic factors that, when alleviated, can can reduce an individual's risk to recidivate (Andrews & Bonta, 2010; Gendreau et al., 1990). The RNR theory distinguishes between criminogenic and non-criminogenic needs and emphasizes the necessity to prioritize criminogenic factors interventions designed to reduce risk. Andrews and Bonta (1998) discussed eight primary criminogenic needs, which include: antisocial attitudes; history of antisocial behavior; antisocial peers; criminal personality makeup; substance abuse; family/marital disruption; education/employment; and leisure/recreation activities. Non-criminogenic needs are considered stability factors and include areas such as housing, finances, and mental health. Though each of these non-criminogenic needs are important to the programming of offenders, they are not strong predictors of future criminal behavior on their own (Andrews & Bonta, 2010).

The responsivity principle indicates that practitioners design and deliver services in a way that engages offenders in the behavior change process. Andrews and Bonta (2010) described two types of responsivity: general and specific. General responsivity refers to using cognitive behavioral therapy and techniques, while specific responsivity refers to individual characteristics that affect the change process. Specific responsivity needs include gender-specific issues, cultural barriers, and learning styles that should be accounted for in the interventions and programming provided. Currently, one of the primary ways to address responsivity is using cognitive behavioral therapy (CBT), which is recognized as an evidence-based practice for justice involved individuals (Andrews & Bonta, 2010). When implemented with fidelity, CBT interventions have been shown to produce reductions in recidivism (Landenberger & Lipsey, 2005; Lispey & Vanderbilt, 2007; Pearson, Lipton, Cleland, & Yee, 2002; Joy Tong & Farrington, 2006; Wilson et al., 2005).

A sociological critique of RNR. Bourdieu's (1983) theory of power dynamics can be used to provide a critique of RNR. While Bourdieu's (1983) assertions can be used to explain the challenges and deficits experienced by justice involved individuals, his theory would suggest that RNR is just another way for the dominant culture to govern the symbolic ideals of society, ultimately reproducing class and maintaining social hierarchies. Bourdieu (1983) was most interested in the reproduction of class and used a discussion of one's habitus and personal capital to understand how individuals navigate different social spaces in relation to others. For Bourdieu, the habitus represents "...a system of lasting, transposable dispositions which, integrating past experiences, functions at every moment as a matrix of perceptions, appreciations and actions" (Brubaker, 2004, p. 45). The habitus is "...both a system whereby people organize their own behavior and a system through which people perceive and appreciate the behavior of

others" (Allan, 2010, p. 178). In addition to individuals' personal beliefs and preferences that are embodied in one's habitus, individuals can also enact personal capital, whether it be economic, cultural, social, or symbolic, within given social spaces to facilitate certain outcomes. For Bourdieu (1983), capital is accumulated labor that is either in material or embodied form that has the "potential capacity to produce profits" (p. 241). Capital involves more than money and material objects, as it includes experience and training (cultural), acquaintances and networks (social), and legitimation (symbolic). Bourdieu (1983) argued that the most successful individuals in society are those who can enact their capital within specific social spaces.

In his theory of social action, Bourdieu (1983) discussed how individuals navigate different fields within their social space, enacting different forms of capital to get ahead. As an individual enters different fields, they bring with them their habitus, which combines all of their individual social, economic, and cultural resources (Bourdieu, 1983). When an individual is sent to prison, they are moved to a field where the required capital is significantly different than what works outside of prison. An incarcerated individual may benefit from physical toughness, antisocial connections with gangs or other groups, and a mindset of self preservation. Whereas someone who is interested in successful reentry from prison would likely not benefit from this same form of capital. In the reentry space, capital involving networks that can help to obtain employment and gain access to financial supports can play a significant role in whether that individual can stay out of prison. Bourdieu would argue that the complexities of human capital required to successfully navigate the reentry space are not sufficiently captured within the RNR theory.

Several other scholars have more directly challenged RNR as a comprehensive rehabilitation theory. Ward and Brown (2004) argued that RNR is a psychometric model focused

on offender profiles that ignores the relevance of contextual and ecological factors in offender behavior. They argue that criminogenic risk is more complex than a psychometric model can account for. As an example, RNR identifies education and employment as an area of criminogenic need and therefore is a target for intervention to reduce an individual's overall risk to recidivate. Challenges in this area can include a history of unstable employment, the lack of a high school diploma or GED, and issues getting along with coworkers. Critics argue that RNR does not account for the reasons why an individual might struggle in these areas. As such, an individual's risk related to education and employment would not adjust to account for someone who dropped out of school due to lack of motivation compared to another who did so out of necessity. Contextual and ecological factors impact individual risks and strengths and are important to consider when identifying interventions and next steps (Ward & Brown, 2004). Scholars argue the theoretical formulation, application, and scope of correctional interventions discussed in RNR are overly simplistic. RNR should be expanded to account for human nature (Ward & Stewart, 2003), consider the role of identity and agency (Maruna, 2001), and account for the challenges associated with trying to motivate people to change while focused on risk reduction (Mann, Webster, Schofield, & Marshall, 2004). Ultimately, critics argue that the theory lacks explanatory depth, especially as it relates to social structure and the underlying causes of identified criminogenic needs (Polaschek, 2012).

The primary implication of the RNR theory is that interventions should be focused on modifying or eliminating risk factors, which are identified as 'unacceptable' or problematic qualities or behaviors. To identify an individual's risk and need, one must first decide what is considered 'acceptable' and 'unacceptable' in society. In conjunction with the earlier critique framed by Bourdieu's work, critics of RNR argue that these qualities and behaviors are defined

by those in positions of power (Maruna, 2001), whereby ensuring that useful and critical social capital is maintained and the existing hierarchy in society is preserved. Drawing from the earlier example, if education and employment are drivers of risk and opportunities to mitigate risks are restricted by those in power, the RNR theory does little to breakdown existing structures that ensure that social capital remains available to those at the top of the hierarchy. From that lens, a program built on RNR will always fail to lower recidivism because it reinforces the dominant culture, reproduces social class, and maintains existing hierarchies that limit access to resources in society.

As a result, the targeted interventions theorized within the responsivity principle of RNR do not suffice to address the structural barriers associated with risk reduction. Consider, for example, an individual whose risk is a combination of employment challenges, negative peer influences, and addiction. RNR requires that you address each one of these areas directly through interventions like vocational training and job placement, exposure to positive peer influences by attending church or volunteering, and attending substance use classes. Sociological critics would argue that none of these interventions address underlying social and ecological issues such as chronic poverty, multigenerational culture and influence, and even more specific structural challenges such as having to travel three hours round trip to attend treatment classes by bus (Maruna, 2001; Opsal, 2012; Pogrebin et al., 2015). These examples represent just a small portion of the challenges experienced by justice involved individuals (Clear et al., 2001; DeVuono et al., 2015; Morenoff & Harding, 2014; Pleggenkuhle et al., 2016) that are not adequately addressed identified or explained using the RNR theory.

The RNR theory has also been criticized by scholars for being male-centric, failing to consider the individual and unique needs of women offenders (Blanchette & Brown, 2006;

Bloom, Owen, & Covington, 2005; Herrschaft, Veysey, Tubman-Carbone, & Christian, 2009). Andrews and Bonta (2010) argued that RNR's explanatory power is equally relevant for male and female offenders; however, many factors most prevalent for women are not included in the theory such as parenting stress, trauma, and mental health conditions (Blanchette & Brown, 2006; Opsal, 2012; Rettinger & Andrews, 2010; Van Voorhis et al., 2010). Blanchette and Brown (2006) suggest that research on gender-informed approaches for justice involved women are limited. The first meta-analysis on the effect of correctional programming on women was conducted by Dowden and Andrews (1999), who concluded that the RNR principles are equally effective for justice involved men and women; however, the meta-analysis included only 16 studies. A second meta-analysis of the effects of correctional practices on women showed that substance abuse treatment programming did reduce recidivism for women when compared to those who did not receive such programming (Tripodi, Bledsoe, Kim, & Bender, 2011). This meta-analysis was also limited by its inclusion of only six studies where recidivism outcomes were examined. In a more recent meta-analysis that examined the effect of programming for women and the extent to which gender responsiveness affected recidivism outcomes, positive results were found (Gobeil, Blanchette, & Steward, 2016). In 37 studies reviewed, positive effects were found with women who received interventions and particularly when those interventions were focused primarily on substance use. Gobeil et al. (2016) also found that "Programs that were fully gender informed had non-significantly smaller effects than those that were partially or not gender informed" (p. 308). Despite promising results, theories, assessments and interventions that are not designed to adequately address larger biological, social and cultural inequities that contribute to risk and recidivism are likely to fall short when long term outcomes are desired.

In response to these critiques, a recent appraisal by Polaschek (2012) demonstrated how RNR is a multifaceted rehabilitation framework that can be used to derive treatment and intervention programming. Polaschek (2012) argued that it is a hybrid theory that blends together etiological, normative, and practice assumptions. As such, Polaschek (2012) argues that the RNR theory has strong explanatory power, considerable empirical support, and has practical utility for correctional practitioners. Despite its identified weaknesses, Polaschek (2012) concluded that RNR remains the "premier rehabilitative theory" for justice involved populations (p. 12) and is therefore used as the foundation of this research. In the next section, I will review the dosage literature that was used to frame the research questions in this study.

### **Review of the Dosage Literature**

Reducing recidivism is actualized through a better understanding and conceptualization of intervention dosage (Lipsey, Landengerber, & Wilson, 2007). Considerable efforts have been made to determine what type of intervention is needed to reduce recidivism, in what amount, and in what manner. Early research on the efficacy of correctional programming found that high risk offenders should spend 40-70% of their time in highly structured activities and programming for three to nine months prior to release (Gendreau et al., 1995; Palmer, 1995; Higgins & Silverman, 1999). The most effective types of interventions included learning and skill building experiences (e.g., role-playing, etc.) aimed at addressing criminogenic needs using a cognitive behavioral approach (Andrews et al., 1990). Cognitive behavioral treatment (CBT) assumes that mental deficits and distortions are learned and therefore can be unlearned or modified to the extent that one can reduce future criminal behavior. CBT is recognized by Andrews and Bonta (2010) as the primary way to address responsivity issues with justice involved individuals. Most recently, in a meta-analysis that reviewed 801 research studies, CBT based interventions were shown to have up to a 26% decrease in recidivism rates as compared to punishment-based interventions which were shown to increase recidivism rates by 8% (Lipsey & Vanderbilt, 2018). As will be discussed below, current literature on dosage focused on the amount of CBT programming delivered to offenders and therefore less is known about appropriate dosage of other types of interventions. This study will expand on our knowledge in this area by looking at intervention types (which are inclusive of both CBT and non-CBT modalities) and the impact of case management meetings on recidivism outcomes.

### **Community Corrections (Halfway Houses)**

During the "halfway house movement" in the 1950s, advocates endorsed their use and growth as an alternative to prison (Hartmann, Friday & Minor, 1994; Latessa & Travis, 1991; Ostermann, 2009). At the time, halfway house programs were acknowledged as effective strategies for reentry to the community, reducing recidivism, addressing prison overcrowding, and being more cost effective (Allen, Carlson, Parks & Seiter, 1978). In 1978, a meta-analysis of 35 halfway houses showed positive effects in only 11 studies (Allen et al.). In 1982, a second study showed that while significantly more cost effective than prison, which remains a primary argument for their existence, halfway houses were no more effective than community-based parole supervision (Latessa & Allen). A study by Latessa and Travis (1991) demonstrated that halfway house participants received considerably more substance abuse treatment and other interventions while in residential halfway houses than alternative community-based supervision strategies. At the time, individuals who successfully completed halfway house programs were shown to experience reductions in recidivism (Hartmann et al., 1994).

When recidivism rates increased dramatically in 2001 the federal government dedicated a significant amount of resources to address this issue across the United States (Wheeler &

Patterson, 2008). Due to many former inmates' lack of resources, a variety of reentry programs, to include community corrections (also known as halfway houses), were formed to provide former prisoners with a structured transition plan that is oriented toward stabilization and treatment. Evaluations later found that vocational training, work release programs, drug treatment services, halfway house programs, and pre-release programs reduced recidivism rates and therefore funding was expanded (Wheeler & Patterson, 2008). According to research by Wheeler and Patterson (2008), these programs were successful because they addressed primary criminogenic and responsivity needs by offering treatment, occupational training and placement, educational programs, legal assistance, and housing aid. Further, benefits of halfway house programs included improvement of occupational skills and decreases in substance abuse, parole violations, and severe criminal behaviors (Lowenkamp & Latessa, 2005).

However, studies on overall program effectiveness lacked academic rigor and evaluations show mixed results causing support in such programs to wax and wane over time. In 2002, a study by Marion found that halfway houses and community-based correctional facilities had no effect on the outcomes of released inmates. At the same time, a study by Lowenkamp and Latessa (2002) found strong evidence in support of the use of halfway houses, with moderate and high-risk offenders showing statistically significant reductions in recidivism rates. In 2005, a similar study of 38 halfway houses found that high risk offenders who successfully completed the program had lower recidivism rates than their comparison group; however, low risk offenders had much higher rates of recidivism than their comparison group (Wilson et al.). Given the mixed results of these studies, scholars argued that further and more sophisticated research was necessary to understand the true effectiveness of halfway houses and their programming (Lowenkamp & Latessa, 2002; Lowenkamp & Latessa, 2004; Seiter & Kadela, 2003). Most

recently, Wong, Bouchard, Gushue and Lee (2019) conducted a meta-analysis of nine independent halfway houses and concluded that these programs are an effective correctional strategy. With a statistically significant mean effect size of 0.236, this study found that individuals who transitioned through a halfway house, as opposed to other forms of release from prison, were significantly less likely to recidivate. Wong et al. (2019) did not, however, look at the impact of specific halfway house programming on participants which is why the current study is so timely and important.

### **Substance Abuse Interventions**

Substance abuse interventions are a common condition of an individual's supervision while in community corrections in Colorado. In 1991, Colorado passed a law stating that all adult felons in the criminal justice system had to be assessed for their substance abuse treatment needs, and subsequently placed in the appropriate level of treatment<sup>2</sup>. As a result, substance abuse treatment is widespread in the state (Division of Criminal Justice, 2012). Several studies demonstrate that recidivism is reduced when individuals receive substance use treatment, remain in a program longer, or graduate from community-based residential substance use treatment programs (Pelissier, Wallace, O'Neil, Gaes, Camp, Rhodes, & Saylor, 2001; Seiter & Kadela, 2003). Unfortunately, this area of research also has mixed results. For example, in a study that examined 1,569 individuals on community supervision, those who received residential substance use treatment were able to maintain in the community for longer without re-arrest and were 73% less likely to recidivate compared with those who did not (Pelissier et al., 2001). The authors contend that the cognitive behavioral approach to programming had a statistically significant

<sup>&</sup>lt;sup>2</sup> Colorado House Bill 1991-1173.

impact on outcomes however clearly state that they were unable to identify which specific components of the treatment interventions were most impactful. A study of drug court participants in Florida, Krebs, Strom, Koetse, and Lattimore (2009) found that individuals who received residential treatment were no more likely to recidivate than those who did not. Individuals who were treated in non-residential settings were found to be less likely to recidivate than those who remained untreated and took longer to recidivate when compared to those treated residentially. Considering that non-residential treatment settings are less costly and could be considered less disruptive to other areas of an individual's life, findings such as these need further examination to identify who is best suited to be treated in more intensive, and expensive, settings. More recently, a comparison study of 2,811 individuals who received residential substance abuse treatment within halfway houses in New Jersey found that: (1) individuals who received substance use treatment were less likely to recidivate and (2) those who stayed in the program for three months or longer significantly decreased their odds of returning to prison (Hsieh & Hamilton, 2016). This study demonstrated support for the risk principle in that those with moderate or high-risk levels had greater odds of returning to prison (Hsieh & Hamilton, 2016).

### **Case Management Meetings**

Despite being a core correctional practice, to date, no dosage study has included case management sessions because they do not typically involve cognitive behavioral interventions (Burrell & Rhine, 2013; Sperber et al., 2013). This is a significant contribution of the current study. Case management meetings are a staple within the community corrections system that is established in Colorado. Required by state standards and enforced by the Department of Public Safety, Division of Criminal Justice (DCJ), community corrections programs must engage in case management meetings with clients on a weekly basis throughout their stay. The literature suggests that case management has been shown to have favorable, yet modest, effects on drug use and recidivism. Effects are more apparent when offenders had greater contact with their case manager, when they had increased access to drug abuse interventions, and spent more time in treatment (Longshore, Turner & Fain, 2005). Even still, case management has not been considered as dosage in any dosage study (Lipsey, 1999; Bourgon & Armstrong, 2005; Makarios et al., 2014; Sperber et al., 2013).

