ABSTRACT

Title of Thesis:	EVALUATING TREATMENT HETEROGENEITY IN THE COMMUNITY MEDIATION MARYLAND RE-ENTRY PROGRAM
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To assist soon-to-be released prisoners in their re-entry process, the Community Mediation Maryland Re-Entry (CMM) program focuses on strengthening pre-existing pro-social relationships and assisting in the development of re-entry plans. Prior evaluations suggest this program is successful at reducing recidivism, but given the varied nature of the treatment, important questions remain. This thesis investigates potential treatment heterogeneity based on the subjects' selection into different formats of the mediation process (i.e., selection of outside participants, focusing on emotional support, and reaching an agreement). The investigations into potential treatment heterogeneity (e.g., propensity score models) reveal null results. In the context of the prior evaluations, it is possible that the null results reflect that CMM is a generally effective program. Future research should consider capturing a larger sample of subjects mediating in the program so that subsequent evaluations can investigate important distinctions in the treatment received, which may be valuable in guiding future implementation of the re-entry mediation model.

EVALUATING TREATMENT HETEROGENEITY IN THE COMMUNITY
MEDIATION MARYLAND RE-ENTRY PROGRAM

by

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Community Mediation Maryland Re-Entry program …………….………CMM

Department of Public Safety and Correctional Services…………………...DPSC

Chapter 1: Introduction

As a result of mass incarceration and prison overcrowding, the number of releases from state and federal prisons/jails has substantially increased in recent years, creating a serious challenge in the United States referred to as "mass re-entry" (Chamberlain & Wallace, 2016). The total number of individuals returning to their communities from adult state and federal correctional institutions totaled 637,411 in 2012 alone (Carson & Golinelli, 2013) and ninety-five percent of all state prisoners will eventually be released (Hughes & Wilson, 2003). Once released, many individuals fail to successfully reintegrate and return to prison due to committing new offenses or parole violations. Indeed, studies show that a large number of releasees will return to prison/jail at some point in time (Pew Center on the States, 2011), with more than half being re-incarcerated within three years of their release (Durose, Cooper & Snyder, 2014; Langan & Levin, 2002). The United States' large numbers of releasees, paired with the similarly large numbers of returns to incarceration, urges academics, practitioners, and policy makers to examine the experiences of released prisoners and the difficulties associated with transitioning from incarceration to the community.

These issues are mirrored within the state context of Maryland. Maryland is currently facing public safety and quality of life concerns resulting from mass re-entry. Between the years of 1980 and 2001, Maryland's prison population increased three-fold—totaling 23,752 inmates—requiring the construction of five new correctional facilities in less than twenty years (LaVigne, Kachnowski, Travis, Naser, & Visher, 2003). Furthermore, the Maryland Division of Correction (MDDOC) expenditures increased over

$300 million dollars within this same time-period. The financial costs alone provide motivation for the state to focus on improving the re-entry process for the thousands of offenders released back into Maryland counties (e.g., 7,447 incarcerees were released in Maryland in 2001; LaVigne et al., 2003). Therefore, Maryland's Department of Public Safety and Correctional Services (DPSCS) is focused on improving the re-entry process for inmates and reducing the number of returns to prison within the state.

Evaluations of programs seeking to improve successful re-entry are solution critical part of pursuing this goal. Within the state of Maryland, there is an innovative program confronting the problem of mass re-entry by assisting subjects in their returns home through the use of mediation. The Community Mediation Maryland (CMM) Re-entry program unites volunteers from the community, family, and other central participants to mediate with soon-to-be released subjects regarding their plans (e.g., relationships, housing, finances, treatment) post-incarceration. Two prior evaluations of the CMM program demonstrate its beneficial influence on the success of subjects' re-entry. This success is seen in subjects' reduced recidivism (i.e., across four different measures), self-reported sense of control in their personal relationships, and ability to deal with conflicts in a productive manner (Charkoudian, Cosgrove, Ferrell, & Flower, 2012). Additionally, this program is unique because it acknowledges the role of the family in the re-entry process and the following project intends to provide more empirical evidence related to this relationship. Measures of success are certainly a primary concern in most program evaluations, but it is also important to investigate which component(s) of a program lead to its success, with the goal of establishing an evidence-based model for the intervention to be replicated with integrity (Andrews & Bonta, 2000; Rhine, Mawhoor & Parks, 2006).

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This thesis investigates potential treatment heterogeneity to determine if success, in this case, recidivism, is maintained across subjects regardless of their differing experiences with the re-entry mediation process. Therefore, the following hypotheses test treatment variations within the subject group (i.e., only those who took part in the mediation) with the hope of informing implementation development, further replications, and participant outreach (e.g., greater returns may be gained by urging subjects to continue the program until they reach an agreement).

The first two treatment variations represent tests of treatment heterogeneity that are not in the control of the program (i.e., individuals cannot mediate with spouses/partners or family members they do not have relationships with), but nonetheless may be useful to inform the targeting of subjects into the program. For example, subjects selecting spouses/partners to participate in mediation sessions will likely experience improved quality in those relationships, which will serve as an important influence in their desistance. Furthermore, emotional support provided by family members is important to recidivism and other recidivism-related outcomes (e.g., employment, addiction, housing), so individuals engaging in mediation with family members may have improved odds of desisting from crime. The latter two treatment variations and corresponding hypotheses test malleable components of the program, which can be influenced for the purposes of achieving better recidivism outcomes (i.e., introducing a prepared list of potential mediation topics or describing the importance of reaching an agreement prior to discontinuing services). Not all subject-participant pairs reach an agreement during their mediation sessions, leaving re-entry plans and important issues unresolved, which might negatively impact their return home. In addition, not all subjects predominantly focus on

topics of emotional support during their mediation sessions, which is an area where social support can be leveraged to assist subjects when financial resources may not be available. Identifying the existence and impact of potential treatment heterogeneity within the components of this program will further highlight its success, but also provide useful information for the program's further development, as well as guide implementation in other areas.

Treatment Variation One:

- **H1(a)**: *Subjects who select spouses/partners as mediation participants will have a lower probability of re-arrest.*

- **H1(b):** *Subjects who select spouses/partners as mediation participants will experience longer tenure in the community without experiencing re-arrest.*

Treatment Variation Two:

- **H2(a):** *Subjects who select family members as mediation participants will have a lower probability of re-arrest.*

- **H2(b):** *Subjects who select family members as mediation participants will experience longer tenure in the community without experiencing re-arrest.*

Treatment Variation Three:

- **H3(a)**: *Subjects who reach a mediation agreement with their mediation participants will have a lower probability of re-arrest.*

- **H3(b):** *Subjects who reach a mediation agreement with their mediation participants will experience longer tenure in the community without experiencing re-arrest.*

Treatment Variation Four:

- **H4(a)**: *Subjects who focus more on emotional support topics during mediation sessions will have a lower probability of re-arrest.*

- **H4(b):** *Subjects who focus more on emotional support topics during mediation sessions will experience longer tenure in the community without experiencing re-arrest.*

Each treatment variation contains two hypotheses (a and b), each testing complementary outcomes of recidivism. The purpose of examining the probability of re-arrest, as well as the duration to arrest, is to assess if these treatment variations operate in different ways. In order to test these hypotheses, this study relies on an extension of propensity score matching (i.e., testing H1(a)-H4(a)), in addition to hazard modeling (i.e., testing H1(b)-H4(b)). The propensity score method is typically used when testing for a treatment effect, but in this thesis, it is used *within* the treated group to test for differences among the mediated individuals across these four domains. In the end, this thesis provides additional insight on the components of CMM and their relationship to recidivism.

Chapter 2: Mass Re-Entry and Utilizing Mediation as a Response

Program Evaluation Framework

Mears (2010) offers an evaluation framework that can be helpful in thinking about the Community Mediation Model in Maryland. He argues that in order to establish the credibility of a policy intervention or program, the first necessary step is to demonstrate a need—"clear evidence of a social problem" (Mears, 2010, p. 52)—and the first section does so by describing the impact of mass re-entry (see Section 1, The Impact of Mass Re-

Entry). The next steps within the evaluation framework require that a policy or program be logical and plausible, as well as supported by research and theory. Therefore, the following sections (see Sections 2-4, Methods for Addressing Mass Re-Entry, Facilitating Re-Entry by Strengthening Pro-Social Relationships, and Why Re-Entry Mediation?) will discuss the ways in which pro-social relationships are expected to facilitate re-entry and describe how a re-entry mediation model theoretically serves as a response to this problem. The last step in this design suggests the review of preliminary observations to support the soundness of the specific program or policy. Accordingly, the concluding sections of Chapter 2 will review an anecdotal account, in addition to the results of two prior evaluations (see Section 5-6, Description of the CMM Program and Prior Evaluations).

The Impact of Mass Re-Entry

As many states move forward with efforts to drastically reduce their prison populations, mass re-entry is an increasingly visible consequence of mass incarceration. A stark example of this relationship is the *Brown v. Plata* (2011) Supreme Court decision, requiring the state of California to reduce the prison population by thirty-three thousand people within a two-year time frame (Kubrin & Seron, 2016). Although California's Department of Corrections and Rehabilitation's motivation towards deinstitutionalization was uniquely motivated by an 8th amendment violation, many other states are experiencing similar mass re-entry difficulties, creating important policy concerns surrounding issues of public safety, quality of life standards, and employment opportunities (Visher, LaVigne & Travis, 2004).

Maryland is also experiencing the financial and social costs associated with mass re-entry. In 2001 nearly 10,000 inmates[1] were released from state prisons and 97% of them returned to Maryland communities, increasing the number of individuals on community supervision and overburdening caseloads of parole and probation officers (LaVigne et al., 2003). In the *Analysis of the FY 2017 Maryland Executive Budget*, the DPSCS (2016) states that parole and probation officers in the state handle an average of 116 cases each—34 cases higher than the national average. Furthermore, the *Maryland Pilot Study: Findings from Baltimore[2]* found that only half of their parolees found their parole officer helpful in their return to home, when 82% held high expectations in their parole officers' ability to assist in their transition. Understandably, a parole officer may not be able to provide their full attention or assistance to the needs of one parolee if his/her caseload exceeds the national average by over 40%. Based on these figures, parole alone cannot be an effective means for successful re-entry, and it is imperative to explore other reintegration efforts and programs.

Methods for Addressing Mass Re-Entry

Successful re-entry is a difficult process due to inherent hurdles associated with having a criminal history, limited education or job skills, current or past substance abuse problems, and an immediate need for basic living requirements (Petersilia 2003; 2005). Unfortunately, little is understood about the factors that affect successful reintegration (Bales & Mears, 2008). The results of Makarios, Steiner and Travis' (2010) study outlines

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[1] It is important to note that this figure underestimates the total number of all offenders released within Maryland because it does not include those who were released from jails.
[2] This report is part of the Urban Institute's Justice Policy Center's larger project known as *Returning Home: Understanding the Challenges of Prisoner Reentry* (Visher et al., 2004).

the common circumstances ex-offenders face at the time of release. Nearly half of their sampled parolees faced education deficits because they did not complete high school or attain their GEDs, less than twenty-percent maintained stable employment, and approximately one-third of their sample moved more than three times. Re-entry mediation efforts cannot change the circumstances facing those being released; however, programs can provide responses to such circumstances.

Many re-entry programs focus on the immediate needs facing those returning home by providing immediate tangible assistance such as housing or employment opportunities. For example, the Illinois Department of Employment and Security's Re-Entry Employment and Service program provides assistance in the form of readiness workshops, tax credits for participating employers, job preparation handouts, and other employment tools to prepare adults and juveniles released from Illinois institutions. Similarly, Project PROVE in Michigan supports employment through education efforts. Participants in this program have increased opportunities for continuing their education and vocational training, with the objective of accomplishing stable employment and increasing their quality of life (Case, Fasenfest, Sam & Phillips, 2005).

Other re-entry efforts may target the emotional support needs of the releasee, in addition to material support requirements. The Exodus program in Salt Lake City, Utah, acknowledges the stigma releasees face and attributes successful social readjustment to increased programming and increased contact with family and friends (Celinska, 2000; McMurray, 1993). Therefore, this program assists in the re-entry process by providing transportation for families to the Gunman Correctional Facility (Celinska, 2000). The aforementioned examples highlight the variety of programs seeking to engage in re-entry

efforts, and as evaluation of these programs progress, the results advocate for combined efforts in improving instrumental and emotional support. One method for making this combined effort is the strengthening of pro-social relationships.