Since case management meetings are required by DCJ and therefore happen with regularity and certainty over someone's stay in the program, they make up a considerable amount of time and resources within community corrections in Colorado. Since fiscal year 2011, Colorado has made great efforts to incorporate cognitive behavioral techniques that address specific criminogenic needs into these meetings through the development of the progression matrix. Future studies should look at the impact that these meetings have on long term outcomes and how these outcomes are impacted by the norms, expectations, and standards of society. For now, the inclusion of case management meetings in this study provides an initial, and promising, understanding of the impact of case management meetings on one- and two-year recidivism outcomes.

#### **Cognitive Behavioral Treatment and Interventions**

Over the last decade, several studies have attempted to refine what, specifically, is most effective when addressing the risk principle and dosage. CBT programs emphasize individual accountability and teach individuals to understand the thinking processes and choices that immediately precede criminal behavior. Several meta analyses have been conducted and support CBT as a particularly effective intervention for reducing recidivism in juvenile and adult

offenders (Lipsey et al., 2007; Pearson et al., 2002; Wilson et al., 2005). In a study of more than 13,000 offenders in 97 programs in Ohio, Lowenkamp et al. (2006) found that programs were more effective when they targeted high risk cases by providing increased levels of CBT and for a longer duration. This is yet another study that supports the RNR theory and provides information targeted to practitioners on how to supervise individuals on their caseloads. In a meta-analysis of over 40 cognitive behavioral programs in the United States, Canada, the United Kingdom, and New Zealand between 1980 and 2004, Lipsey, Landenberger, and Wilson (2007) found programs that target moderate and high-risk offenders for intervention services had greater success. The implementation quality of CBT programming was also found to be strongly related to the program effect size. In addition, increases in the amount of sessions per week and total number of treatment hours, not the overall duration of treatment, increased the effect size. These findings suggest that by targeting moderate and high-risk individuals for interventions you can allocate scarce resources to the individuals who need it and will receive the most long-term benefit from it.

Pearson et al. (2002) found that cognitive behavioral programs were more effective at reducing recidivism than strictly behavioral ones due to their focus on changing how an individual's attitudes, thoughts and beliefs are connected to their behavior. Wilson et al. (2005) found that CBT was highly effective with recidivism reductions of 20-30% compared to control groups. Lipsey et al. (2007) conducted a meta-analysis on 40 CBT programs with a sample that included both juveniles and adults who were under supervision on probation, parole, or in prison. Lipsey et al. (2007) found that well-implemented CBT interventions can reduce recidivism by as much as 30% with moderate to high risk offenders. Kroner and Takahashi (2012) found that the number of CBT sessions received by individuals was a statistically significant predictor of

recidivism, where offenders who received more sessions had lower rates of recidivism. Although this research is helpful, it does not provide insight into how non-CBT interventions impact outcomes. This study seeks to expand on our understanding of work works by including other types of interventions that are not strictly cognitive behavioral.

#### **Dosage Studies**

There are four studies that provide more targeted and specific details related to intervention dosage. First, Lipsey (1999) conducted a meta-analysis of over 200 studies on correctional treatment for juvenile offenders and found that program duration (six months or more) influenced effect sizes in both institutional and community-based programs. He found that at least 100 hours of programming was needed to reduce recidivism, and that effective and longlasting implementation was required for recidivism reduction.

Second, Bourgon and Armstrong (2005) examined intervention dosage and one year recidivism with 620 incarcerated male offenders in Ontario, Canada. The sample for this study included all new offenders at a residential correctional facility between 1997 and 1999. These offenders were assessed as needing treatment and had at least one year at risk after release from the facility. Participants in this study were placed into one of three treatment groups by level of risk<sup>3</sup> and criminogenic need. Cognitive-behavioral intervention programs were designed to address identified criminogenic needs and change individual attitudes, thoughts and beliefs about criminal activity. The study found that moderate risk offenders with few needs and who had 100 hours of intervention dosage experienced reductions in recidivism. However, high risk offenders with high needs required more intervention dosage hours to experience reductions in recidivism.

<sup>&</sup>lt;sup>3</sup> To assess risk level, Bourgon and Armonstrong (2005) used the Level of Supervision Inventory – Ontario Revised (LSI-OR). This assessment differs from the LSI used in the current study in that it does not have the financial, accommodation, or emotional/personal scales. Instead, the LSI-OR includes a scale to assess for antisocial patterns.

"The results suggest a simple linear relationship between dosage and effectiveness, with the more treatment the average offender receives, the greater the reduction in recidivism" (Bourgon et al., 2005, p. 21).

Sperber et al. (2013) used a sample of 689 adult male offenders who were successfully discharged from a secure, community-based, residential correctional facility between 2006 and 2009. To examine the relationship between intervention dosage and recidivism outcomes, this study evaluated a four month, cognitive-behavioral intervention program designed to address identified criminogenic needs. Offenders were broken into categories which included a lowdosage group receiving 0-99 hours, a medium-dosage group receiving 100-199 hours, and highdosage group receiving 200 or more hours. Sperber et al. (2013) found increases in dosage reduced recidivism at all risk levels. Those who received the highest levels of dosage experienced the greatest reductions in recidivism. The results also supported the provision of 200 hours of dosage for the highest risk cases. Of particular importance, Sperber et al. (2013) found that increasing the amount of dosage for low risk offenders from minimal (less than 100 hours) to moderate (100-199 hours) produced a 13% reduction in recidivism. This study did not find support for the interaction between dosage and risk which conflicts with the risk principle suggesting that low risk offenders should receive less dosage. When dosage for high risk offenders was increased from medium (100-199 hours) to high (200+ hours), Sperber et al. (2013) observed a 24% reduction in recidivism.

Finally, Makarios et al., (2014) examined the relationship between cognitive behavioral intervention dosage designed to address criminogenic needs and recidivism. In a sample of 900 individuals who successfully discharged from a secure, community-based, residential correctional setting, this study examined recidivism outcomes after successful completion of a

four month program. This study replicates the work of Sperber et al. (2013); however, examines dosage in 50-hour increments. Unlike their prior study, Makarios et al. (2014) found that the relationship between intervention dosage and recidivism was moderated by risk. "Furthermore, in low-medium and medium risk cases, increasing dosage eventually resulted in increases in the rates of recidivism, suggesting a parabolic relationship between treatment dosage and recidivism" (Makarios et al., 2014, p. 345). The largest changes in recidivism varied by dosage hours and risk level. Most interestingly, increasing dosage to very high levels (300 hours or more), even for higher risk cases, produced limited reductions in recidivism.

These four critical studies provide guidance on how to intervene with individuals with different risk levels and criminogenic needs. This information is critical to practitioners who have large caseloads and scarce resources. By identifying who benefits the most from interventions we can learn how to allocate our resources and get the best outcomes for individuals most in need of intervention. This study seeks to contribute to this literature by analyzing the impact of both clinical (CBT) and nonclinical intervention types, clinical (CBT) dosage and case management sessions on outcomes with individuals who are in a community-based setting.

### **Summary**

Theoretical contributions to the understanding of why individuals engage in criminal behavior are abundant and important to establishing a baseline understanding for why people think and act the way they do. However, our understanding of what can be done to reduce procriminal behavior requires further investigation to account for the numerous complexities that comprise each individual and circumstance. The most recent dosage literature focuses on the impact of cognitive behavioral interventions in secure settings (Makarios et al., 2014; Sperber et

al., 2013) and remains unclear about the specific amount of dosage necessary to reduce recidivism. The two most recent dosage studies report conflicting results related to the risk principle: where Sperber et al. (2013) found no support for the interaction between risk level and dosage, results from Makarios et al. (2014) support more dosage for higher risk individuals. Interestingly, findings indicate that individuals with lower risk do not always benefit from a high level of intervention, and in fact could be negatively impacted. This study looks to expand what we know about dosage by taking a more holistic approach to the provision of interventions, which may or may not be clinical, cognitive behavioral, or provided in secure settings. This expansion of our understanding of dosage, and therefore responsivity, provides a deeper understanding of what works in community-based, correctional settings. Ensuring that individuals receive the most appropriate type, dosage and intensity of interventions will have beneficial results beyond the individual, to include families, communities and society at large.

### CHAPTER 3—METHODOLOGICAL DESIGN

### Introduction

This quantitative study assesses the impact of the intensity of nonclinical and clinical intervention types, clinical dosage, and case management meetings on recidivism at one- and two-years post completion of the residential phase of two community corrections programs in Colorado. This research contributes to the growing literature on the impact of specific correctional interventions on recidivism. Examination of intervention intensity, defined as the number of different types of interventions an individual received during their residential stay, and case management meetings result in a significant contribution to our understanding of what works to reduce recidivism. Prior research utilizes dosage hours as a key predictor of recidivism which allows for comparison with the dosage results of this study (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al, 2013). Understanding the role that these variables play in explaining recidivism will help practitioners match clients with interventions in the most appropriate ways.

The most recent dosage research is focused on individuals who received interventions in secure settings (Makarios, et al., 2014; Sperber, et al., 2013), meaning they entered a program and did not leave until the full dosage amount was administered with considerable restrictions to community access. The current study expands our knowledge by analyzing a sample of individuals who resided in an open setting, meaning they had access to the community in a multitude of ways and were required to build their lives (e.g., work, bills, family) while simultaneously receiving interventions to address different areas of criminogenic need. By analyzing the intensity of interventions to include both clinical and nonclinical options, in an

open setting, where clients are in the community and have concurrent responsibilities, this research broadens our understanding of service provision in real world settings. In other words, this study examines what works when delivering interventions to individuals who have regular responsibilities and access to daily stressors and triggers that can lead to recidivism. The following section describes the research design and methods to address the research questions, the hypotheses, the description of the sample, operationalization of dependent and independent variables, and the analysis plan. But first, an overview of community corrections in Colorado is necessary to set the stage for the study.

### Halfway Houses and Community Corrections in Colorado

In Colorado, Community Corrections (CC) is synonymous for halfway house. CC programs are government funded and operated as either private for-profit, private non-profit, or government agencies and provide an array of transitional services for justice involved populations (Division of Criminal Justice [DCJ], 2012). There is no standardized definition of halfway houses; however, they are most typically community-based programs for individuals under correctional supervision that provide housing, daily supervision, and assistance with transitional services (Wong et al., 2019). In Colorado, individuals are required to live at the CC program, work, pay rent, and participate interventions that are offered or required to address criminogenic and non-criminogenic needs. In addition to supervising an individual's daily life to ensure public safety, program staff are tasked with promoting behavior change that supports a non-criminal lifestyle. They do this by assessing an individual's risk and needs, referring them to or administering appropriate interventions, and providing case management services. Staff may also provide or refer individuals to employment or education services, life skills classes, and provide organized leisure and recreation activities (DCJ, 2012).

There are two primary offender types in community corrections: diversion and transition (DCJ, 2012). Diversion offenders are sentenced to CC for felony offenses by a judge in lieu of prison. Their CC sentence consists of two phases: residential and nonresidential. During the residential portion, CC offenders must live at the program but have open access to the community for work, programming, and other activities. Upon completion of the residential portion of the program, diversion offenders move to the non-residential phase of their sentence where they live on their own but report to CC staff, similar to probation and parole. Transition offenders come to CC after doing time in prison as a way of transitioning back to the community. Upon completion of the residential portion of the program, transition clients move on to parole, where they live in the community and report to their parole officer (DCJ, 2012).

In addition to diversion and transition clients, it is also possible that an individual who is on probation or parole be placed in a CC program temporarily. Most often this occurs because the individual becomes unstable and is placed in the CC as a condition of their current probation or parole supervision. Instability is most likely related to housing (e.g., can't live with family member anymore) or treatment needs (e.g., relapse) and therefore once the individual is considered stable they are able to leave the program and go back to regular supervision. These individuals are called condition of probation or condition of parole clients and are typically in the program for a short period of time. Although within any given CC program, it is possible to have a combination of diversion, transition, condition of probation, and condition of parole clients, the number of conditional placements are significantly lower than diversion and transition (DCJ, 2012). Therefore, for the purposes of this study, data was analyzed using the two most prominent client types: Diversion and Transition. Within CC in Colorado, there are also individuals who are placed in specialized treatment programs for chronic conditions such as mental health and substance use, or offense specific needs (e.g., sexual offenders). While all individuals in CC are assessed for outpatient treatment needs in these areas, some clients require inpatient level treatment and therefore go to a specialized treatment program. The requirements of specialized treatment programs are unique to the programming offered and, once complete, clients may transfer to regular CC programming, probation or parole. Due to the complexity and uniqueness of these programs, clients in specialized treatment programs were not included in this study.

The DCJ, Office of Community Corrections reported that 5,721 individuals were discharged from community corrections in fiscal year 2012, which was an increase from 5,681 in fiscal year 2011 (DCJ, 2012). According to their annual report, "The profile of the 'typical' residential community corrections offender in Colorado has been consistent for many years; Single, Caucasian males with a high school diploma or GED" (DCJ, 2012, p. 8). As the population of CC in Colorado has grown over time, so has the average LSI risk score of the clients represented within these programs. The DCJ annual report highlights an average Level of Supervision Inventory (LSI<sup>4</sup>) risk score of 28.82 in fiscal year 2011 and 29.11 in fiscal year 2012 (2012, p. 22). The data presented in the DCJ report also suggest that as an individual's risk level increases, their successful completion rates decrease, while the rates of escape or unsuccessful discharge increase (DCJ, 2012). As a result, the need to dial into 'what works' in CC is more critical than ever before. By understanding what interventions are most effective, and in what

<sup>&</sup>lt;sup>4</sup> The Level of Supervision Inventory (LSI) is a dynamic risk assessment that assesses overall risk to recidivate, criminogenic need areas, and responsivity to interventions. There are 54 items on the LSI and the maximum score is a 53.

amounts, services can be tailored to better address the needs of the population while working to reduce recidivism outcomes.

# **Research Questions and Hypotheses**

The following three research questions and three associated hypotheses guide this dissertation:

Research Question 1: To what degree was intervention *intensity* (defined as the total number of different types of clinical and nonclinical interventions) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

- H<sub>0</sub>: There is no significant relationship between the *intensity* of intervention and one- and two-year recidivism outcomes.
- H<sub>a</sub>: Those who received higher *intensity* of interventions had a lower likelihood of recidivism compared to those who did not.

Research Question 2: To what degree was the *dosage* of clinical intervention (defined as hours of clinical intervention<sup>5</sup>) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

- H<sub>0</sub>: There is no significant relationship between the amount of the *dosage* of clinical intervention and one- and two-year recidivism outcomes.
- H<sub>a</sub>: The higher the amount of *dosage* of clinical intervention is significantly related to a lower likelihood of recidivism.

<sup>&</sup>lt;sup>5</sup> Data on nonclinical intervention hours was not available during the study timeframe in a consistent way across client files and thus, could not be reliably examined as a separate variable.

Research Question 3: To what degree was the *amount of case management* meetings provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

- H<sub>0</sub>: There is no significant relationship between the *amount of case management* meetings and one- and two-year recidivism outcomes.
- H<sub>a</sub>: Higher *amounts of case management* meetings are significantly related to a lower likelihood of recidivism.

# **Research Design**

#### **Research Overview**

This research consisted of four phases of data management and statistical analyses that will be briefly described here and then elaborated upon throughout the chapter. The first phase involved gaining access to data, both through the state and at individual programs, as well as pursuing Internal Review Board permission to conduct this study (see Appendix A for IRB approval letter). The DCJ functions as the oversight agency for CC programs in the state of Colorado and publishes numerous reports about the characteristics of the population and recidivism outcomes post program completion. At the time this study began in 2015, the most recent recidivism report data was requested and received from the DCJ. Next, 27 community corrections programs were contacted, and 16 programs agreed to participate in this study. As described in the selection of programs and sample section below, not all 16 sites were suitable for the study resulting in a final sample of two programs.

Phase two of the research involved site selection, data collection, and management. The DCJ provided demographic information for clients along with binary (yes/no) recidivism data. Next, over a period of six months, detailed intervention and case management data was collected

from two CC programs through the review of both paper and electronic files. Data obtained from DCJ was then combined with case specific intervention and case management data into a single data set appropriate for analysis.