Facilitating Re-Entry by Strengthening Pro-Social Relationships

The creation and improvement of pro-social relationships generate a domino effect, wherein the offender experiences informal social control, social support, strengthened social bonds and social ties (Charkoudian et al., 2012; Taylor, 2016), and theory implies that these issues are crucial to successful reintegration. The rationale for implementing this type of pro-social programming falls under the overarching social support paradigm, wherein social support reduces criminal offending and is delivered through a variety of sources (i.e., governmental programs, community, social networks, families, or interpersonal relations; Cullen, 1994).

The concept of *social support* is defined by Lin (1986, p. 18) as "the perceived or actual instrumental and/or expressive provisions supplied by the community, social networks, and confiding partners". The concept of social support has been examined in many studies, which find its widespread beneficial effects across psychological well-being (Johnson Listwan, Colvin, Hanley & Flannery, 2010), adjustment to prison (Jiang & Winfree, 2006), incarceration-related rule violations (Howser, Grossman & Macdonald, 1983), feelings of hostility (Hochstettler, DeLisi & Pratt, 2010), parenting (Ghazarian & Roche, 2010), and recidivism (Cullen, 1994; Farrell, 2000; Reisig, Holtfreter & Morash, 2002).

Social bonds are defined as "attachment to families, commitment to social norms and institutions (school, employment), involvement in activities, and the belief that these

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things are important" (Hirschi, 1969, p.16). Whereas, *social ties* are conceptualized as "a necessary, yet insufficient, precondition for supportive relationships to be developed or maintained" (Taylor, 2016, p. 323-333). Many programs to facilitate re-entry are created based on the social-ties-recidivism relationship (e.g., family reunion programs or mediation). This relationship is based on the idea that social ties, strong pro-social relationships, and social bonds will promote reintegration and reduce recidivism once released.

In the early 1920s, studies began to uncover the beneficial relationship between social ties and recidivism. Ohlin (1954) is one of the first papers outlining the social ties-recidivism relationship by articulating the association between increased parole success and increased the frequency of family contact while incarcerated. Glaser (1964) reaffirmed these findings with data collected in the 1940s and 1950s. Nelson, Deess and Allen (1999) expanded this body of literature by exploring additional outcome variables and found that those who reported family emotional support thirty (30) days post-release found better success in regards to their drug use, employment, and criminal activity.

Control theorists posit that informal social controls, like those exhibited by peers, family, and the community, will prohibit or reduce criminal activity. An example of this theoretical rationale is Braithwaite's (1989) idea of reintegrative shaming. Throughout this process, the offender is punished or shamed, but not permanently labeled as criminal as an attempt is made to reintegrate the offender. In this example and many others, informal social control is only effective because of the supportive manner by which it is presented; meaning, social control and social support are often "intertwined" (Wright & Cullen, 2001). Overall, social ties and social support have been shown to be important factors that

facilitate successful re-entry, in regard to recidivism and other important outcomes like employment.

Several theories speak to these concepts and their connection to pro-social relationships or partners. For example, Hirschi's (1969) social bond theory states that strong social bonds to family and friends (e.g., improved relationships via re-entry mediation) decrease offending. This theoretical rationale is often utilized in the literature regarding resources and programs to improve inmate visitations for the purposes of maintaining and strengthening these bonds. Those who advocate for increased prisoner visitation argue that the increased contact may restore broken relationships and sustain current ones during the period of imprisonment (Bales & Mears, 2008; Glaser, 1964; Maruna & Toch, 2005) and further, these visitations will influence post-release success.

Additionally, life-course approaches, like Laub and Sampson's (1993) age-graded theory of informal social control, identify the importance of social support during life transitions. In the case of offenders returning to the community, their release from prison is an arguably significant transition where this form of support is necessary for their success. Furthermore, sources of social support are identified by Agnew (1999; 2006) as mechanisms to reduce strain experienced by the offender. Lastly, a labeling perspective (Paternoster & Iovanni, 1989) is relevant to the rationale of this program because re-entry mediation, with individuals serving an important role in the offender's re-entry, allows improvement of the offender's identity[3] as visitation increases. The importance of an

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[3] Prisoner re-entry narratives highlight the importance of relationships and specific roles (e.g., adopting the role of provider for the family). For example, when the roles are structurally incompatible (i.e., unable to financially provide) a releasee's fear of returning to crime increases (Harding, Dobson, Wyse & Morenoff, 2017).

improved or legitimate self-identity can also be a product of their attachment or involvement with their family.

Mills and Codd (2008) argue that resuming a family-focused role after release creates a legitimate self-identity, changing the stigmatized label and reducing the likelihood of re-offending. The obtainment of a more legitimate self-identity is achieved with more contact with family and children before, during, and after incarceration (Visher, Bakken & Gunter, 2013). Harding and colleagues (2017) found that those involved in a releasees important social network often require the releasee to assume specific roles (e.g., provider) and structural incompatibility may exist between this role and the releasee's opportunities and/or abilities. Although this structural incompatibility can cause an individual to return to crime, prisoner re-entry narratives demonstrated that social ties and social support were found to decrease an individual's fear of returning to crime and their ability to manage challenges in their re-entry process.

Therefore, programs with a focus of improving the quality of interpersonal relationships, as well as provide an opportunity for more contact/visitation fit within this theoretical framework, such as family reunification programs. Family reunification programs are often utilized in situations involving child welfare, especially in regard to parental drug use (Maluccio & Ainsworth, 2003). Because Visher and colleagues (2004) identified that many of their Maryland parolees had at least one biological child (i.e., approximately fifty percent of their sample) and were often substance abusers, this type of program justification is particularly relevant to the theoretical fabric of the CMM program.

As described earlier, the CMM program can be seen as an innovative re-entry effort combining theoretical logic from several areas. Figure 1 illustrates how these concepts can

be linked together to collectively lead to lower rates of recidivism[4]. The CMM program relies on four assumptions grounded in criminological theory: 1) the selection of community members to serve as mediators and the selection of outside participants to attend mediation sessions increases informal social control experienced by the releasee due to the strengthening of important pro-social relationships; 2) the coverage of many topics relating to instrumental and emotional support decreases pressures experienced by the releasee in their return home via increased social support from their family, friends, and/or other pro-social individuals (e.g., discussion of financial resources/contributions to decrease potential strain that may cause the individual to return to crime; theoretical justifications can be articulated for each topic area discussed, but are not addressed here), 3) the access to the unlimited number of mediation sessions increases contact between the releasee and their pro-social influence which can reduce their chances of returning to crime (e.g., increasing their return to a pro-social role and legitimizing their identity by resuming the role of parent), and 4) the execution of a mediation agreement signals that both parties recognize the expectations associated with the releasee's return home decreasing potential impediments to a successful re-entry (e.g., requiring attendance at an after-care program like Alcoholics Anonymous to move in with a sibling upon release).

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[4] Mears (2010) notes that "effective policy…rests on a sound theoretical or causal logic" (p. 96) and logic models (like Figure 1) serve as useful illustrations to depict how all components relate to one another while demonstrating the theoretical logic behind the individual components.

Figure 1. Re-entry Mediation Theoretical Model

Community member serves as mediator → Life Course perspective; social bonds; social ties

Selection of outside participants → Life Course perspective; social bonds; social ties

Mediation on variety of topics → Instrumental Support → Cullen's (1994) Social Support; Strain; Life course perspective

Mediation on variety of topics → Emotional Support → Cullen's (1994) Social Support; Strain; Life course perspective

Access to unlimited number of sessions → Labeling; Increased visitation; increased contact

Execution of agreement → Agreement between post-release expectations and reality; informal social control

→ Lower Recidivism

Lastly, the overarching assumption of this program is the application of mediation to the re-entry process, with the goals of increasing satisfaction with and quality of pro-social relationships, in addition to achieving reductions in recidivism. The next section will discuss the implementation of mediation services for the purposes of improving experiences of re-entry and how this application intuitively makes sense.

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Re-entry mediation is a unique form of programming because it speaks to the importance of social control, social support, social ties, and social bonds. Traditionally, mediation is commonly known for its application to individuals that have prior situational or interpersonal relationships (e.g., landlord and tenant, spousal) (Umbreit, 1995); however, mediation within the context of the criminal justice system most commonly occurs between strangers participating in victim-offender (VOF) mediation programs. The growth of the victim-offender movement from the mid to late 1970s led to the creation and implementation of VOF mediation programs across the United States, as an alternative to traditional retributive forms of justice. The first VOF mediation reconciliation program was implemented in 1978 and this program and programs alike were based on the rationales of retributive and restorative justice (Umbreit, 1995). Victim-offender mediation shows success (studies mainly focus on youths) in reducing the likelihood of re-offending and decreasing the severity of re-offense if and when it does occur (Nugent & Paddock, 1995). Although research supports the use of VOF mediation, little is known in regards to adult offenders or more serious offenses because VOF mediation is not often appropriate in these circumstances.

Furthermore, mediation efforts have been used in other criminal justice contexts such as: street conflict settlements (Whitehill, Webster & Vernick, 2012), divorcing parents (Cohen, 2012), for youths during probation (Beck & Turk, 1998), in small claims disputes (McEwan & Maiman, 1981), and with regard to police calls for service (Charkoudian, 2005). Additionally, research on traditional forms of mediation in criminal justice context does necessarily draw a parallel with the implementation of re-entry mediation services.

Re-entry mediation provides the opportunity for inmates to meet with families or other supportive persons (i.e., the offenders not only know, but have active relationships with the participants) to address and plan for re-entry into the community (i.e., the mediation's focus shifts from the offense to the offender).

Little research investigates this form of a mediation model; however, parallels exist in the divorce literature (e.g., disseminations of marriage and child custody disputes). The dissolution of a marriage, especially those involving children, places a large strain on the participants' relationship. Conflicts with regard to the division of assets or child custody/visitation are arguably comparable to the types of conversations a releasee may have with their family or other supportive individuals when returning home. Mediation is found to be an effective resource for those going through divorce proceedings by producing adherence to dissolution agreements without litigation (Emery, 1995; Malia, Cunningham, MacMillan & Wynn, 1995), increasing the ability of separated parents to successfully co-parent (Emery, Laumann-Billings, Waldron, Sbarra & Dillon, 2001), and increasing contact with the children (Emery et al., 2001). The subjects of re-entry mediation face similar issues of reaching reconciliation with family members, spouses, friends, etc., which involves arguably analogous emotions and stresses of those in divorce proceedings. Therefore, it is compelling that this form of mediation may produce similar results, further legitimizing the decision to implement this innovative form of re-entry program.

In 2003 and 2009, DPSCS performed a needs assessment to evaluate the post-incarceration needs of individuals returning to their communities. More than two thousand inmates were interviewed across the state of Maryland, most of whom requested assistance with employment and housing upon release; however, these needs are both difficult and

costly to deliver on a large-scale basis. Therefore, the creation of DPSCS' re-entry plan included the creation of the Community Mediation Re-Entry Maryland (CMM) program. The goal of the CMM is to improve positive relationships between inmates, their families, and their communities, with the hopes of addressing widespread needs of inmates through the strengthening of their pro-social relationships.

Furthermore, another justification for the implementation of a re-entry mediation model is the low cost. Undoubtedly, as corrections budgets increase with the rise of prison populations and the number of individuals on community supervision, states like Maryland seek out ways to effectively improve their correctional systems without extensively expanding their financial costs. The CMM program's necessary operational inputs (e.g., staffing, financial resources) are largely concentrated in volunteer efforts (i.e., mediators are go unpaid for the purposes of managing the mediation sessions) and the only financial expense is with regard to administrative functions. Furthermore, Mears (2010) states that "[re-entry programs] built on volunteer efforts, …free up scarce correctional system resources and thus be justified if no direct effect on recidivism or other post-release outcomes is identified" (p. 117) and argues that volunteer-based programming is warranted, even without improvements to recidivism, due to the potential benefits for the releasees' incarceration or post-release experiences.