Phase three employed basic statistical analyses to investigate simple relationships among variables. Exploratory and descriptive analyses using univariate and bivariate statistics were used to inform more complex multivariate modeling for phase four.

In phase four, hypothesis testing was conducted using stepwise logistic regression, the appropriate technique for a binary dependent variable. The data were managed using Microsoft Excel and IBM's Statistical Package for the Social Sciences (SPSS).

**Data sources.** Data for this study came from two sources. First, the Division of Criminal Justice, Office of Community Corrections provided a dataset with all offenders who discharged from a community corrections (CC) facility between July 1, 2008 and December 31, 2012. These data were part of a larger recidivism study conducted by the state that tracked new misdemeanor or felony filings within 12 months of successful termination from residential CC supervision.<sup>6</sup> This dataset represented the most recently available and comprehensive recidivism data on CC clients in Colorado at the time the study began. Fortunately, it included 24 months of time at risk for the study's sample which included individuals who successfully discharged from CC in calendar year 2011.

The original dataset was derived from the Community Corrections Information and Billing (CCIB) system, a data repository that includes all programmatic variables entered by CC program staff. The original dataset contained information on all offender types including those

<sup>&</sup>lt;sup>6</sup> Recidivism data includes new misdemeanor and felony filings in county or district court across 22 judicial districts with the exception of Denver County Court filings, which were excluded from the analysis due to the information being unavailable.

on non-residential status, in specialized treatment programs, and placed as a condition of either probation or parole (N=31,670). The variables contained within CCIB are specific to each individual offender and their stay in a CC program. Variables include items such as demographics, LSI risk assessment scores, prior criminal history, termination reasons, etc. Case management staff enter the data into CCIB at time of discharge and therefore individuals who were in a CC program but had not yet discharged from the program at the end of calendar year 2011 were not included in the original dataset. Despite the inclusion of all discharge types in the larger dataset, only individuals who successfully discharged from CC were included in DCJ's recidivism research and thus, this study only examined successful program terminations.

The independent variable data needed for this study (i.e., intensity of nonclinical and clinical intervention types, clinical dosage, and case management meetings) required a second data source because this data did not exist in the CCIB during this time frame. To access this critical information required permission from individual community corrections (CC) programs, independent review, and hand coding of individual client case files.

Selection of programs and sample. All 27<sup>7</sup> residential (non-specialized) CC programs in the state of Colorado were contacted to participate in this study. Sixteen programs granted access to client data, one denied access, and ten did not respond (See Appendix B for breakdown of program response). Due to restricted resources for this project, it was not possible to review individual, paper, and electronic files across 16 sites to include all successfully discharged cases in the dataset and therefore, I used a purposive sampling strategy to select sites for the study.

<sup>&</sup>lt;sup>7</sup> These include only residential, non-specialized programs that were open in CY2012 and remain open today.

This strategy is described below, with the goal of gathering and analyzing data on a desired sample of 150<sup>8</sup> cases.<sup>9</sup>

The approach began with the 16 community corrections programs that agreed to participate in the study. Three criteria were used to narrow the sampling frame. First, only offenders who successfully discharged from a program in calendar year 2011, and therefore had at least one year at risk in the community, were included in the sample. Analysis of the sample revealed that all individuals in the final sample had two years at risk post program completion. Next, to create data comparison opportunities across locations, programs that used the same data management system were prioritized for selection. In 2011, most programs in Colorado used one of three primary data management systems: Etrac, SecurManage, or CorrectTech. Since most programs were using E-Trac, only those programs (n=14) were retained at this stage of the selection process. To have at least partial electronic access to client files during data collection, only those that continued to use E-Trac during the study time frame (n=5) were retained. This left five programs who continued to use Etrac during the data collection process: Advantage Treatment Center, Mesa County Community Corrections, ICCS Jefferson, ICCS Weld and ICCS West.

Next, these five programs were contacted to engage in data collection test sessions to demonstrate their ability to produce reliable and complete data. At the conclusion of the data collection testing phase, three of the remaining five programs were excluded from the sample for missing or insufficient data. Specifically, ICCS West housed only female offenders and had only

<sup>&</sup>lt;sup>8</sup> This study set out to have a sample of 150. Upon completion of the data collection phase, there were 147 cases in the final sample.

<sup>&</sup>lt;sup>9</sup> A study by Vittinghoff and McCulloch (2006) recommends that for binary logistic regression, five to ten participants per variable should be used. The largest possible regression model may have up to 10 variables. This model would necessitate 50 to 100 participants and therefore a sample of 147 exceeds the minimum threshold.

five successful completion cases in the dataset and therefore was excluded. ICCS Jefferson and ICCS Weld were excluded after several data collection test sessions where it was determined that the independent variables were not systematically tracked or available within the paper and electronic case files. During the selection process it was also learned that only the programs that provided interventions directly in the program<sup>10</sup> to their offender population would have the necessary data records to support this study. Intervention data was more clearly documented in files at programs where direct billing for services occurred. This left two programs in the sample: Advantage Treatment Center and Mesa County Community Corrections.

As shown in Table 1, after the two programs were selected, the DCJ data set was refined to only include: (1) offenders from these two programs and (2) successful discharges in calendar Table 1

Facility	Rural/Urban	Male (N)	Female (N)	
Mesa County Community Corrections	Urban	109	18	
Advantage Treatment Center	Rural	37	N/A	
Subtotal		146	18	
Excluded Cases		1511	2 <sup>12</sup>	
Total		147		

# Total Clients by Facility

*Note*. N/A = not available.

<sup>&</sup>lt;sup>10</sup> It was discovered during the pilot data collection phase that the two CC programs who contracted with outside providers to offer substance use and mental health services were reliant on those providers to share information related to attendance and participation. As a result, the data available on an individual's interventions was not always available or complete.

<sup>&</sup>lt;sup>11</sup> Fifteen male cases had to be removed from the sample due to missing information and therefore the final sample included a total of 131 male cases.

<sup>&</sup>lt;sup>12</sup> Two female cases had to be removed from the sample due to missing information and therefore the final sample included a total of 16 female cases.

year 2011. Ultimately, the original sample for this study included an initial total sample of 164 offenders who successfully discharged from ATC (n=37) and MCCC (n=127). After data collection was complete, as a result of missing or unavailable data, 17 cases were removed resulting in a final sample which included 147 cases.

Advantage Treatment Center (ATC) is a CC program located in the northeastern part of Colorado. Considered rural, this facility had an average daily population of 58 individuals in fiscal year 2012 (Division of Criminal Justice, 2012). While nonresidential services have been offered through ATC since 1998, the residential CC program opened in 2005. In addition to residential CC services, ATC provides a variety of clinical and nonclinical interventions on site to its all-male population. Conversely, Mesa County Community Corrections (MCCC) opened in 1971 and was the first community corrections program in Colorado. It is a larger, urban program on the western slope of Colorado and had an average daily residential population of 247 in fiscal year 2012 (Division of Criminal Justice, 2012). MCCC offers services to both male and female residents and, similar to ATC, provides a number of onsite clinical and nonclinical interventions to their clientele.

Figure 1 below, provides a chart to illustrate how the condensed dataset for this study was derived. The data are restricted to offenders who successfully discharged from residential community corrections at ATC and MCCC in calendar year 2011, which ensured that individuals had two years at risk and represented the most recent recidivism data available at the time the data was requested from the Division of Criminal Justice. After data collection was concluded, cases with missing or insufficient data were excluded, the resulting dataset included 147 cases.

DCJ/OCC FY09-CY12 Recidivism Dataset (N = 31,670)Removed cases from specialized treatment programs (N = 19,799)Removed duplicates (N = 16,431)Limited dataset to include the original 16 participating programs (N = 7,626)Limited dataset to include successful discharges in CY2011 (N = 1,900)Limited dataset to include programs with Etrac (N = 394)Limited dataset to include only ATC and MCCC in CY2011 (N = 164)

Limited dataset to include cases with all necessary data (N = 147)

Figure 1. Sampling Procedure

**Data and Coding Procedures.** For each client in the sample, three program files were reviewed: the client's general paper file, the client's clinical file (if applicable), and the client's electronic file in Etrac. A standardized data collection sheet was used (see Appendix C for the data collection sheet) for coding consistency. This data collection sheet was developed and refined after pilot testing it on 37 cases. Two types of interventions were tracked—clinical and nonclinical. Clinical interventions include substance abuse, mental health, domestic violence, anger management, and cognitive restructuring. Nonclinical interventions include employment, education, life skills, and other. Every effort was made to verify attendance, dosage amounts and intensity to assure accurate calculation of intervention amounts received. In calendar year 2011,

however, CC programs did not collect dosage data on nonclinical interventions and therefore these variables were coded as binary (i.e., attendance at any point in the program, yes/no). Specific coding of these variables will be discussed further in the next section.

# Variables

**Dependent variables.** Despite a wealth of information available to practitioners in the criminal justice system related to measuring success, a key metric of system effectiveness continues to be recidivism. The literature examining recidivism among adults is vast and varied with a multitude of definitions of recidivism and the required length of the follow up period. The Bureau of Justice Statistics estimates that 68% of individuals released from prison are arrested within three years and this statistic has remained constant for more than a decade (Alper & Durose, 2018).

The dependent variables used in this study include one- and two-year recidivism outcomes. The recidivism report published by the DCJ states, "Recidivism data were obtained from the Colorado Judicial Branch's information management system (ICON), which contains information concerning new misdemeanor or felony filings in county or district court. Information regarding filings in Denver County Court were not available so are excluded from this analysis" (Division of Criminal Justice, 2013, p. 8). In 2013, DCJ reported that of the 9,443 residential community corrections clients that terminated in fiscal year 2011 and 2012, the majority, or 60% (n=5,666), discharged from the program successfully (i.e., successful termination). While clients who came directly from prison (transition clients) were more likely to be successful than those placed in CC directly from the community (diversion clients), less than 20% of either group received a new court filing within a year of discharge. After two years, 27%

of diversion and 32% of transition clients had recidivated, with females and older clients having the highest rates of long-term success.

Following the work of Bourgon and Armstrong (2005) and Sperber et al., (2013), *OneYearRecidivism* is a dummy variable measured as those who received misdemeanor or felony filings in county or district court within twelve months of successful completion of the community corrections program. All individuals in the sample were at risk for at least one year in the community post program completion. This variable is coded as 1 for those who recidivated and 0 for those who did not. *TwoYearRecidivism* is also a dummy variable measured as those who received misdemeanor or felony filings in county or district court within twenty-four months of successful completion of the community corrections program. All individuals in the sample were at risk for at least two years in the community post program completion. This variable is coded as 1 for those who recidivated and 0 for those who did not.

**Independent variables.** Before discussing the specific operationalization of key independent variables of interest for the study (intervention intensity, clinical dosage, and amount of case management) a review of contextual information is worthwhile.

Community Corrections programming in Colorado provides or refers individuals in their program to several different intervention types. This study examines the intensity of nine intervention types subdivided into clinical (substance use, mental health, domestic violence, anger management and cognitive restructuring) and nonclinical interventions (employment, education, life skills and other) (see also Table 2 on page 66). Each clinical and nonclinical intervention had a dummy variable indicating whether the client participated in that intervention at all during their stay. Specific variable operationalization of the intensity of these intervention types, clinical dosage and case management meetings is available in the next section.

Although there are a handful of studies in the extant literature that broach the relationship between intervention dosage, defined broadly as the number of hours of intervention received within a given timeframe, and recidivism reduction, a standardized definition of dosage has yet to be developed (Sperber et al., 2013). While some define dosage as the number of sessions (Kroner et al., 2012), others look at the number of hours (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013) or even the number of days (Hser et al., 1998). For the purposes of this study, clinical dosage is conceptualized as the amount, in hours, of specific types of clinical interventions a client received. Consistent with the four primary dosage studies discussed in chapter two (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013), defining dosage in hours accounts for the session length differences at ATC (110-minute sessions) and MCCC (90-minute sessions). Every effort was made to gather data related to the amount of dosage for nonclinical interventions. However, attendance and length of time spent at nonclinical interventions such as education, employment, life skills and others were not regularly documented in client files.<sup>13</sup> Therefore, data on dosage can only be calculated for clinical interventions. Specific variable operationalization of dosage is available in the next section.

The number of case management meetings attended by clients was also analyzed but as a separate intervention type and not as dosage because the amount of time spent in case manager

<sup>&</sup>lt;sup>13</sup> Most nonclinical interventions take place outside of the community corrections program and therefore documentation beyond basic attendance was inconsistent.

meetings was unavailable at both programs.<sup>14</sup> Fortunately, I was able to quantify the number of case management meetings as the frequency of these meetings are required by state standards.<sup>15</sup>

### **Intensity variables**

Intensity by types of intervention. Two variables are used to examine intensity by type of intervention: nonclinical interventions and clinical interventions. It is important to separate nonclinical from clinical interventions to demonstrate the intensity of each type of intervention provided over the course of an individual's stay in the program. Prior research supports cognitive behavioral interventions as a risk reducing best practice (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013) which are represented within the clinical intervention types. To analyze the impact of interventions that are not cognitive behavioral in nature, nonclinical intervention types were separated from clinical intervention types.

*IntensityNONclinicaltypes* is a continuous variable computed from of a series of individual dummy variables that each identify whether an individual received nonclinical interventions such as employment services (Yes=1, No=0), educational services (Yes=1, No=0), life skill services (Yes=1, No=0), and other services (Yes=1, No=0). For each client, the four nonclinical intervention types were added together to form the variable *IntensityNONclinicaltypes* with a possible range of zero to four.

*Intensityclinicaltypes* is a continuous variable computed from a series of individual dummy variables that each identify whether an individual received one of the following clinical intervention types: substance abuse (Yes=1, No=0), mental health (Yes=1, No=0), domestic

<sup>&</sup>lt;sup>14</sup> Case management meetings were documented by date, start time, and with a chronological note indicating topics of discussion however the meeting end time was not available on any meeting note in any client file.

<sup>&</sup>lt;sup>15</sup> According to Community Corrections Standard 6-070 "Case managers shall meet individually at least once each week with each residential offender on their caseload. Gaps between meetings shall not exceed 10 calendar days" (Division of Criminal Justice, 2010, p. 34).
violence (Yes=1, No=0), anger management (Yes=1, No=0), and cognitive restructuring (Yes=1, No=0). For each client, the five clinical intervention types were aggregated together into the variable *Intensityclinicaltypes* with a possible range for this variable is zero to five though the true range is zero to four as no individuals received all five clinical intervention types.

**Clinical dosage.** *Clinicaldosage* is a continuous variable that identifies the total number of clinical intervention hours an individual received throughout their stay. In the dosage literature it is commonplace to analyze dosage in increments of hours rather than minutes or sessions (Bourgon et al., 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et. al., 2013). Specific dosage amounts were calculated separately for the five types of clinical interventions: substance abuse, mental health, domestic violence, anger management, and cognitive restructuring. The calculation included the total number of sessions attended by the client for each intervention type multiplied by the clinical session length for each program (e.g., number of sessions of the specific clinical intervention \* session length = intervention dosage). Dosage hours for the five clinical intervention types were then added together to form the variable *Clinicaldosage*.

At Advantage Treatment Center (ATC), clinical sessions are 110 minutes in length and so dosage was calculated by the number of sessions multiplied by 110 minutes for each client. For example, if case A from ATC attended 10 substance abuse intervention sessions, clinical dosage would be calculated using the following equation: (10\*110)/60=18.3 hours. Case A would have 18.3 hours of substance abuse clinical dosage. At Mesa County Community Corrections (MCCC), clinical sessions are 90 minutes in length, and this was calculated by the number of sessions multiplied by 90 minutes. For example, if case B from MCCC attended 10 substance abuse intervention sessions, clinical dosage would be calculated using the following equation (10\*90)/60=15 hours. Case B would have 15 hours of substance abuse clinical dosage. Because

just over half of the cases in the dataset experienced multiple types of clinical interventions, clinical intervention dosage hours were added together to form the variable labeled *clinicaldosage*.