Description of the CMM Program

Many of the struggles facing soon-to-be released prisoners are unchangeable or at the very least, considerably difficult to change (e.g., economy and job opportunities, stigmatization of incarceration, etc.) and these circumstances create conflict between the offender and their support systems. Upon release, individuals have an immediate need for

basic living requirements (i.e., housing and financial support) and this burden often falls onto those closest to them, who may not be prepared or financially able to fulfill all of these needs. Therefore, the overall goal of the CMM is to assist inmates with their return to home *and* to provide support to their families, friends, or other supportive members of their interpersonal networks. For example, a family may be hesitant to allow an inmate participant to return to their home post-release. This program provides a productive space where this topic may be breached in an effective manner, leading to compromise and agreement, regarding the terms an offender may return back home (e.g., participation in alcoholics anonymous and monthly drug tests).

The CMM program is available in almost every state correctional facility, as well as many local detention centers in Maryland. The CMM program provides inmates (excluding sex offenders) the opportunity to mediate with two outside participants of their selection, 6-12 months prior to their release to discuss important, albeit difficult topics[5] of disagreement such as housing, employment, substance abuse, children, and any other areas of conflict necessary to promote their successful return home. CMM staff members present information on the program to potential subjects and meet with interested participants one-on-one to complete their intake process. The DPSCS' Memorandum of Understanding is utilized to determine if the potential subject's case is appropriate and if the inmate has sufficient contact information to invite the selected participant to the mediation sessions.

Two mediators[6] attend the mediation sessions to promote "an open, honest, and often difficult dialogue to prepare for the transition back into the community" (Community

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[5] The re-entry mediation participants determine the topic selection while mediators provoke discussions and brainstorming of possible solutions to satisfy all parties involved.
[6] Mediators are required to attend a 50 hour Basic Mediation Training (i.e., 45 hours of classroom time, paired with a 5-hour evaluated apprenticeship) to volunteer in the program.

Mediation Maryland, 2013). Mediators explain the mediation process to all participants, facilitate the discussion surrounding any issues of conflict, and promote a conversation to determine a solution. The first step of the re-entry mediation process is a conversation between the inmate and a CMM program staff member to identify if they have a plan for their re-entry and what role, if any, members of their family, friends, or community will have. The individuals identified as being the most productive or beneficial to their re-entry process will be discussed to determine their potential involvement in the mediation services. The CMM is not explicitly for the purposes of family reintegration; therefore, if a releasee believes that family members are a potential threat to their desistance, they have the option to select other pro-social individuals[7].

The CMM program uses a screening process at this point to ensure that selected participants will not pose a threat to the future releasees' safety, such as in the case of retaliation. The CMM staff contacts participants and then their information is submitted to the facility for clearance purposes. In some cases, the participant in not interested in mediating inside of the incarceration facility. In these cases, the re-entry mediation process will be offered again to the parties once the subject is released. After the subjects and participants are screened and clearance is received, a date for the first mediation is scheduled. Three two-hour mediation sessions occur prior to release and then the mediation services are available outside of the incarceration facility as follow-up sessions[8].

The CMM has the goal that those participating in the program will provide instrumental and emotional support, including assistance with housing, employment, drug

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[7] For this reason, participants in the CMM program have selected faith-based community leaders, former employers, or friends to participate in the re-entry mediation process.
[8] There is no limit to the number of sessions participants attend. Therefore, the mediation services can be as comprehensive as the participants choose.

and alcohol abuse, and other needs, yet this is not always the case as selected participants

may engage in criminal behaviors themselves (Mills & Codd, 2008; Taylor, 2016). As there

is little to no research on this form of re-entry mediation[9], the theoretical linkages, as

discussed, justify the development of a program to promote prosocial support an offender

needs in their transition from incarceration. If found to be a best practice, re-entry

mediation can serve as a tool to fulfill the need wherein an inmate's reintegration can be

supported by negotiated agreements, improved relationships and communication with key

individuals (i.e., strengthening families ties and repairing their own pro-social roles), and

preparedness for the realities of returning home (i.e., housing, substance abuse issues,

employment, etc.).

Prior Evaluations of CMM

The success stories from the CMM program, as well as related prior evaluations

serve as the foundation of establishing a re-entry mediation model and identifying the

CMM as a re-entry best practice. Essentially, the relationship between re-entry mediation

and recidivism has only begun to be tested as an empirical question. Like most exploratory

program evaluations, personal stories of success were the initial insight into the potential

promise of the program. For example, consider the following passage about two former

participants, Richard and Richard Sr., from the first evaluation:

> Richard was about to be released from his most recent sentence. He wanted to
> talk with his family, and mediation was arranged with his mother, Cecilia; father,
> Richard Sr.; and quickly, half a dozen topics – items that the participants wanted
> to make a plan about – had been selected. The mediators thought there was

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[9] Johnson and Cullen (2015) note it is not rare for re-entry programs and policies to heavily rely upon "common sense", and most re-entry programs considered to be promising are only evaluated 1-2 times. These points mirror the CMM program's current situation, wherein two evaluations have been completed, and the theoretical framework is tied to many different theories and perspectives, but more importantly, the program is commonsensical in nature.

time to brainstorm a solution to one of them and asked the family where they would like to start. Without a moment's hesitation, Cecilia said, "Drugs."… The family's plan included Richard Sr. contacting Richard's NA sponsor and going to NA meetings with him when he got out. Also, Richard would spend his time helping in Richard Sr.'s business, so he would have something productive filling his time. (Community Mediation Maryland, 2013)

The two prior evaluations performed by Choice Research Associates hypothesized that re-entry mediation would decrease recidivism (i.e., arrest, conviction, and incarceration) by strengthening the offenders' relationships with their families, friends, and other community individuals. Both evaluations yielded similar results—re-entry mediation is beneficial to the re-entry process and reduces recidivism amongst subjects (Flower, 2013; 2014). Limitations of the 2013 evaluation (e.g., limited sample size, single comparison group, missing release dates) led to replication in 2014 with the usage of quasi-experimental controls for the comparison groups (i.e., propensity score matching), a larger treatment group, official release dates, and data on returns to prison. As the second evaluation addressed many of the limitations of the 2013 evaluation, the key findings from the 2014 report will briefly be reviewed.