The original range for *clinicaldosage* was 0 to 459 hours. After being examined for outliers using the inter-quartile range (IQR) rule in SPSS (Tukey, 1977), one case was removed. The IQR rule identifies cases as outliers if they fall outside of the IQR multiplied by 1.5 and then by 3.0 (Pallant, 2013). Hoaglin & Iglewisz (1987) demonstrated that the 1.5 multiplier inaccurately identifies outliers 50% of the time and therefore suggests using a multiplier of 2.2. SPSS functionality will not allow you to set a specific multiplier (Pallant, 2013), but rather limits the analysis to multipliers of 1.5 and 3.0 respectively. For the purposes of this study, cases were identified as outliers and removed only if they met or exceeded the 3.0 threshold (Hoaglin & Iglewisz, 2987). As a result, one case was removed from the *clinicaldosage* variable calculation (see Appendix E for SPSS graph) which resulted in a range from 0 to 376.

**Case management variable.** *CMmtgsTotal* is a continuous variable measured as the number of total case management meetings a client attended during their residential stay in CC. This variable was examined for outliers using the interquartile range rule in SPSS (Tukey, 1977) and based on recommendations from Haglin & Iglewisz (1987), none were identified for removal (see Appendix E for SPSS graph). These meetings were included as an independent variable to examine their potential recidivism reducing impact (Burrell & Rhine, 2013). Previous dosage research has excluded these types of meetings, focusing instead on clinical and cognitive

behavioral interventions that are skill based and specifically target criminogenic needs.<sup>16</sup> The range for this variable is seven to 133.

#### **Control variables**

Age. *A*ge is considered a statistically significant predictor of recidivism whereby the older an individual is, the less likely they are to recidivate (Katsiyannis, Whitford, Zhang, & Gage, 2018). *Age\_at\_entry* is a continuous variable calculated using an individual's date of birth and the date of entry into the CC program. This variable was examined for outliers using the interquartile range rule in SPSS (Tukey, 1977) and based on recommendations from Haglin & Iglewisz (1987), none were identified for removal (see Appendix E for SPSS graph). The range for this variable is from 18 to 65.

**Sex.** Sex is considered a statistically significant predictor of recidivism whereby by males are more likely to recidivate than females (Katsiyannis et al., 2018). *Sex* is a dummy variable coded as males as 1 and females as 0. There are 131 males in the dataset, and 16 females. <sup>17</sup>

**Ethnicity.** Inclusion of ethnicity as a control variable replicates prior research by Sperber et al., (2013) and Makarios et al. (2014). In addition, many prior studies have considered the role that race and ethnicity plays on recidivism with mixed results with some studies indicating that Blacks are more likely than Whites to recidivate (Sabol, Adams, Parthasarathy, & Yuan, 2000; Spohn & Holleran, 2002) and others indicating than when controlling for environmental factors the impact of race on recidivism is diminished or nonexistent (Andrews & Bonta, 1998; Gendreau et al., 1996). For a broader discussion on the history of research on race, ethnicity and

<sup>&</sup>lt;sup>16</sup> Case management meetings in residential CC in Colorado may (or may not) meet this criterion as program service delivery varies greatly. Designed to cover several different topics, case management meetings include activities such as addressing criminogenic needs, program terms/conditions, goal setting/planning, financial management, and addressing program behaviors though they may (or may not) be cognitive behavioral and skill based.

<sup>&</sup>lt;sup>17</sup> While there were 18 female cases in the original sample, two were removed due to missing information.

recidivism see McGovern, Demuth, and Jacoby (2009). For the purposes of this study *Ethnicity* is coded as a dummy variable whereby Caucasians are coded as 1 and all other race and ethnicities (African American, Hispanic, Asian American/Pacific Islander, Native American/Alaskan Native, and other) are coded as 0. In CCIB, community corrections programs are asked to enter an individual's ethnicity. It is unclear how program staff determine an individual's ethnicity and whether this variable is inclusive of an individual's race. There are 121 Caucasians in the dataset, and 26 individuals of other racial/ethnic descent (listed above). This is aligned with the 2012 DCJ Annual Report which indicates that the typical CC client is Caucasian and made up approximately 80% of the statewide CC population. In addition, according to the Colorado Department of Local Affairs, State Demography Office

(https://demography.dola.colorado.gov/demography/), census data from 2010 demonstrates that approximately 70% of Colorado residents reported being White making the sample consistent with Colorado demographics.

**Client type.** According to the Division of Criminal Justice, transition clients generally have lower recidivism rates when compared to their diversion counterparts (DCJ, 2013). For this reason, it is important to differentiate between client type. The client type, or legal status, of an individual is of considerable importance as it shows where an individual is at on the correctional continuum. Where diversion clients are coming to CC from the community, transition clients are coming from prison, and this distinction may impact an individual's ability to be successful upon completion of the program. *ClientType* is a dummy variable coded as diversion as 1 and transition as 0. There are 99 diversion clients and 48 transition clients in the dataset.

**LSI entry.** In CC, an individual's LSI is completed at entry into the program and redone every six months to demonstrate any change in their risk and needs. It is important to control for

LSI because it has been validated as a predictor of future recidivism (Andrews & Bonta, 1995; Andrews & Bonta, 2010; Bonta, 2002; Lowenkamp & Bechtel, 2007; Lowenkamp et al., 2009). By controlling for the entry LSI, it ensures that the impacts of intervention type intensity, clinical dosage or case management variables have on recidivism outcomes are independent of an individual's overall risk level at the time of entry into the CC program. All 147 cases in the dataset had an entry LSI that was completed at the beginning of their stay at the CC program. This variable was examined for outliers using the interquartile range rule in SPSS (Tukey, 1977) and based on recommendations from Haglin & Iglewisz (1987), none were identified for removal (see Appendix E for SPSS graph). *LSIEntry* is a continuous variable measured as the total LSI composite score at entry into the program. Client entry LSI scores range from 11 to 45, with higher numbers indicating higher risk.

# Table 2

#### Intensity Types

Intensity type	Description	Cognitive based?	Specific duration?	Examples	Required?	Measured by
Substance abuse	All adult offenders in the state of Colorado are statutorily required to be assessed, upon entry into community corrections, for substance use needs and matched to a recommended treatment level <sup>18</sup>	Yes	Yes	Strategies for Self- Improvement and Change (SSC), the matrix model	If criteria met, yes	Yes/no and hours
Mental health	If a client self-reports a mental health concern, or records indicate this as an area of concern, they may be referred. Mental health assessments are conducted, and treatment is assigned by the provider. Process varies by provider	Possibly <sup>19</sup>	Possibly <sup>20</sup>	Dialectical behavior therapy (DBT), psychotherapy	Possibly <sup>21</sup>	Yes/no and hours
Domestic violence	Assignment to treatment is based on having a current or past conviction for domestic violence	Yes	Yes		If criteria met, yes	Yes/no and hours
Anger management	Assignment to treatment is typically based on conviction type (violent offense) but may also be identified as a need	Possibly <sup>22</sup>	Possibly <sup>23</sup>		If criteria met, yes	Yes/no and hours
Cognitive restructuring	Designed to address criminal thinking that is not associated with substance use	Yes	Yes	Thinking for a Change (T4C)	If criteria met, yes	Yes/no and hours
						(Continued)

<sup>&</sup>lt;sup>18</sup> Colorado Revised Statute 16-11.5-102. This treatment level requires a specific range of treatment hours per week by the Office of Behavioral Health to be evidence based and cognitive behavioral (Colorado Department of Human Services, 2013).

<sup>&</sup>lt;sup>19</sup> Curricula depends on the treatment provider. For example, dialectical behavior therapy is provided as a structured, cognitive behavioral program; however, psychotherapy is less structured and may or may not be cognitive behavioral in nature.

<sup>&</sup>lt;sup>20</sup> Manualized curricula (such as DBT) has a specific number of sessions and dosage hours while psychotherapy is less structured and is not pre-determined

<sup>&</sup>lt;sup>21</sup> If an individual is assessed as needing mental health treatment the program may require them to attend. In other cases, the individual may be given a choice on whether they want to participate.

<sup>&</sup>lt;sup>22</sup> Curricula depends on treatment provider and may or may not be cognitive behavioral in nature.

<sup>&</sup>lt;sup>23</sup> Curricula depends on treatment provider and may or may not be cognitive behavioral in nature.

Intensity type	Description	Cognitive based?	Specific duration?	Examples	Required?	Measured by
Employment services	Assistance with job readiness, interviewing and skill development	No	No	Resume writing, mock interviews, job searching	No	Yes/no
Educational services	Educational attainment	No	No	GED preparation, college prep, vocational training	No	Yes/no
Life skills services	Designed to teach and support daily life	No	No	12-step groups, parenting class, cooking	No	Yes/no
Other services	Other nonclinical groups were placed in this category	Possibly <sup>24</sup>	Possibly <sup>25</sup>	Victim awareness, program specific classes such as Clients at Risk of Revocation (CARR)	Possibly <sup>26</sup>	Yes/no
Case	Provided for all residential CC offenders and includes case	No	No	N/A	Yes <sup>27</sup>	Total
management	etc.					Meetings

<sup>&</sup>lt;sup>24</sup> Curricula depends on program and provider.
<sup>25</sup> Duration depends on program and provider.
<sup>26</sup> These interventions may be required based on conviction type or identified behaviors in the program.

<sup>&</sup>lt;sup>27</sup> Case management meetings are required every 7 days with gaps no larger than 10 days by the Division of Criminal Justice (Colorado CC Standard 6-070).

#### **Analysis Plan**

The data were uploaded to SPSS for analysis. Descriptive statistics were calculated and are described in the results chapter. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were calculated for continuous variables. Outliers were examined using the interquartile range (IQR) rule in SPSS (Tukey, 1977; Hoaglin & Iglewicz, 1987; Cook, 1998).

To assess each research question, three separate logistic regression procedures were conducted (e.g., a series of separate models for intervention intensity, clinical dosage, and number of case manager meetings) to establish what significant relationships exist between the predictor variables and one- and two-year recidivism. A comprehensive stepwise method involving both backward and forward entry was used to select the best subset of predictor variables for the regression models (Kleck, 2000). Stepwise regression involves initially specifying a full model of all possible variables of interest and then choosing predictor variables based on statistical significance. Thus, this process creates a series of regression models that retain only the variables with the most statistically significant relationship with the dependent variable (Field, 2013). Initially, the model was specified using theory and prior research to determine relevant independent variables of interest.

To construct these regression models, each initial model was specified with key independent variables (intensity of nonclinical intervention types, intensity of clinical intervention types, clinical dosage, and case management meetings) based on theory and prior research, along with covariates of age at entry (continuous), ethnicity (dichotomous, 1 =

Caucasian, 0 = other than Caucasian), sex (dichotomous, 1 = male, 0 = female), LSI<sup>28</sup> at time of entry into the program (continuous, min = 11, max = 45) and client type (1 = diversion, 0 =transition). Next, using backward elimination, variables were tested for deletion, one at a time, removing the least significant variable from the model. After removing the first two variables, backwards elimination was conducted using a liberal *p* of .200. until the initial best fit model was identified. At the end of the backward elimination process, the analytic strategy initiated a forward entry method, reintroducing each eliminated variable back into the model one at a time, to ensure that no variables were exclude erroneously (Kleck, 2000). At this point, a variable was considered statistically significant and retained at the .050 level. Prior to interpreting the results of each regression model, the assumptions of the binary logistic regression were tested as described at the beginning of the analysis section.

#### **Assumption Testing**

Assumption testing was performed on the final model. The assumptions of the binary logistic regression include level of measurement, minimum sample size, independence of observations, absence of multicollinearity, linearity of independent variable and the logit of the dependent variable (Field, 2013). Each assumption and how it was tested is described in the following section.

The first three assumptions are based on research design and variable operationalization. For a binary logistic regression, the dependent variable should be binary, coded as 0 and 1. The dependent variables used in these analyses were binary, coded as 1 = yes, recidivated; 0 = no, did not recidivate. The assumption of independence of observations indicates that each observation

<sup>&</sup>lt;sup>28</sup> The Level of Supervision Inventory (LSI) is a 54-item actuarial risk assessment administered to all adult felons in Colorado during their time on supervision. The LSI is used to determine overall level of risk, identify criminogenic needs, and provide responsive interventions. Over time, an individual is reassessed to determine whether their overall risk has been reduced.

should be independent, i.e., that repeated measures are not included (Tabachnick & Fidell, 2013). Each model has independent observations.

Determining the sufficient sample size is more difficult to assess. For example, using a sample size calculation provided by Peduzzi, Concato, Kemper, Holstein and Feinstein (1996), the sample size for this study using logistic regression should be around 440. Due to issues of practicality, and the limitations associated with the structure and sources of the data, a sample of this size was not viable. However, the final study sample size of 147 does exceed the minimum threshold recommended for binary logistic regression as determined by Vittinghoff and McCulloch (2006). They suggest that five to ten participants per variable should be used. The largest possible regression model had 7 variables meaning this model would necessitate a minimum of 35 to 70 participants. Since the sample size for this study was 147, this assumption was met.

The next assumptions are based on the data. There should be linearity between continuous predictors and the log odds of the dependent variable. This was tested by taking the log of each continuous independent variable, creating an interaction term of the log variable and the original independent variable, and placing them into the binary logistic regression model. In all models the interaction term was not statistically significant suggesting this assumption was met. The assumption of absence of multicollinearity among predictor variables was examined using bivariate correlations. Variables correlated with a strength of .80 or above are indicative of multicollinearity that could cause issues with model testing (Tabachnick & Fiddell, 2013). No issues of multicollinearity were identified in the dataset.

#### **Summary**

To understand the impact of nonclinical intervention types, clinical intervention types, clinical dosage, and case management meetings on one- and two-year recidivism outcomes, data was collected from a final sample of 147 individuals from two community corrections programs in Colorado. The analytic strategy discussed above was used to assess each of the three research questions in the findings chapter. To assess the first research question a regression model was created involving *IntensityNONclinicaltypes*, *Intensityclinicaltypes* and covariates (*Age\_at\_entry, Ethnicity, LSIEntry, Sex,* and *Clienttype*) in separate models to examine both one- and two-year recidivism. To assess the second research question, the same strategy discussed above was used to examine the relationship between *ClinicalDosage* and covariates with one- and two-year recidivism in separate models. To answer the third research question, the total number of case management meetings was examined in a model (*CMmtgsTotal*) and covariates with one- and two-year recidivism.

The following chapter will detail the results of the analyses organized by research question.

#### CHAPTER 4—DATA ANALYSIS FINDINGS

#### Introduction

This quantitative study was designed to assess the effect of the intensities of interventions, dosage of clinical interventions, and case management meetings provided to clients on recidivism at one- and two-years post completion of the residential phase of two community corrections programs in Colorado. The research questions and hypotheses associated with this project are as follows:

Research Question 1: To what degree was intervention *intensity* (defined as the total number of different types of clinical and nonclinical interventions) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

- H<sub>0</sub>: There is no significant relationship between the *intensity* of intervention and one- and two-year recidivism outcomes.
- H<sub>a</sub>: Those who received higher *intensity* of interventions had a lower likelihood of recidivism compared to those who did not.

Research Question 2: To what degree was the *dosage* of clinical intervention (defined as hours of clinical intervention<sup>29</sup>) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

• H<sub>0</sub>: There is no significant relationship between the amount of the *dosage* of clinical intervention and one- and two-year recidivism outcomes.

<sup>&</sup>lt;sup>29</sup> Data on nonclinical intervention hours was not collected during the study timeframe in a consistent way across client files.

• H<sub>a</sub>: The higher the amount of *dosage* of clinical intervention is significantly related to a lower likelihood of recidivism.

Research Question 3: To what degree was the *amount of case management* meetings provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

- H<sub>0</sub>: There is no significant relationship between the *amount of case management* meetings and one- and two-year recidivism outcomes.
- H<sub>a</sub>: Higher *amounts of case management* meetings are significantly related to a lower likelihood of recidivism.

To contribute to the literature on the impact of service provision on recidivism (e.g., Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013), this research focuses on both clinical and nonclinical interventions in an open setting where clients are in the community and have concurrent responsibilities. In doing so, this research expands upon our understanding of real-world service provision. This chapter is organized into two sections: descriptive statistics and multivariate analysis. The descriptive statistics section presents summary descriptive statistics in order to characterize the sample. The chapter concludes with the multivariate analysis which presents the results of the binary logistic regression models used to assess the research questions.

#### **Descriptive Statistics**

As shown in Table 3, most clients were Caucasian (n = 121, 82%), male (n = 131, 89%), and sentenced as Diversion (n = 99, 67%) which is consistent with statewide CC population at that time (DCJ, 2012). Most clients were in the Mesa County Community Corrections (MCCC) program (n = 110, 74%) while Advantage Treatment Center (ATC) represented a smaller

proportion of the sample (n = 37, 25%).

Table 3

Frequency Table of Sample Demographics

	Count	Percent
Mesa County Community Corrections	110	74.8
Advantage Treatment Center	37	25.2
Caucasian Non-Caucasian	121 26	82.3 17.7
Male	131	89.1
Female	16	10.9
Diversion	99	67.6
Transition	48	32.7

*Note*. Due to rounding errors, percentages may not equal 100%.

Table 4 presents summary information about nonclinical and clinical interventions. Most clients received employment services (n = 96, 65%); however, they may or may not have been provided at the program itself. Substance abuse interventions were received by most clients (n = 135, 92%) and in most cases these services were provided within the program. The majority of clients *did not* receive education services (n = 94, 64%), life skills services (n = 109, 74%), mental health services (n = 122, 83%), domestic violence services (n = 109, 74%), anger management services (n = 133, 90%), cognitive restructuring services (n = 127, 86%), or other services (n = 102, 69%).

Table 5 (page 77) presents additional summary statistics for these continuous variables. Clients were an average of 33.27 years old (SD = 10.24) and at entry had an average LSI at entry of 29.95 (SD = 6.05) which are consistent with what was reported by DCJ about the CC population during that time (DCJ, 2012). On average, clients had 47.48 total case management meetings (SD = 23.73). The average clinical intervention dosage for substance abuse was 75.87 hours (SD = 68.42), 1.99 hours (SD = 6.56) for mental health, 9.88 hours (SD = 21.34) for domestic violence, 2.34 hours (SD = 9.15) for anger management, and 4.70 hours (SD = 16.07) for cognitive restructuring. Overall, clients' clinical intervention dosage was, on average, 94.39 hours (SD = 78.75). The intensity of nonclinical interventions received ranged from zero to four while the range for clinical intensity was also zero to four.

## Table 4

NonClinical Interventions			Clinical Interv	Clinical Interventions					
Туре	Count	Percent	Туре	Count	Percent				
Employment			Substance Abuse						
Received	96	65.3	Received	135	91.8				
Not Received	51	34.7	Not Received	12	8.2				
Education			Mental Health						
Received	53	36.1	Received	25	17.0				
Not Received	94	64.0	Not Received	122	83.0				
Life Skills			Domestic Violence						
Received	38	25.9	Received	38	25.9				
Not Received	109	74.2	Not Received	109	74.2				
Other			Anger Management						
Received	45	30.6	Received	14	9.5				
Not Received	102	69.4	Not Received	133	90.5				
			Cognitive						
			Restructuring						
			Received	20	13.6				
			Not Received	127	86.4				

Frequency Table for Interventions Received

*Note.* Due to rounding errors, percentages may not equal 100%.

On average, clients had a nonclinical intensity of 1.58 (SD = 1.02). Clients had an average clinical intensity of 1.58 (SD = 0.78). When all intervention types were combined (nonclinical and clinical), clients received an average of 3.16 intervention types (SD = 1.33).

Figure 2 presents recidivism outcomes at one- and two-years post program completion. All cases in the sample had two years at risk in the community post program completion. More than three quarters of the sample did not recidivate at one-year post program completion (n = 116, 79%). At two-years post program completion, 71% of the sample did not recidivate (n = 104).



Figure 2. Recidivism Outcomes.

# Table 5

# Summary Statistics for Continuous Variables

	Mean	Standard Deviation	Min	Max	Pearson Correlation 1 Year Recidivism	Pearson Correlation 2 Year Recidivism
Intensity Nonclinical Types	1.58	1.00	0.00	4.00	064	116
Intensity Clinical Types	1.58	0.78	0.00	4.00	171*	152
Clinical Dosage (total)	94.39	78.75	0.00	376.00	158	151
Substance Abuse	75.87	68.42	0.00	382.50	134	116
Mental Health	1.99	6.56	0.00	40.30	077	061
Domestic Violence	9.88	21.34	0.00	103.50	096	070
Anger Management	2.34	9.15	0.00	57.00	094	131
Cognitive Restructuring	4.70	16.07	0.00	91.60	.020	025
Total Case Management Meetings	47.48	23.73	7.00	133.00	188*	214**
Age at Entry	33.27	10.24	18.00	65.00	.247**	.318**
LSI at Entry	29.95	6.05	11.00	45.00	.068	.084

\*\*p < 0.01 (2-tailed). \*p < 0.05 (2-tailed).

#### **Multivariate Analysis**

To address the research questions, a series of binary logistic regressions were performed to determine the relationship between the predictor variables of the study and the dependent variables of one- and two-year recidivism. As these dependent variables are binary in nature (i.e., 1 = recidivated, 0 = did not recidivate), the binary logistic regression is the appropriate type of regression model to utilize (Cohen et al., 2013). To construct these regression models, each initial model was specified with key independent variables (intensity of nonclinical intervention types, intensity of clinical intervention types, clinical dosage, and case management meetings) based on theory and prior research, along with covariates of age at entry (continuous), ethnicity (dichotomous, 1 = Caucasian, 0 = other than Caucasian), sex (dichotomous, 1 = male, 0 =female),  $LSI^{30}$  at time of entry into the program (continuous, min = 11, max = 45) and client type (1 = diversion, 0 = transition). Using backward elimination, variables were tested for deletion, one at a time, removing the least statistically significant variable from the model. After removal of the first two variables, backwards elimination was conducted using a liberal p of .200. until the initial best fit model was identified (Kleck, 2000). At the end of the backward elimination process, the analytic strategy initiated a forward entry method, reintroducing each eliminated variable back into the model one at a time, to ensure that no variables were exclude erroneously. At this point, a variable was considered statistically significant and retained in the model at the .050 level. Prior to interpreting the results of each regression model, the assumptions of the binary logistic regression were tested as described at the beginning of the analysis section.<sup>31</sup> I

<sup>&</sup>lt;sup>30</sup> The Level of Supervision Inventory (LSI) is a 54-item actuarial risk assessment administered to all adult felons in Colorado during their time on supervision. The LSI is used to determine overall level of risk, identify criminogenic needs, and provide responsive interventions. Over time, an individual is reassessed to determine whether their overall risk has been reduced.
<sup>31</sup> The analysis of clinical dosage in Models 2.1 and 2.2 also examined a possible interaction between clinical dosage and LSI at entry as some previous studies indicate the presence of this interaction (e.g., Bourgon et al., 2005; Lipsey, 2018; Makarios et al.,

organize the remainder of the findings chapter by research question and conclude with a summary of key findings.

Research Question 1: To what degree was intervention *intensity* (defined as the total number of different types of clinical and nonclinical interventions) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

This section of the findings chapter examines the effect of the intensity of nonclinical and clinical intervention types on one- and two- year recidivism and examines the hypothesis that the more interventions received the less likely an individual recidivated.

#### Model 1.1: Intensity of Nonclinical and Clinical Intervention Types and 1-Year

**Recidivism.** Model 1.1 explores the intensity of clinical (e.g., substance abuse, mental health, domestic violence, anger management, and cognitive restructuring) and nonclinical (e.g., employment, education, life skills, and other) interventions on one-year recidivism while controlling for age at entry, ethnicity, LSI entry, sex, and client types. As shown in Table 6, the overall initial model was statistically significant ( $\chi^2(7) = 22.60$ , p = .002, Nagelkerke  $R^2 = .22$ ) and correctly classified one-year recidivism 79.6% of the time.

The analytic strategy was then to remove the least significant variable, client type, and the model was rerun. Next, the least significant variable in that model, LSI entry, was again removed and the model was rerun using backwards elimination with a removal condition set to p= .200. Intensity of nonclinical types (step 1) and ethnicity (step 2) were removed from the model using the backwards elimination process, resulting in a model (not shown) including

<sup>2014)</sup> while other studies indicate no such interaction exists (e.g., Sperber et al., 2013). Results indicate no interaction was present in this study.

intensity of clinical types, age at entry, and sex. At this point, forward entry was performed to include previously excluded variables back in one at a time. Variables were removed if they were not statistically significant at the 0.05 level once added back to the model.

Table 6

Initial Model 1.1 With Intensity of Clinical and Nonclinical Types and Covariates Predicting 1-Year Recidivism

Variable	В	SE	Wald	р	OR
Intensity of nonclinical types	-0.21	0.25	0.74	.391	0.81
Intensity of clinical types	-0.84**	0.35	5.68	.017	0.43
Age at entry	-0.08**	0.03	8.28	.004	0.92
Ethnicity	-0.50	0.55	0.84	.359	0.61
LSI entry	0.02	0.04	0.39	.534	1.03
Sex	1.44	1.08	1.77	.183	4.23
Client type	0.30	0.53	0.32	.573	1.35
Constant	0.86	2.05	0.18	.674	2.37

*Note.*  $\chi^2(7) = 22.60$ , p = .002, Nagelkerke  $R^2 = .22$ \*\*\*p<.001; \*\*p<.02; \*p<.05

As shown in Table 7, this process resulted in a final model with just two variables,

intensity of clinical types and age at entry predicting one-year recidivism. The overall final

Table 7

Final Model 1.1 With Intensity of Clinical Types and Age at Entry Predicting 1-Year Recidivism

Variable	В	SE	Wald	р	OR			
Intensity of clinical types	-0.82**	0.33	5.99	.014	0.44			
Age at entry	-0.08**	0.03	9.86	.002	0.92			
Constant	2.51**	1.01	6.12	.013	12.28			
$v_{ote} = v^2(2) = 17.29$ n < 0.01 Nagelkerke $R^2 = 17$								

*Note.*  $\chi^2(2) = 17.29$ , p < .001, Nagelkerke  $R^2 = .17$ \*\*\*p < .001; \*\*p < .02; \*p < .05 model was statistically significant ( $\chi^2(2) = 17.29$ , p < .001, Nagelkerke  $R^2 = .17$ ) and correctly classified one-year recidivism 78.9% of the time. There was a statistically significant negative relationship between intensity of clinical types and one-year recidivism, p = .014, OR = 0.44. A one unit increase in intensity of clinical intervention types was associated with 0.44 times lower odds of recidivating at one year. There was a statistically significant negative relationship between age at entry and one-year recidivism, p = .002, OR = 0.92; a one-year increase in age was associated with 0.92 times lower odds of recidivating at one-year.

#### Model 1.2: Intensity of Nonclinical and Clinical Intervention Types and 2-Year

**Recidivism.** Model 1.2 explores the intensity of clinical (e.g., substance abuse, mental health, domestic violence, anger management, and cognitive restructuring) and nonclinical (e.g., employment, education, life skills, and other) interventions on two-year recidivism while controlling for age at entry, ethnicity, LSI entry, sex, and client types. As shown in Table 8, the overall initial model was statistically significant ( $\chi^2(7) = 31.20, p < .001$ , Nagelkerke  $R^2 = .27$ ) and correctly classified two-year recidivism 74.1% of the time.

The least significant variable, client type, was removed and the analysis was rerun. LSI entry was the least significant variable in the resulting model and was subsequently removed. The analysis was then rerun using backwards elimination with a removal setting of p = .200. The best fit model (not shown) at this stage included intensity of nonclinical types, intensity of clinical types, age at entry, and sex. At this point, forward entry was performed to include previously excluded variables one at a time. Ultimately variables were excluded if they were not statistically significant at the p = .050 level which resulted in the removal of the sex variable (p = .170).

### Table 8

Variable	В	SE	Wald	р	OR
Intensity of nonclinical types	-0.36	0.23	2.52	.113	0.70
Intensity of clinical types	-0.67**	0.30	4.94	.026	0.51
Age at entry	-0.10***	0.03	13.74	.000	0.91
Ethnicity	-0.55	0.53	1.08	.299	0.58
LSI entry	0.03	0.04	0.52	.471	1.03
Sex	1.12	0.82	1.88	.170	3.07
Client type	0.09	0.48	0.04	.845	1.10
Constant	2.32	1.82	1.63	.202	10.16

*Initial Model 1.2 With Intensity of Clinical and Nonclinical Types and Covariates Predicting 2-Year Recidivism* 

*Note.*  $\chi^2(7) = 31.20$ , p < .001, Nagelkerke  $R^2 = .27$ \*\*\*p<.001; \*\*p<.02; \*p<.05

After forward entry and the removal of variables that were not statistically significant, the final model, as shown in Table 9, included intensity of nonclinical types, intensity of clinical types, and age at entry. The overall final model predicting two-year recidivism was statistically significant ( $\chi^2(3) = 27.39$ , p < .001, Nagelkerke  $R^2 = .24$ ) and correctly classified two-year recidivism 74.1% of the time.

## Table 9

*Final Model 1.2 With Intensity of Clinical and Nonclinical Types and Age at Entry Predicting 2-Year Recidivism* 

Variable	В	SE	Wald	р	OR
Intensity of nonclinical types	-0.41	0.21	3.76	.053	0.66
Intensity of clinical types	-0.65*	0.29	5.00	.025	0.52
Age at entry	-0.10***	0.03	16.47	.000	0.90
Constant	3.99***	1.05	14.36	.000	53.96
<i>lote</i> $\gamma^2(3) = 27.39$ $n < 0.01$ Nagelker	ke $R^2 = 24$				

*Note.*  $\chi^{2}(3) = 2/.39$ , p < .001, Nagelkerke  $R^{2} = .24$ \*\*\*p < .001; \*\*p < .02; \*p < .05 There was not a statistically significant relationship between intensity of nonclinical types and two-year recidivism though the relationship approached statistical significance and was retained for that reason (p = .053). There was a statistically significant negative relationship between intensity of clinical types and two-year recidivism, p = .025, OR = 0.52. One unit increases in intensity of clinical intervention types are associated with 0.52 times lower odds of recidivating at two years. There was also a statistically significant negative relationship between age at entry and two-year recidivism, p < .001, OR = 0.90; where a one-year increase in age is associated with 0.90 times lower odds of recidivating at two years.

Summary of findings for Research Question 1. This series of models investigated if intervention *intensity* (defined as the total number of different types of clinical and nonclinical interventions) provided to individuals during residential community corrections in calendar year 2011 was related to one- and two-year recidivism outcomes. The results indicate partial support of the research hypothesis whereby intensity of *clinical* types was a statistically significant predictor of lower odds of recidivism at one and two years. Intensity of *nonclinical* types, while not technically statistically significant at either one or two years, may demonstrate substantive significance as it approached statistical significance (p = .053) at two years. It should be noted that age at entry into the program was a statistically significant predictor of lower odds of recidivism at one and two years.

Research Question 2: To what degree was *dosage* of clinical intervention (defined as hours of clinical intervention) provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

This section of the findings chapter examines the effect of the amount of clinical dosage, in hours, on one- and two-year recidivism and explores the hypothesis that the more clinical dosage received the less likely an individual was to recidivate.

**Model 2.1: Clinical Dosage and 1-Year Recidivism.** Model 2.1 explores the amount of clinical dosage (e.g., substance abuse, mental health, domestic violence, anger management, and cognitive restructuring) on one-year recidivism while controlling for age at entry, ethnicity, LSI at entry, sex, and client type. As shown in Table 10, the overall initial model was statistically significant ( $\chi 2(6) = 24.54$ , p < .001, Nagelkerke R2 = .24) and correctly classified one-year recidivism 78.8% of the time.

#### Table 10

Variable	В	SE	Wald	р	OR
Clinical dosage	-0.01	0.04	6.81	.009	0.99
Age at entry	-0.09*	0.03	8.97	.003	0.92
Ethnicity	-0.60	0.54	1.26	.262	0.55
LSI entry	0.04	0.04	1.21	.271	1.05
Sex	1.58	1.09	2.10	.147	4.85
Client type	0.39	0.52	0.55	.458	1.47
Constant	-0.29	2.04	0.02	.886	0.75

Initial Model 2.1 With Clinical Dosage and Covariates Predicting 1-Year Recidivism

*Note.*  $\chi^2(6) = 24.54$ , p < .001, Nagelkerke  $R^2 = .24$ \*\*\*p<.001; \*\*p<.02; \*p<.05

In two separate steps, the least significant variables (step 1: client type, step 2: LSI entry) were removed. Next, backwards elimination with a removal condition set to p = .200 resulted in

the removal of ethnicity and a resultant model (not shown) including clinical dosage, age at entry, and sex. Excluded variables were then entered back in, one at a time, and the final model involved the removal of any variables not statistically significant at the 0.05 level. The sex variable (p = .163) was ultimately excluded for this reason resulting in a final model that included intensity of clinical dosage and age at entry.