The 2014 evaluation included data from 2008-2014 for individuals participating in the CMM program (n=282). The subjects were matched to two control groups utilizing propensity score matching (i.e., the CMM Control Group and the Cohort Control Group). The CMM Control Group[10] consisted of matched individuals willing to participate during

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[10] The variables used to calculate the propensity score included: age, marital status, race (nonwhite), gender, age at first involvement in crime, days from release, other party plays a positive role in my life, how often they confide in the other party, how happy they are with the relationship, feeling on control in the relationship, if they feel conflict can be dealt with productively, most serious prior conviction offense type (separate binary measures for drug, person, property), prior arrests, prior arrest conviction rate, total prior charges, average number of days sentenced to incarceration, prior most serious offense category, total times incarcerated, average serious category, prior total convictions by offense type (separate binary measures for drug, person, property), and prior average felony convictions.

the same time period and met all eligibility requirements, but did not receive mediation because of various reasons (e.g., outside participant unable to be contacted, distance to between participants was too far to travel).

The Cohort Control Group included matched individuals from the same DPSCS facilities released from 2009-2013, but did not apply to participate. The methods used in this evaluation included logistic regression and Cox Regression survival analyses yielding consistent positive results at one, two, and three years post-release. Those in the mediation group survived without arrest (Year 1: 81% of treatment group survived compared to 68% of control; Year 2: 66% versus 51%; Year 3: 49% versus 39%), conviction (Year 1: 92% of the treatment group survived without an arrest leading to conviction compared to 85% of the control; Year 2: 86% versus 75%; Year 3: 78% versus 67%), incarceration (Year 1: 92% of the treatment group survived without an arrest leading to incarceration compared to 88% of the control group; Year 2: 88% versus 79%; Year 3: 85% versus 76%), and did not return to prison more often than those whom did not mediate (Year 1: 78% did not return to prison compared to 72% of the control group; Year 2: 70% versus 59%; Year 3: 65% versus 55%) (Flower, 2014).

The program's success is likely due to the voluntary efforts provided by the community members serving as mediators, the specific phases of the mediation reached, and the participants involved, but this has not empirically confirmed. Johnson and Cullen (2015) state that one of the difficulties in evaluating re-entry programs to determine "what works" is the inherent heterogeneity in the programs (i.e., program setting, program type, time frame of intervention). Furthermore, if a study shows that it is the specific components of a program that generates its success, then this reduces the chance that the results are

influenced by mere selection into the program. This study intends on contributing to the CMM literature by investigating potential treatment heterogeneity in components limited to pre-existing pro-social relationships and components flexible to program development.

The 2014 evaluation explored the mediation treatment in two distinct ways: a discrete measure (if mediated or not) and the number of mediation sessions attended; yet, this delineation does not account for additional heterogeneity in the experiences of those who participated in the program. For example, the selected outside participants vary from spouses/partners, parent to child, child to parent, other relative, friends, and others. According to research, certain relationships may be stronger than others in regard to promoting successful re-entry. Furthermore, not all subjects focused their discussions in mediation on the same types of topics (i.e., an emphasis on emotional support). Lastly, the number of sessions attended does not mean that all individuals reached the same stage in their mediation. For example, some participants may not reach agreement after any number of sessions. These examples highlight the varying degree of experiences an individual may experience while participating, suggesting important treatment heterogeneity that may generate different conclusions.

Thinking About Treatment Heterogeneity Within the CMM Program

Within the CMM program, there are two ways in which treatment heterogeneity matters: 1) implementation/program development and 2) the targeting/outreach of subjects. The following hypotheses examine the possible differential effects that may exist for participants with certain types of pre-existing pro-social relationships (spouse/partner or family) and whether heterogeneity in mediation composition (reaching agreement or topic

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focus) influences the likelihood of or time to arrest. To complete the following analyses, the hypotheses outline the four separate treatment conditions to answer the following research questions:

- *Is the relationship of the selected participant to the release related to recidivism?*

- *Is reaching a mediation agreement between participants related to recidivism?*

- *Is focusing on emotional support topics during the mediation related to recidivism?*

Hypotheses

As discussed by Sampson and Laub (1995), marriage is a positive turning point in the life of an offender and influences their desistance from crime. However, it is important to note the importance of social bonds and attachment level that exists between the spouses/partners[11]—a quality marriage is an effective deterrent to crime and deviance. Married subjects choosing to mediate with their spouses or partners arguably shows an interest in improving the quality of this relationship, which will likely increase the probability that these individuals are not arrested post-release. Furthermore, those who do not have a spouse or partner to participate in mediation with may be limited to the selection of a friend[12]. As shown by Warr (1998), one of the mechanisms of the marriage effect is the reduced involvement with peers due to pre-occupation with their spouse/partner.

Based on the literature supporting a relationship between marriage and the desistance from crime, it is important to investigate this relationship with regard to the CMM program.

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[11] In this hypothesis, the term partner refers to legal partnerships between the subject and participant rather than all informal romantic partners or relationships.

[12] It should also be noted that certain individuals indicating that they have a spouse or partner did not necessarily select that individual as their mediation participant. About 14% of the married/committed individuals selected other pro-social relationships to mediate with.

Not all participants will have the opportunity or access to choose a spouse/partner as their participant; meaning, this program may be well suited to target married releasees with the goal of improving the quality of those theoretically important relationships. Furthermore, if the results show that there are no discernible differences between married and non-married participants, then that further supports that the improvements in recidivism are an artifact of participating in the program rather than pre-existing marital bonds. To determine if the resulting success of the CMM program is driven by a potential marriage effect, this study tests the following hypothesis:

- **H1(a):** *Participants who select spouses/partners[13] as mediation partners will have a lower probability of re-arrest.*

- **H1(b):** *Subjects who select spouses/partners as mediation participants will experience longer tenure in the community without experiencing re-arrest.*

Another important test of pre-existing pro-social relationships involves the role the family plays in the desistance process. The relationship between family ties and desistance from crime is less studied/empirically supported; however, there is some evidence of the benefits of this relationship. "Exploration of issues such as how family ties during imprisonment can be maintained and strengthened, and whether resources and support that would aid prisoners and their families, could facilitate successful reentry for returning prisoners is certainly warranted." (Visher, LaVigne & Travis, 2004, p. 125) Families are theoretically considered an important social bond (Hirschi, 1969) and an important form

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[13] In order to determine if the results of this hypothesis are capturing a marriage effect or a romantic partner effect, sensitivity analyses were performed and are reported in Appendix A. The sensitivity analyses contain propensity score matching results for comparisons for having a romantic partner and having a cohabitating partner (see Appendix A for a full discussion).

of social control (Cullen, 1994). Furthermore, studies like Nelson and colleagues (1999) show that the family is important to the desistance of drug use and the obtainment of employment.

As not all subjects may be interested or able to mediate with family members, it is important to investigate how these pre-existing pro-social relationships may disparately influence desistance. Family members, in comparison to friends or other pro-social individuals, are predicted to have a stronger protective influence over the releasee in their return home. Therefore, the existence of longer pre-existing relationships are expected to maintain stronger bonds (Hirschi, 1969) and the importance of resuming a family focused role (Mills & Codd, 2008) will likely increase the chance of a successful re-entry. However, there is the potential that this hypothesis may be testing the same relationship as hypothesis one. Meaning, results may suggest more of a spousal effect than a family one. The implications of this marriage-family overlap will be discussed later on in this manuscript (*see* Appendix A).

- **H2(a):** *Participants who select family as mediation partners will have a lower probability of re-arrest.*
- **H2(b):** *Subjects who select family members as mediation participants will experience longer tenure in the community without experiencing re-arrest.*

When an individual is released from prison, there may be immense uncertainty about their lives post-release. For example, a releasee may be unsure of their financial support, where they will live, and if they will be allowed to see their children. Therefore, social support, which is important to serious life transitions (Laub & Sampson, 1993), in addition to participants' expectations will be concretely outlined for the subjects who reach

an agreement during their mediation process. Furthermore, these subjects, unlike many other releasees, are predicted to experience less dissatisfaction between their expectations and the realities of returning home (Bobbit & Nelson, 2004), improving their experiences with reintegration, and reducing the strain they may encounter (Agnew, 1993).

Furthermore, parallels drawn from the divorce literature suggest the importance of written agreements with regard to increased child visitation and co-parenting (Emery et al., 2001). In the current implementation of the CMM program, reaching an agreement between the subject and the participant is not a mandated component of the program. In other words, individuals can choose to conclude services without resolution between parties. Therefore, testing the following hypothesis will determine if mediators should suggest the benefits of reaching an agreement or continuing sessions until an agreement can be reached.

- **H3(a)**: *Subjects who reach a mediation agreement with their mediation partners will have a lower probability of re-arrest.*

- **H3(b):** *Subjects who reach a mediation agreement with their mediation participants will experience longer tenure in the community without experiencing re-arrest.*

As previously discussed, returning home can involve many uncertainties for the releasee if not discussed and planned in advance with their social networks. For example, Travis (2005) found that many individuals were homeless post-release when they had prior plans to live with friends or family. Furthermore, topics relating to instrumental support (like employment and housing) have important negative relationships with recidivism (Agnew, 1999; Sampson & Laub, 2003; Greenberg & Rosencheck, 2008a; 2008b);

however, the extent of this type of support is largely limited to the current financial means of their family and friends. Therefore, addressing topics of emotional support, which may be less limited, in a mediated setting will likely subdue the tensions and disagreements associated with making important re-entry plans and improve returns home.

The participants in this sample discuss a wide range of topics from employment and co-parenting to communication and sex, as well as some participants discuss many topics (as high as 19) before discontinuing services, while others discuss only one. The extensive heterogeneity in the topic coverage during mediation sessions is a result of the participant-guided re-entry mediation format, but emotional support topic areas appear to be important substantive discussions as they are often brought up during these sessions.

In the criminological literature, there exists a variety of mechanisms intended to capture emotional support (e.g., relationship quality, family involvement). Due to the number of topics contained in this data set, emotional support in this project is defined as any topics relating to the attempt to provide comfort, understand, love, and/or companionship to the subject (Lin, 1986; Vaux, 1988). Focusing on this form of social support is of particular interest as providing emotional support is regarded in the literature as important to the re-entry process, but it is also a form of social support that is not restricted by the tangible resources a family, institution, or program may be limited by. Furthermore, mediating arguably has the potential to improve emotional relationships (i.e., ability to community, express love, etc.); however, it cannot change the financial situation subjects and participants may find themselves in (i.e., discussing finances or employment will not increase annual earnings or job opportunities a subject may have access to).

In terms of this program, a focus of emotional support is expected to have a greater beneficial influence over a subject's return home, as this program can leverage and strengthen this type of support regardless of the participants' current resources (i.e., the program does not provide financial means or incentives). Furthermore, emotional support is stated as an integral part of re-entry programs that intend on being successful because this support type impacts several aspects of a releasees life (e.g., emotional support can reduce marital issues, diminish negative emotions, minimize barriers between pro-social others when returning home, etc.; Listwan et al., 2006). If it is the case that focusing on certain topics over others are associated less re-offending, then the CMM can be amended to recommend that these topics guide discussion, as they may be more essential in supporting successful re-entry. This guidance does not have to change or overturn the participant driven mediation model, but additions like providing a list of emotional support topics may inspire additional conversations[14].

- o **H4(a)**: *Subjects who focus more on emotional support topics during mediation sessions will have a lower probability of re-arrest.*

- o **H4(b):** *Subjects who focus more on emotional support topics during mediation sessions will experience longer tenure in the community without experiencing re-arrest.*

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[14] Appendix B includes supplemental analyses to evaluate if the results change based on how a discussion of children during the mediation sessions is coded. As discussed throughout this document, the majority of the subject sample has at least one child and, as one might have expected, discussed their children during mediation. However, due to the limitations in details captured for these discussions, this category is ambiguous with regard to emotional support, and the supplemental analyses investigate how the results change when children is either included or excluded from the measure of emotional support.

Chapter 3: Data and Methods

Description of the Data

Choice Research Associates collected the data used in this proposal from 2009-2014 while working as an independent evaluator funded by Abell Foundation in Baltimore City Maryland. Choice Research Associates collected the data to perform the prior evaluations discussed in the above literature review and as mentioned, their data set includes additional observations for the cohort comparison group, and the CMM propensity score matched control groups. However, as this project investigates the potential treatment heterogeneity (i.e., differences within the treated group), the analyses only involve information for those releasees that signed up for mediation and participated in at least one mediation session (N=166). Several questionnaires were involved in this data collection process and all relevant measures for subjects and their selected participants were combined into a single data set[15]. Therefore, the final data set includes information on demographic characteristics, quality of the relationship (pre- and post-; taken from both points' of view), content of the mediation sessions (completed by the mediators), and the recidivism outcomes of interest.