As shown in Table 11, the results of this final model predicting one-year recidivism were statistically significant ( $\chi^2(2) = 19.16$ , p < .001, Nagelkerke  $R^2 = .19$ ) and this model correctly classified one-year recidivism 78.1% of the time. There was a statistically significant negative relationship between clinical dosage and one-year recidivism, p = .009, OR = 0.99. A one hour increase in clinical dosage was associated with 0.99 times lower odds of recidivating at one year. There was also a statistically significant negative relationship between age at entry and one-year recidivism, p < .001, OR = 0.91; a one-year increase in age was associated with 0.91 times lower odds of recidivating at one-year.

Table 11

Final Model 2.1 With Clinical Dosage and Age at Entry Predicting 1-Year Recidivism

Variable	В	SE	Wald	р	OR
Clinical dosage	-0.01**	0.00	6.53	.011	0.99
Age at entry	-0.10***	0.03	11.45	.001	0.91
Constant	2.56**	1.00	6.51	.010	12.90
<i>Note</i> . $\chi^2(2) = 19.16, p < .001, Nag$	gelkerke $R^2 = .19$				

\*\*\*p<.001; \*\*p<.02; \*p<.05

# **Model 2.2: Clinical Dosage and 2-Year Recidivism.** Model 2.2 explores the effect of clinical dosage (e.g., substance abuse, mental health, domestic violence, anger management, and cognitive restructuring in hours) on two-year recidivism while controlling for age at entry, ethnicity, LSI at entry, sex, and client type. Table 12 provides the results of this initial model.

The overall regression model was statistically significant ( $\chi^2(6) = 32.79, p < .001$ , Nagelkerke  $R^2$  = .29) and correctly classified two-year recidivism 72.6% of the time.

At this point, the least significant variable client type was removed, and the model was rerun. Next, the least significant variable in the model, LSI at Entry, was removed and the model was rerun. Using backwards elimination with a removal p value of .200 the model was then rerun and ethnicity was removed. The model (not shown) included clinical dosage, age at entry, and sex (p = .118). Forward entry was then performed to include previously excluded variables back into the model, one at a time.

Table 12

Initial Model 2.2 With Clinical Dosage and Covariates Predicting 2-Year Recidivism

Variable	В	SE	Wald	р	OR
Clinical dosage	-0.01**	0.00	7.59	.006	0.99
Age at entry	-0.11***	0.03	14.46	.000	0.90
Ethnicity	-0.70	0.51	1.85	.173	0.50
LSI entry	0.05	0.04	1.45	.228	1.05
Sex	1.33	0.83	2.54	.111	3.76
Client type	0.18	0.48	0.13	.716	1.19
Constant	1.12	1.80	0.39	.534	3.06

*Note.*  $\chi^2(6) = 32.79$ , p < .001, Nagelkerke  $R^2 = .29$ \*\*\*p<.001; \*\*p<.02; \*p<.05

At this stage of the analytic strategy, variables were removed from the model if they were not statistically significant at the 0.05 level once added back into the model. The final model included the variables clinical dosage and age at entry and are presented in Table 13. Results of this final model predicting two-year recidivism were statistically significant ( $\chi^2(2) = 26.73$ , p <.001, Nagelkerke  $R^2 = .24$ ) and correctly classified two-year recidivism 72.6% of the time. There was a statistically significant negative relationship between clinical dosage and two-year recidivism, p = .005, OR = 0.99. One hour increases in clinical dosage were associated with 0.99 times lower odds of recidivating at two years. There was a statistically significant negative relationship between age at entry and two-year recidivism, p < .001, OR = 0.90; one year increases in age was associated with 0.90 times lower odds of recidivating at two years. Clinical dosage was related to lower odds of one- and two-year recidivism, as such, the null hypothesis for Research Question 2 was rejected.

#### Table 13

Final Model 2.2 With Clinical Dosage and Age at Entry Predicting 2-Year Recidivism

Variable	В	SE	Wald	р	OR
Clinical dosage	-0.01**	0.00	7.32	.007	0.99
Age at entry	-0.11***	0.03	16.93	.000	0.90
Constant	3.38***	0.95	12.67	.000	29.45
$N_{abc} = 2(2) = 26.72 \text{ m} < 0.01 \text{ N}_{abc} = 11 \text{ m}_{abc}$	$D^2 - 24$				

*Note.*  $\chi^2(2) = 26.73$ , p < .001, Nagelkerke  $R^2 = .24$ \*\*\*p<.001; \*\*p<.02; \*p<.05

**Summary of findings for Research Question 2.** This series of models investigated if clinical *dosage* (defined as hours of clinical intervention<sup>32</sup>) provided to individuals during residential community corrections in calendar year 2011 was related to one- and two-year recidivism outcomes. The results indicate support of the research hypothesis whereby clinical *dosage* was a statistically significant predictor of lower odds of recidivism at one and two years, and as such, the null hypothesis for Research Question 2 was rejected. As with the models associated with Research Question 1, age at entry into the program was also a statistically significant predictor of lower odds of recidivism at one and two years.

<sup>&</sup>lt;sup>32</sup> Data on nonclinical intervention hours was not collected during the study timeframe in a consistent way across client files.

Research Question 3: To what degree was the *amount of case management* meetings provided to individuals during residential community corrections in CY2011 related to one- and two-year recidivism outcomes?

This section of the findings chapter examines the effect of the amount of case management meetings on one- and two- year recidivism and hypothesizes that the more meetings received the less likely an individual was to recidivate.

#### Model 3.1: Total Case Management Meetings and 1-Year Recidivism. Model 3.1

explores the amount of case management meetings on one-year recidivism while controlling for age at entry, ethnicity, LSI at entry, sex and client type. As shown in Table 14, the overall regression was statistically significant ( $\chi 2(6) = 23.47$ , p = .001, Nagelkerke R2 = .23) and correctly classified one-year recidivism 78.2% of the time.

#### Table 14

Initial Model 3.1 With Total Case Management Meetings and Covariates Predicting 1-Year Recidivism

Variable	В	SE	Wald	р	OR
Total case management meetings	-0.03**	0.01	7.06	.008	0.97
Age at entry	-0.09**	0.03	8.61	.003	0.92
Ethnicity	-0.55	0.55	1.01	.315	0.58
LSI entry	0.02	0.04	0.31	.580	1.02
Sex	1.45	1.08	1.81	.178	4.28
Client type	0.20	0.51	0.16	.693	1.22
Constant	0.94	2.07	0.21	.650	2.56

*Note.*  $\chi^2(6) = 23.47$ , p = .001, Nagelkerke  $R^2 = .23$ \*\*\*p<.001; \*\*p<.02; \*p<.05

In two steps, the least significant variables (step 1: client type, step 2: LSI entry) were removed. Backwards elimination was then initiated with a removal *p* value of .200. Ethnicity

was removed, resulting in a model (not shown) including total case management meetings, age at entry, and sex (p = .173). Forward entry was then performed to include previously excluded variables back in one at a time. For the final model, variables were removed if they were not statistically significant at the 0.05 level. The results of this final model predicting one-year recidivism were significant, ( $\chi^2(2) = 19.52$ , p < .001, Nagelkerke  $R^2 = .19$ ) and this model correctly classified one-year recidivism 78.9% of the time.

As shown in Table 15, there was a statistically significant negative relationship between total case management meetings and one-year recidivism, p = .005, OR = 0.97. A one unit increase in total case management meetings was associated with 0.97 times lower odds of recidivating at one year. There was a statistically significant negative relationship between age at entry and one-year recidivism, p < .001, OR = 0.90; a one-year increase in age was associated with 0.90 times lower odds of recidivating at one year.

Table 15

*Final Model 3.1 With Total Case Management Meetings and Age at Entry Predicting 1-Year Recidivism* 

Variable	В	SE	Wald	р	OR
Total case management meetings	-0.03**	0.01	7.76	.005	0.97
Age at entry	-0.09***	0.03	10.62	.001	0.91
Constant	2.89**	1.06	7.37	.007	17.97
$V_{ata} = v^2(2) - 10.52$ n < 0.01 Nagalkarka $P^2 - 10.52$	10				

*Note.*  $\chi^2(2) = 19.52$ , p < .001, Nagelkerke  $R^2 = .19$ \*\*\*p < .001; \*\*p < .02; \*p < .05

#### Model 3.2: Total Case Management Meetings and 2-Year Recidivism. Model 3.2

explores the amount of case management meetings on two-year recidivism while controlling for age at entry, ethnicity, LSI at entry, sex and client type. As shown in Table 16, the overall regression model was statistically significant ( $\chi 2(6) = 34.67$ , p < .001, Nagelkerke R2 = .30) and classified two-year recidivism 78.9% of the time.

Individually, the least significant variables (step 1: client type, step 2: LSI entry) were removed. Backwards elimination was then initiated with a removal p value of .200. Ethnicity was removed, resulting in a model (not shown) including total case management meetings, age at entry, and sex (p = .139). Forward entry was then performed to include previously excluded variables back in one at a time. For the final model, variables were removed if they were not statistically significant at the 0.05 level. As shown in Table 17, the results of the final model predicting two-year recidivism were statistically significant ( $\chi^2(2) = 30.04$ , p < .001, Nagelkerke  $R^2 = .26$ ) and correctly classified two-year recidivism 81.0% of the time.

Table 16

Initial Model 3.2 With Total Case Management Meetings and Covariates Predicting 2-Year Recidivism

Variable	В	SE	Wald	р	OR
Total case management meetings	-0.03**	0.01	9.91	.002	0.97
Age at entry	-0.11***	0.03	14.47	.000	0.90
Ethnicity	-0.71	0.53	1.80	.179	0.49
LSI entry	0.02	0.04	0.38	.539	1.02
Sex	1.18	0.82	2.06	.151	3.25
Client type	0.02	0.47	0.00	.973	1.02
Constant	2.70	1.87	2.07	.150	14.83

*Note.*  $\chi^2(6) = 34.67$ , p < .001, Nagelkerke  $R^2 = .30$ \*\*\*p<.001; \*\*p<.02; \*p<.05

There was a statistically significant negative relationship between total case management meetings and two-year recidivism, p = .001, OR = 0.97. A one meeting increase in total case management meetings was associated with 0.97 times lower odds of recidivating at two years. There was also a statistically significant negative relationship between age at entry and two-year recidivism, p < .001, OR = 0.90; a one-year increase in age was again associated with 0.90 times lower odds of recidivating at two years. Total case management meetings predicted lower odds

of recidivism at one and two years; and thus, the null hypothesis for Research Question 3 was

rejected.

Table 17

*Final Model 3.2 With Total Case Management Meetings and Age at Entry Predicting 2-Year Recidivism* 

В	SE	Wald	р	OR
-0.03***	0.01	10.69	.001	0.97
-0.11***	0.03	16.66	.000	0.90
4.01***	1.03	15.05	.000	54.91
	B -0.03*** -0.11*** 4.01***	B         SE           -0.03***         0.01           -0.11***         0.03           4.01***         1.03	B         SE         Wald           -0.03***         0.01         10.69           -0.11***         0.03         16.66           4.01***         1.03         15.05	B         SE         Wald         p           -0.03***         0.01         10.69         .001           -0.11***         0.03         16.66         .000           4.01***         1.03         15.05         .000

 $\chi$  (2) = 50.04, p < .001, Nagerkerkerk = \*\*\*p < .001; \*\*p < .02; \*p < .05

**Summary of findings for Research Question 3.** This series of models examined if the total number of case management meetings provided to individuals during residential community corrections in calendar year 2011 was related to one- and two-year recidivism outcomes. The results indicate support of the research hypothesis whereby total number of case management meetings was a statistically significant predictor of lower odds of recidivism at one and two years. As with the models associated with Research Question 1 and 2, age at entry into the program was a statistically significant predictor of lower odds of recidivism at both one and two years.

#### Summary

The sample consisted of clients who were mostly Caucasian, male, and identified as Diversion clients. In this sample, most clients did not recidivate at one or two years. When considered in separate models with control variables, intensity of nonclinical types was not found to be statistically significant at one year; however, intensity of clinical types was found to be statistically significant. For two-year recidivism results, intensity of nonclinical types showed substantive significance (p=.053). Once again, intensity of clinical types was statistically significant at two years. As a result of these mixed findings, the null hypothesis for Research Question 1 was not rejected.

When considered in separate models, clinical dosage and total case management meetings were associated with statistically significant lower odds of recidivism at one and two years. As such, null hypotheses for Research Questions 2 and 3 were rejected.

The following chapter, Chapter 5, will contain a discussion of these results. It will also contain a discussion of the strengths and limitations of the study, as well as the implications of the results. Chapter 5 will conclude with recommendations for future research.

#### CHAPTER 5—DISCUSSION

#### Introduction

This quantitative study examines the impact of the intensity of nonclinical and clinical intervention types, clinical dosage, and case management meetings on recidivism at one- and two-years post completion of residential programs in Colorado. It was designed to broaden our understanding of clinical and nonclinical intervention delivery in a community corrections setting. To date, much of the dosage research has focused on populations in secure settings (Bourgon & Armstrong, 2005; Makarios et al., 2014; Sperber et al., 2013) and has largely ignored the role of case management (Burrell & Rhine, 2013; Sperber et al., 2013). Research on effective interventions, their intensity, and dosage is critical for the design and delivery of interventions for community corrections clients. As the population of community corrections in Colorado has grown over time, recidivism rates have remained stagnant. As a result, the need to pinpoint what works is more important than ever before. In addition, much of the work being done in community corrections in Colorado is case management and this study deepens our understanding of the impact of these services on clients in the program. By understanding what interventions are most effective, and in what amounts, services can be tailored to better address the needs of the population while having a profound impact both individuals and our communities.

The Risk/Need/Responsivity (RNR) theory provides the theoretical framework for understanding what works to reduce an individual's risk to recidivate, as reduction of risk through correctional programming translates to more successful discharges out of the criminal justice system and lower recidivism rates. At its core, RNR purports that one's risk to recidivate can be predicted, specific drivers of risk can be identified, and that appropriately matched

interventions, provided at the correct intensity, dosage, and though the proper modality, can be administered to reduce an individual's risk of recidivism (Andrews et al., 1990). Many programs have been evaluated and support the risk principle. For instance, Lowenkamp et al. (2006) found that programs that did not adhere to the risk principle failed to reduce recidivism among offender populations. Lipsey and Cullen (2007) found that programs had better outcomes related to recidivism when targeting medium and high-risk offenders. The dosage literature goes deeper into the amount of intervention required to actualize better outcomes. Three dosage studies have found support for recidivism reduction based on specific quantities of intervention hours and risk level (Bourgon & Armstrong, 2005; Lipsey, 1999; Makarios et al., 2014). Interestingly, the fourth dosage study was unable to find support for the interaction between risk level and intervention hours. Instead, Sperber et al. (2013) found that increasing intervention dosage amounts with all offenders reduced recidivism.

Evaluating this body of research is important for those under supervision and practitioners alike. There are numerous deleterious impacts associated with criminal justice involvement such as disenfranchisement, difficulty obtaining housing and employment, and stressed social supports (Opsal, 2012; Petersilia, 2003; Pogrebin et al., 2015; Travis, 2005). Therefore, supervision and community-based services are designed to assist individuals in these areas. However, varied needs amongst this population can lead to a wide range of services and programs that are designed to help but can be costly and time consuming to maintain. Research on dosage and service provision facilitates strategic resource deployment and targeted interventions to help people not just get out of the system but stay out of it. The most recent dosage literature has focused entirely on cognitive based interventions in secure settings to determine what dosage amount is most impactful at recidivism reduction. This is a limitation as

most adults on correctional supervision are in outpatient settings such as community corrections, probation, and parole (Alper & Durose, 2018). In this setting, clients are not a captive audience and must focus on several different, and often competing responsibilities at the same time. They are required to work, take care of their families or build prosocial supports, resolve outstanding financial obligations and follow a myriad of rules and regulations. Understandably, attending treatment, applying what is learned to daily life, and creating new habits can take a backseat to more urgent and pressing matters. Therefore, research on interventions delivered in community-based settings is critical to recidivism reduction efforts. Not only does this study add to the literature on community-based interventions, the expansion of dosage to include intensity of intervention types and case management meetings provides a broader understanding of what works to reduce recidivism.

Three research questions were explored in this study. First, intensity of intervention types was divided into two variables: nonclinical and clinical types. The results of these analyses enhance knowledge and understanding of how to intervene most effectively and efficiently. More specifically, I examine if receiving multiple intervention types impacts outcomes. Second, clinical dosage was also examined as the total number of hours of intervention, provided by trained practitioners administering cognitive behavioral interventions. Prior research demonstrates that cognitive behavioral intervention dosage is effective at reducing recidivism both in the aggregate (Sperber et al., 2013) and when provided in higher doses to those who are higher risk (Bourgon et al., 2005; Lipsey, 1999; Makarios et al., 2014).

Finally, the total number of case management sessions received were analyzed. Case management meetings are a staple of supervision practices in community corrections in Colorado and where most of the time is spent between CC staff and individuals under supervision. During

the time period of this study, no information was available about the length of time, or specific content, of these meetings and therefore only the aggregate impact was examined. Even still, case management makes up a significant portion of the resources that go into CC programming and understanding its impact on long term recidivism outcomes is critically important.

The remainder of this chapter will summarize major study findings, articulate how each finding contributes to the existing literature and CC practice, review limitations of the research, and provide suggestions for future studies in this area.

#### Conclusions

Intensity of intervention types. This study looked at the intensity of intervention types provided to clients in community corrections in calendar year 2011 separated into two groups: nonclinical and clinical. Clients included in the sample could have received all or none these types of interventions throughout their stay; however, 43% of clients received just one nonclinical intervention type and 46% received just one clinical intervention type. Nonclinical interventions are generally vocational in nature, delivered by program staff or provided through resource in the community, and, when available, open to everyone. Providing these types of interventions to people under supervision is common and outcomes are often clear and identifiable. For instance, if an individual is unemployed when they begin a class and becomes employed after its completion, one could say that the employment intervention was effective. Nonclinical interventions address core areas of stabilization and need for individuals on supervision such as employment, education, life skills and other interventions. And yet, not all clients received a combination of these interventions in this sample making it difficult to thoroughly asses the role of nonclinical interventions on recidivism outcomes. Furthermore, because data on nonclinical interventions was only available in the form of whether an individual
participated or not during their stay in the community corrections program it was not possible to assess dosage hours or their quality.

Clinical interventions are designed to address some of the more complex criminogenic needs experienced by individuals under supervision. A cognitive behavioral approach is preferred, both empirically and by regulatory agencies, because it has been shown to address the underlying attitudes, thoughts, and beliefs that interfere with successful outcomes. Consider the earlier example of an individual who obtains a job after completing an employment class. That class likely did not address underlying issues with authority, conflict resolutions skills, or substance abuse that may interfere with being able to keep a job. In accordance with the tenets of RNR theory, and accounting for the complexity of individual needs and strains, my findings indicate that the more clinical intervention types received during ones stay in community corrections, the lower their risk to recidivate at one- and two-years post program completion.

When assessing clinical and nonclinical interventions on recidivism results demonstrate that nonclinical types did not have a statistically significant relationship with one- or two-year recidivism. It did, however, reach substantive significance at two years with a *p* level of .053. This could mean that it is more important to address clinical needs. It may also be indicative of not enough nonclinical interventions being offered to make a difference in this study. Interestingly, the data in this study demonstrated that most clients were not receiving an array of services during their stay. Substance use treatment and employment services were received most frequently and, in most cases, clients did not receive many other types of services. This may be, in part, a result of state regulation and availability of services but could also be a reflection of the programs included in this study. Based on my experience working in community corrections, these findings align with what I have seen in practice for more than a decade. In fact, I believe

that the two programs included in this study offer some of the most comprehensive intervention programming throughout the state. Because they provide so many services in house, these providers are able to more quickly get people connected with interventions and develop needed programming. Even still, most clients are not receiving much beyond substance use and employment services which may also be problematic if these interventions are provided to individuals who do not need them. The literature on risk is clear, providing interventions to individuals who don't need them, in other words overtreating people, can have unintended, negative impacts (Andrews & Bonta, 2010). Community corrections programs are acutely focused on getting people into substance use treatment because of the statute as well as helping people to gain employment because a portion of their residential stay is paid for by the individual so unemployment can create significant challenges in their stay. As a result, it is more likely that individuals are being under-treated and may complete their stay without addressing all of their criminogenic and non-criminogenic needs. As a result, in 2013, community corrections programs began implementing a level system that requires them to address all criminogenic needs throughout an individual's stay in the program. A follow up study would likely find that current clients are accessing a wider array of intervention types as a result of this new practice.

**Clinical dosage.** Similar to prior dosage literature (Bourgon et al., 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013), the amount of clinical dosage in hours received during an individual's stay in community corrections has a statistically significant, negative relationship with both one- and two-year recidivism outcomes. Dosage was analyzed in hours, as opposed to sessions or minutes, to: (1) have comparative results to the four primary dosage studies, and (2) account for the different session lengths offered by ATC (110-minute sessions) and MCCC (90-minute sessions). Like the original dosage study conducted by Lipsey (1999),

this study found support for increasing clinical dosage to reduce recidivism. Irrespective of the time at risk in the community, higher dosage amounts resulted in a lower likelihood of recidivating at both one- and two-years post program completion. In one of the more recent dosage studies, Sperber et al. (2013) tested for a possible interaction between clinical dosage and LSI entry scores. They did not find statistical support for the interaction in their analyses. I also examined this possible interaction in the one- and two-year recidivism models and found no evidence of it. Thus, my findings suggest that providing more clinical dosage to individuals in community corrections, irrespective of their LSI score when they begin the program, reduces recidivism.

These findings can have a tremendous impact on community corrections supervision practices and the individuals, families, and broader communities that are impacted by them. They support focusing resources on clinical intervention dosage and possibly the need to address multiple criminogenic need areas throughout ones stay in residential programming. Considering that even modest reductions in recidivism can have a tremendous positive impact, further research in this area is warranted.

**Case management meetings.** Case management meetings involve both the case manager and the client and allow time for the evaluation, identification, and delivery of interventions. In these meetings the client can express their needs, stresses, and strains. Together with their case manager, they can determine if the current course of services and interventions are working to achieve the goals of supervision and recidivism reduction. Case management meetings are an important part of programming in community corrections in Colorado as case managers must meet with clients on a weekly basis throughout their stay in residential programming as required by state standards (Division of Criminal Justice, 2010).

Prior research suggests that case management meetings provide favorable, yet modest, effects on drug use and recidivism outcomes. Positive effects were shown to be greater when individuals had more contact with their case manager and when they had increased access to drug abuse treatment (Longshore, Turner & Fain, 2005). These positive effects increase the longer the client spends in programming (Longshore et al., 2005). In this study, the number of case management meetings that an individual had during their stay was shown to have an inverse relationship with recidivism at both one- and two- years. In other words, the higher frequency with which an individual met with their case manager during their stay, the less likely they were to recidivate at post program completion. To bolster these findings, I conducted further analysis to see if case management meetings were simply a proxy for length of stay in the program. Interestingly, length of stay was not shown to be a factor in reducing recidivism in my dataset. Although I did not asses the quality or content of the meetings themselves, my findings provide support for case management meetings as a core correctional practice in the Colorado community corrections system and one that is effective at reducing recidivism.

### **Contributions to the Literature and Implications on Practice in Community Corrections**

The study results summarized above have several important implications for service delivery within community corrections while also contributing to the broader literature.

Intensity of intervention types. The results in this study suggest that the risk of recidivism can be reduced by increasing the intensity of clinical interventions provided to individuals in community corrections. While the intensity of nonclinical interventions was only substantively significant at two years post program completion, results indicate that the more clinical intervention types an individual receives, the less likely they were to recidivate at both one and two years post successful completion of the program. All too often, resource constraints

result in the removal of available interventions in the community. This research suggests that investing resources into offering a variety of clinical and nonclinical interventions could bring about a positive return on investment. Additionally, this research supports prior literature demonstrating that increased clinical dosage throughout someone's stay in community corrections impacts recidivism outcomes (Bourgon et al., 2005; Lipsey, 1999; Makarios et al., 2014; Sperber et al., 2013). When budgets are tight, intervention availability should not be at risk. As noted earlier, most individuals in the sample were provided substance use treatment and employment services which is a result of statutory requirements (House Bill 1991-1173) and the need to pay rent at the program. A direct match for interventions such as life skills, cognitive restructuring, anger management, and those that fell into the other category was not available in the dataset for this study. While this study did not assess the quality of the match between an individual's criminogenic needs and the intervention type received, the results demonstrate some support for addressing multiple needs throughout the program. Future studies in this area, with larger sample sizes, are warranted particularly to allow for deeper exploration of gender dynamics as it relates to treatment matching and delivery as women have unique treatment and responsivity needs.

**Case management.** This study found that the amount of case management sessions received is associated with recidivism reduction and supports efforts to empirically identify what activities and services can and should be counted as dosage. In Colorado community corrections, case management meetings are provided consistently to program residents. Since drawing this sample, Colorado has made great efforts to incorporate cognitive behavioral techniques that address specific criminogenic needs into these meetings through the development of the progression matrix. According to Burrell and Rhine (2013) case management sessions should be

considered in dosage research as practitioners are more frequently expected to deliver cognitive behavioral interventions. Future studies should look at the impact that these meetings have on long term outcomes and further, how meeting length and quality of content within these meetings does so as well. For now, the inclusion of the number of case management meetings in this study provides an initial, and promising, understanding of their impact on one- and two-year recidivism outcomes.

Service delivery in Community Corrections. The two most recent dosage studies (Makarios et al, 2014; Sperber et al., 2013) focused on individuals in secure, inpatient settings who participated in clinical interventions, delivered from start to finish, over a four-month period. When an individual's sole responsibility is to attend classes, participate in interventions, and prepare for release, one could assume that there may be more opportunities for internalization of the material without having to focus on the requirements of functioning outside of treatment. This study adds complexity to our understanding of dosage and intervention, by using a sample of individuals who have access to the community, its influences, and outside responsibilities; all things that can get in the way of successful outcomes. In this study, participants were required to find a job/work, attend to family responsibilities, and comply with supervision responsibilities all the while having access to the community. In this environment individuals have access to negative influences, drugs and alcohol, and competing pressures that can make it challenging to follow through with the requirements of supervision. Even still, the findings suggest that intensity of clinical intervention types, clinical dosage, and case management meetings are impactful on outcomes post program completion. This study demonstrates that the interventions provided to individuals in community corrections had value. This finding suggests that even with the challenges of open settings, individuals can be placed in

lower levels of custody, provided with interventions, and succeed. These findings, although modest, support a community-based model of reentry that maintains supportive connections in the community, addresses criminogenic needs, and is less costly to the system overall.

### Limitations

The findings presented here have the potential to be profoundly impactful on individuals, families, the broader community, and correctional practices in community settings. As a result, its limitations should be addressed in follow up studies to help broaden and deepen our understanding of what works.

**Study design.** The primary limitation of this study has to do with its design. Participants were not randomly assigned to interventions, or case management staff, and therefore outside factors could be impacting the findings presented here. Self-selection into clinical and nonclinical interventions and individual motivation to complete treatment could have affected both successful completion of the community corrections program and the odds of recidivism (Davis, Bozick, Steele, Saunders & Miles, 2013). Additionally, factors outside of the residential program such as the strength of familial support, individual skills and abilities, and access to community resources were not able to be analyzed and may have also impacted findings.

Nonclinical data availability. The nonclinical data available in this study (e.g., employment, education, life skills and other interventions) made it impossible to assess dosage hours because it was not tracked as a dose by the participating programs. This is a significant limitation because while the intensity of nonclinical interventions approached statistical significance on recidivism outcomes at two years it is not possible to know if dosage in the form of sessions and hours of these nonclinical interventions is meaningful. It would be of great value to uncover the extent to which multiple sessions of life skills, or employment services, impacts

recidivism in future years. Thus, much more information is needed to truly understand whether nonclinical interventions are necessary to affect outcomes. It would also be meaningful to assess how the quality of nonclinical programming, and ability to respond to different individual needs, impacts long term outcomes. This is the next logical research question to explore to better understand the allocation of resources to individuals for maximum impact.

**Quality of service delivery.** As mentioned earlier, the quality of interventions was not explored in this study. Quality of service delivery has been a concern for decades, although there remains a dearth of research in this area. In 1996, Bickman conducted a study of mental health and substance abuse services for adolescents and found that providing more services did not yield better results due to the fragmented and disjointed nature of service delivery. Bickman's study provided initial insights into how the quality of service delivery may be more impactful than even the number of hours provided to individuals under supervision. Future studies related to substance use and mental health have shown that the quality of the relationship between the provider and the client can have a positive impact on outcomes (Ilgen, McKellar, Moos, & Finney, 2006; Lorenzo-Luaces, Debueis, & Webb, 2014; Morash, Kashy, Smith, & Cobina, 2015; Taxman & Ainsworth, 2009). Future studies should examine both the content of case management meetings as well as the impact of the alliance between staff and client as it relates to outcomes.

To better understand correctional supervision and how interventions impact the individuals experiencing them, studies like this should employ mixed methodologies. Qualitative research has yielded considerable insight into the barriers to successful reentry for those on supervision (Binswanger, Nowels, Corsi, Long, Booth, Kutner, & Steiner, 2011; Hanrahan, Gibbs & Zimmerman, 2005; Opsal, 2012). It illuminates the interplay between the structure of

the correctional system for which an individual is under supervision and an individual's agency, or free will, to choose to engage in intervention programming (Opsal, 2011). Additionally, according to Wolgemuth, Erdil-Moody, Opsal, Cross, Kaanta, Dickmann & Colomer (2015), qualitative research provides several benefits to participants, to include the ability to self-reflect and gain awareness. Gaining insight into how interventions are perceived (as helpful or not), how the administrator of the intervention impacts its effectiveness, and so on is of tremendous importance for future studies.

If interventions are to be effective in reducing recidivism, they must be of high quality, follow evidence-based practices, be delivered with sufficient dosage, and should motivate individuals to complete the intervention (Dowden & Andrews, 2004; Makarios et al, 2014; Sperber et al., 2013). Programs must also have engaged leadership, qualified staff, and appropriate systems for sanctioning clients who violate program rules (Lowenkamp, Flores, Holsinger, Makarios, & Latessa, 2010). Regular fidelity processes to monitor consistency in delivery and the matching of intervention services are necessary in programs (Long, Sullivan, Wooldredge, Pompoco, & Lugo, 2018). To assess the quality of service delivery in this study, transcripts of the administration of interventions and case management meetings would have had to be reviewed and analyzed. Although time restraints would have prevented this from happening, the information necessary was also not available for analysis.

General responsivity. Additionally, the extent to which interventions were matched to the needs of the participants (general responsivity) was also not available. Identifying criminogenic needs and matching them to interventions has long been recognized as a key component of effective behavioral health (Andrews et al., 1990; Andrews & Bonta, 2010; Gendreau, 1996; Long et al., 2018). In a recent study by Gill and Wilson (2017), the impact of

matching was compared to that of intervention dosage. Gill and Wilson's study concluded that matching interventions and services to client needs was less impactful on recidivism than the combination of interventions and services provided. This means that the intensity of intervention types alone can reduce recidivism without the need to specifically align individual needs with specific intervention types. This finding was echoed by a recent study by Long et al. (2018), which found that engagement in programming alone is more impactful than the type of programming received for certain individuals. In their sample of 69,129 offenders, interventions were provided that may or may not have been directly tied to assessed criminogenic needs. Their findings suggest that, in some cases, programs and interventions may provide benefit to those who are not formally targeted, if only as mechanisms to feed an individual's motivation to change (Long et al., 2018). So although my research did not focus on the quality of the intervention or match between one's identified needs and the intervention itself, the findings of this study correspond with the work of Gill et al., (2017) and Long et al. (2018) who indicate that the intensity of intervention types can impact long term outcomes. Even still, future studies should delve into this further.

**Specific responsivity.** This study did not analyze whether interventions were matched to address an individual's specific responsivity. Specific responsivity refers to individual characteristics and preferences that affect the change process. This can include considerations such as gender responsiveness, cultural barriers, and learning styles (Andrews & Bonta, 2010). There was no information available as to how an individual's specific responsivity needs were addressed in any of the interventions analyzed in this study. There was no information to indicate that clients were assigned to providers or case managers based on individual characteristics or preferences. In addition, clients may have had several case managers throughout their stay which

could impact their ability to build a trusting, professional relationship. This professional relationship, also referred to as a supportive alliance, could affect intervention delivery and response. Qualitative methodologies are best suited to gather this type of data and would be well worth exploring.

**Sample size.** Limited statistical power may have played a role in some of the null findings in model 2.1 and 2.2. While the sample for this study (n=147) met the minimum requirements put forth by Vittinghoff and McCullough (2006), a larger sample would have provided for more generalizability, and possibly more nuanced, results. Due to limitations on time and resources, a larger sample, while available, could not be pursued. Most of the data in the study came from reviewing individual case files which required a minimum of an hour per individual case, totaling approximately 160 hours collecting the data. Then another 75 hours were spent coding and preparing the data for analysis. The original study design included data from 16 community corrections programs which, in hindsight, would have been impossible for me to complete in a timely manner. Future research should seek to replicate this study, with ample resources and support, and in more community corrections programs. A study of that magnitude would greatly increase our knowledge and understanding of what works in community corrections in Colorado, and the impact that intervention types, dosage, and general case management strategies have on long term outcomes. Similarly, this sample of individuals were under a more robust form of supervision than those on probation and/or parole and a less robust form of supervision than the most recent dosage study samples (secure/closed setting where individuals can't leave program until treatment is administered in full). As such, results may only be transferable to community corrections populations, and may also be limited to the specific community corrections programs in the sample.

### **Recommendations for Future Research**

While several ideas for future research were discussed above as part of the study limitations, there is still much work to be done. As reform efforts focus on incarcerating less people in prisons (Austin, Cadora, Clear & Danksy, Greene, Gupta, Mauer, Porter, Tucker, & Young, 2013), additional efforts must be placed on delving further into what works in community-based settings. For individuals on probation, parole and in community corrections (halfway houses), engaging in interventions designed to address criminogenic needs can be easily overlooked. Maintaining employment, housing, financial stability, and managing relationships are prioritized, while meeting seemingly extraneous expectations of supervision may not be viewed as worthy. These extraneous activities can include meetings with a case manager, participation in individual and group interventions to address criminogenic needs, supervision costs, call-in expectations, urine analyses, etc. These additional expectations can be overwhelming (Pogrebin, Stretesky, Walker & Opsal, 2015; Viglione, 2017), especially when compared to individuals who are able to engage in interventions in an inpatient setting prior to release into the community (such as the dosage research by Sperber et al., 2013 and Makarios et al., 2014). To keep individuals in and connected to their communities, a better understanding is needed of what interventions are most effective in open settings, in what intensity and dosage so as to focus on what works and remove extraneous barriers to success.

How much of a given intervention is necessary to reduce one's risk to recidivate is a critical question within the dosage literature. As criminal justice budgets explode nationwide, using research-based dosage to reduce risk is critical to managing resources and actualizing the best outcomes. There is more to it though than simply establishing an evidence-based number of hours of a given intervention. As this study shows, increasing the number of types of

interventions can also reduce an individual's risk to recidivate. As a result, the risk assessment used is critical to the process of service delivery. Several scholars have criticized the use of the LSI, which is the risk assessment used in Colorado. Citing that it does not account for the role that gender, racial, and ethnic differences play in the differing social, economic and political contexts of individuals, it is time to consider how risk is assessed and used to deliver interventions. Selecting a risk assessment, or several, that are best suited for certain populations would allow the system to be more accurate and responsive in their service delivery model. Doing so will allow the field to advance beyond current assessment processes and the myopic results these assessments often provide to a more dynamic and individualized response to clients and their needs.

Another consideration is the possibility that some interventions, or combinations of interventions, are more impactful than others. In addition, within those unique types of interventions, the quality of service delivery has been left largely untouched in the dosage literature (Baglivio, Wolff, Jackowski, Chapman, Greenwald & Gomez, 2018; Hay, 2018). As programs are implemented and interventions are delivered in real world settings, many unintended modifications to the intervention itself can occur impacting its effectiveness (Miller & Miller, 2015). Qualitative research, as mentioned earlier, can illuminate the experience of the interventions for those participating in them, and help to identify gaps in intervention service delivery (Opsal, 2011). A prime example of this is with case management. As noted in this study, there is not currently a mechanism in place to track the length of a case management meeting, the quality of this type of intervention, or the impact of the relationship between practitioner and client. An ideal model for case management would be one that involves audio or video taping of the session not only to track the dosage length but enable skilled coaches to transcribe and code

meeting content for the purposes of assessing quality. In a recent study by Holstrom, Adams, and Morash (2017), they found support that the type of supportive communication provided to female clients matters and that in most cases, probation officers were providing informal, as opposed to tangible, support. While received positively, it highlights the need for further exploration into the most helpful communication and connection strategies between practitioners and clients. Enhancing our understanding of the impact of case management meetings would also include regularly asking staff and clients to rate the quality of their supportive alliance. This type of qualitative data could then be used further engage in matching to include how clients are partnered with staff to begin with. The criminal justice space is focused primarily on outcomes (Miller et al., 2015) and thus, a critical shift is necessary to analyze the process of implementation, quality of delivery, and fidelity management within the service delivery space (Duwe & Clark, 2015; Fixsen et al., 2005).

Community corrections in Colorado has changed significantly since calendar year 2011 in many meaningful and exciting ways. First, in 2013, the Progression Matrix was developed to ensure consistency among the multiple programs throughout the state and ensure that all criminogenic needs were addressed throughout someone's time in the program. The progression matrix brought with it a focus on the Eight Guiding Principles for Effective Interventions, and case managers were asked to do more with clients in their meetings to address specific needs. In addition, the BSMART project was implemented in 2015 and involves a more consistent way of delivering sanctions and incentives to individuals in the programs. In theory, these evidenceinformed enhancements to community corrections programming were designed to increase success within the programs and alter how interventions are delivered, in what quantity, and for what duration. According to Burrell and Rhine, "With the development of cognitive behavioral

supervision models, supervision has been restructured to incorporate cognitive behavioral techniques, skill training, role modeling, and positive reinforcement. Under these new approaches it is more plausible to suggest that supervision provided by PPOs should be considered treatment and thus qualify as dosage" (2013, p. 9). Community corrections in Colorado would greatly benefit from a statewide follow up study demonstrating how things have changed and the impact that current interventions are having on long term recidivism.

From a practitioner standpoint, what has not changed in the two programs examined in this study is the culture among staff and dedication to excellence in programming. Both MCCC and ATC have been at the forefront of new initiatives in the state, committed to developing and implementing evidence based and informed programming as they strive for excellence. Both programs also have consistently had very low turnover rates, a data point linked to high staff engagement and morale (Wells, Minor, Lambert, & Tilley, 2016; Wooldridge & Cochran, 2019). Indeed, in published reports from DCJ/OCC, both programs were found to have some of the lowest turnover rates in the state (Division of Criminal Justice, 2014). While this report is no longer published annually, the additional support provided to staff and overall commitment to quality programming can be seen, and felt, when at the program. Staff are committed to being the best and are dedicated to recidivism reduction efforts. Had this study included a more diverse sampling of community corrections programs across the state, it is reasonable to believe that the results would be different. As mentioned previously, most programs do not offer or track treatment opportunities and access to qualified providers varies greatly. Location and program culture also has an impact on intervention delivery and varies across programs.

The results of this study suggest that there is a need to focus on how to link individuals with interventions. As dosage research evolves, this gap in the literature is the next frontier

which should be pursued. Not only does the field need to look further into how interventions are designed to address specific criminogenic needs but more importantly, how the modality and delivery of interventions meets the general and specific responsivity needs of clients under supervision (Burrell & Rhine, 2013; Duwe & Clark, 2015; Miller & Miller, 2015). For research like that to take place in community corrections in Colorado, programs would need to collect far more detailed and reliable data on interventions, and further assess individuals to determine their responsivity needs. While cognitive behavioral interventions are often inherent in some programming received (clinical dosage), most justice involved individuals receive these types of services in a group setting that follows manualized curricula and without individualized attention toward their specific level of perceived proficiency in these areas. Thus, individuals may benefit from more individualized and intensive services to help address risk areas that include a direct focus on what is driving their risk specifically.

As with many ambitious research projects, this study has opened a Pandora's box regarding the possibilities for future studies. And through this process there is one question above others that I argue is of utmost importance to address. What role does the relationship between the client and the service provider play in outcomes? To what degree does a supportive alliance between practitioner and client impact the 'uptake' of the intervention itself? Through this chapter there have been several references to a possible hidden component to successful long-term outcomes. I believe that component is hidden within the quality of the relationship between the individual providing the intervention and the individual receiving it and the quality of the work being done. The overall and complete quality of relationships as a predictor of success are explored in detail within some psychological and sociological spaces (Lambert & Barley, 2001; Lowenkamp, Holsinger, Robinson, & Cullen, 2012). However, it is largely

forgotten in the criminal justice space, where individuals are mandated to participate in interventions and therefore the quality of the delivery is easily overlooked (Cohen & Whetzel, 2014). This is largely uncharted territory within the criminal justice landscape and likely to unlock discoveries key to successful, long term outcomes.

### Conclusion

It can be assumed that without interventions to address criminogenic and noncriminogenic needs, individuals in community corrections will struggle to reenter society successfully. The people, places, and circumstances that led to incarceration are likely to be present upon release and therefore it is critical to address areas of need through effective interventions that increase long term success. There may also be a diminishing point of return in providing too many interventions to clients who don't have the risk and need profiles to warrant them. Identifying the point where positive benefits outweigh negative consequences is of considerable importance in the field of corrections. Research has shown that interventions can work at reducing recidivism. This study demonstrates support for the impact that interventions can have on an individual's success at one- and two-years post program completion. As researchers and practitioners learn more about how to build a system of interventions that support clients in the community while also reducing recidivism, our communities become safer. The findings are promising and should be encouraging to practitioners nationwide. Clinical interventions, and the intensity with which they are delivered, can reduce recidivism in community corrections. Furthermore, interventions delivered in open, community-based settings are effective at reducing recidivism, even though there are so many competing responsibilities for clients. Most importantly, the delivery of interventions and the subsequent reduction in recidivism that is experienced can have a much larger impact than simply on the individual

themselves. Ensuring the appropriate balance between interventions can produce positive outcomes for individuals, their families, and the community at large.

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### APPENDIX A

### **Internal Review Board Approval Letter**



Knowledge to Go Places

Research Integrity & Compliance Review Office Office of the Vice President for Research 321 General Services Building - Campus Delivery 2011 eprotocol TEL: (970) 491-1553 FAX: (970) 491-2293

#### NOTICE OF APPROVAL FOR HUMAN RESEARCH

DATE:	August 16, 2016							
TO:	Shelley, Tara, Sociology							
	Naday, Alexandra, Sociology, Burkett, Betty, Sociology, Carolan, Michael, Sociology							
FROM:	Swiss, Evelyn, CSU IRB 2							
PROTOCOL TITLE:	Dosage Matters: Going Deeper into 'What Works' for Risk Reduction in Community Corrections							
FUNDING SOURCE:	NONE							
PROTOCOL NUMBER:	16-6494HH							
APPROVAL PERIOD:	Approval Date: August 14, 2016	Expiration Date: July 21, 2017						

The CSU Institutional Review Board (IRB) for the protection of human subjects has reviewed the protocol entitled: Dosage Matters: Going Deeper into 'What Works' for Risk Reduction in Community Corrections . The project has been approved for the procedures and subjects described in the protocol. This protocol must be reviewed for renewal on a yearly basis for as long as the research remains active. Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.

Important Reminder: If you will consent your participants with a signed consent document, it is your responsibility to use the consent form that has been finalized and uploaded into the consent section of eProtocol by the IRB coordinators. Failure to use the finalized consent form available to you in eProtocol is a reportable protocol violation.

If approval did not accompany a proposal when it was submitted to a sponsor, it is the PI's responsibility to provide the sponsor with the approval notice.

This approval is issued under Colorado State University's Federal Wide Assurance 00000647 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under CSU's Assurance, please do not hesitate to contact us.

Please direct any questions about the IRB's actions on this project to:

IRB Office - (970) 491-1553; <u>FICRO\_IRB@mail.Colostate.edu</u> Evelyn Swiss, Senior IRB Coordinator - (970) 491-1331; <u>Evelyn Swiss@Colostate.edu</u> Tammy Felton-Noyle, Assistant IRB Coordinator - (970) 491-1655; <u>Tammy.Felton-Noyle@Colostate.edu</u>

Erely Swiss

Swiss, Evelyn

Approval to review up to 1000 client (prisoner) files and recruit 20 clients for qualitative interviews with the approved recruitment and consent procedures. This study does involve the enrollment of prisoner population. IRB prisoner representative was present during the discussion and vote of this study in accordance with 45 CFR 304(b). The project is considered not greater than minimal risk and qualifies for approval under 45 CFR 46.306(a)(2)(ii). Project is currently unfunded. The above-referenced project was approved by the Institutional Review Board with the condition that the approved consent form is signed by the subjects and each subject is given a copy of the form. NO changes may be made to this document without first obtaining the approval of the IRB.

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## APPENDIX B

# **Program Request and Outcome List**

Data Access Requested								
Program Name	Access Request Result							
Advantage Treatment Center (ATC)	Granted							
CMI – Longmont	Granted							
CMI – Boulder	Granted							
CMI – Fox	Granted							
CMI – Ulster	Granted							
CMI – Dahlia	Granted							
CMI – Columbine	Granted							
CMI – CCTC	Granted							
Garfield County Community Corrections	Granted							
ICCS – Kendall	Granted							
ICCS – Weld	Granted							
ICCS – West	Granted							
Mesa County Community Corrections	Granted							
San Luis Valley Community Corrections	Granted							
Time to Change - Adams	Granted							
Time to Change - Commerce City	Granted							
Comcor, Inc	Denied							
Arapahoe County Treatment Center	Did not respond							
CEC – Arapahoe County Residential Center	Did not respond							
CEC – CAPS	Did not respond							
CEC – CAE	Did not respond							
CEC – Tooley Hall	Did not respond							
CEC – Williams Street Center	Did not respond							
Hilltop Community Corrections Program	Did not respond							
Independence House – Fillmore	Did not respond							
Independence House – Pecos	Did not respond							
Larimer County Community Corrections	Did not respond							

## APPENDIX C

## **Data Collection Sheet**

Case Code: Pro		Prog	gram: Start Date:				Term	Date:	Data co	Data collection date:				
	TOTAL	Crim Hx	E/E	Fin	F/M	Acc	L/R	Comp	AOD	E/P	A/B			
Entry LSI														
Exit														
LSI	Cli	inical – Sub	stance			Clinical	– Mental I	lealth Ty						
Date attended – X hour							Date attended – X hour							
	Clinic	al – Anger	Mana	geme	nt Tx			Clinic	cal – Cog o	nly Tx				
Date at	ttended –	X hour					Date a	Date attended – X hour						
	Clini	cal – Dome	estic V	iolenc	e Tx			Clin	ical – Othe	er Tx:				
Date attended – X hour						Date attended – X hour								
	Case Management I						nterventions							
Case Manager(s): Dates attended – X hour if av						vailable								
Non Clinical Intervention – Employment Services						Non Clinical Intervention – Educational Services								
Dates attended – X Hour if available						Dates attended – X Hour if available								
Non Clinical Intervention – Parenting Class					Non Clinical Intervention – Organized Leisure activities									
Dates attended – X Hour if available							Dates attended – X Hour if available							
Non Clinical Intervention – Other:						NOTES								
Dates attended – X Hour if available														

## APPENDIX D

## **Correlation Table**

		1	2	3	4	5	6	7	8	9	10	11
1.	Age_at_entry	-										
2.	LSIEntry	184*	-									
3.	Sex	.028	046	-								
4.	Client Type	283**	.023	104	-							
5.	Ethnicity	.030	.085	048	019	-						
6.	Intensity NON Clinical Types	133	.130	167*	253**	.158	-					
7.	Intensity Clinical Types	137	.026	049	.108	.024	.085	-				
8.	Clinical Dosage	237**	.251**	043	.221**	.004	.208*	.443**	-			
9.	Total CM Mtgs	148	.069	116	.106	.008	.361**	.408**	.566**	-		
10	. One Year Recidivism	247**	.068	.127	.075	110	064	171*	158	188*	-	
11.	. Two Year Recidivism	318**	.084	.129	.065	133	116	.152	151	214**	.804**	-

Pearson Correlation Matrix among Independent, Dependent, and Control Variables

\* \* p < 0.01 (2-tailed).

\*p < 0.05 (2-tailed).

## APPENDIX E

## Inter-Quartile Range (IQR) Rule Analysis



## Clinical Dosage – IQR Analysis














LSIEntry