Subjects completed an intake questionnaire during the sign-up process for the CMM program. The purpose of this intake questionnaire was two-fold: 1) record demographic information for the subjects (e.g., age, race, criminal history; see Table 1) and their selected participants (see Table 2) and 2) establish a baseline for the current status of their relationship with participants (*see* Table 3). With the sample of subjects, the

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[15] For the following sections, these individuals will be referred as subjects and their selected pro-social counterparts will be referred to as participants.

average releasee is 33.8 years of age (ranging from 19 to 60), male (84%), African American (79%), single and never married (48%), have at least one child (73%) and have at least one prior conviction (98%) before their current incarceration stay (see Table 1). On average, those with children have at least 2 children (ranging from 1-9 children) and their children are predominantly under the age of 18 years old (i.e., 98 of 121 reported children are under the age of 18). Furthermore, those participating in this program have self-reported criminal histories beginning as young as the age of 6 (ranging up to 46) and a large majority of subjects have 3 more prior convictions (i.e., 108 of 166 subjects). Furthermore, the average length of stay for their current incarceration is approximately 1 year and 6 months at the time of intake for the mediation program.

Table 1. Subject Demographics (n=166)

	Frequency	Percentage
Gender		
Male	140	84%
Female	26	16%
Race		
African American	131	79%
Caucasian	21	13%
Hispanic	2	1%
Native American	1	1%
Other/Multi-racial	11	6%
Have children	121	73%
Length of Stay		
1 year or less	90	54%
1 to 3 years	49	30%
3 to 5 years	14	8%
More than 5 years	13	8%
Prior convictions (at least one)	162	98%
Most Recent Offense(s)		
Person Offense	110	66%
Drug Offense	44	27%
Property Offense	9	5%
Sex Offense	3	2%

Table 2 provides the descriptive statistics for the selected participants race and their relationship to the subjects. The data regarding the characteristics of the participants is less informative than their subject counterparts. For example, information regarding participants' criminal involvement and family composition are not included. As a result, the following analyses may miss a comprehensive picture of whether or not the participant

provides a pro-social relationship for the subject or in the alternative, a criminogenic influence. However, one possible indication that the participant provides a pro-social influence over the subject (other than their selection by the subject) is in the results of the reported pre-mediation relationship status (see Table 3). On average, the subjects reported positive views across all relationship measures and indicated that they are able to confide in and resolve conflicts with their selected counterparts.

Table 2. Description of Selected Outside Participants (n=190)

	Frequency	Percentage
Race		
African American	135	79%
Caucasian	29	17%
Hispanic	3	1%
Other/Multi-racial	7	3%
Missing	16	10%
Relationship to Subject		
Spouse/Partner	63	38%
Inmate's parent	34	20%
Sibling	11	7%
Child of releasee	11	7%
Inmate's child's parent	14	8%
Other relative	10	6%
Friend	20	12%
Other	3	2%

Table 3. Pre-Mediation Relationship Status

	N	Range	Mean	SD
Point of view of Subjects				
Participant plays a positive role in my life (5 indicates strong agreement)	166	1 to 5	4.4	.93
Degree of happiness with Participant (7 indicates extremely happy)	166	1 to 7	5.2	1.66
How often do you confide in Participant (4 indicates almost always)	166	1 to 4	2.9	1.06
I feel I have no control over my relationship with Participant (5 indicates feeling more control)	166	1 to 5	2.5	1.27
Conflict can be dealt with productively	166	1 to 5	3.9	.98
Point of view of Other Participants				
Subject plays a positive role in my life (5 indicates strong agreement)	172	1 to 5	4.0	1.18
Degree of happiness with Subject (7 indicates extremely happy)	172	1 to 7	5.1	1.76
How often do you confide in Subject (4 indicates almost always)	171	1 to 4	2.9	1.17
I feel I have no control over my relationship with Subject (5 indicates feeling more control)	171	1 to 5	2.7	1.32
Conflict can be dealt with productively	169	1 to 5	4.0	.84

Additional information utilized in these analyses is provided by the mediator's reporting form and the participants' evaluation forms. The mediation reporting form is by case, as the mediator completes it after each individual mediation session. The mediator documented which topics were discussed during mediation (see Table 4) [16], the stage of mediation reached in the specific session, and the parties specified a plan of action by the end of the session. Participants were asked to complete an evaluation form after every

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[16] The mediator also recorded his/her notes and comments; however, these vary by case and by session

mediation session. Contained in the evaluation forms are questions to investigate how the participants perceived the mediator (e.g., the mediator explained the mediation process, the mediator listened), their individual satisfaction with the process (e.g., satisfied with the results of the mediation), and the status of their relationships at the end of the session (e.g., reached agreement, final session). Additionally, participants were evaluated by revisiting the questions they answered during intake and they were asked to provide an update (e.g., do you still feel you have no control in your relationship?).

The topics listed in Table 4 were taken to create a measure of emotional support; wherein, treatment indicates a higher proportion of focus on emotional support topics out of all topics discussed. Emotional support in this project is defined as any topics relating to the attempt to provide comfort, understand, love, and/or companionship to the subject (Lin, 1986; Vaux, 1988). If a topic was ambiguous on whether it was emotional in focus, it was coded as "not emotional" in order to be conservative (e.g., children, parole/home detention, health, substance abuse, and "other"). For example, the topic of substance abuse may be considered in terms of understanding a subject's abuse problems (e.g., emotional support), but substance abuse may also be discussed in terms of providing information regarding treatment programs (e.g., practical support). Another instance of the ambiguity in support exists with regard to health. From the data, it is uncertain if this topic is capturing healthcare coverage (e.g., practical support) or a participant expressing that they want the subject to improve their health for the sake of living a happy and healthy life (e.g., more emotionally supportive). However, it is important to note that because the topic of children was so frequent, I conducted sensitivity analyses to determine how the results do/do not change based on coding it as an emotional topic. In the main results, they are not coded as

an emotional support topic, but in the sensitivity analysis, the opposite coding decision was

made.

Table 4. Mediation Topics Covered by Support Type (by case)

	Frequency	Percentage
Focus on Emotional Support	95	57%
Communication	112	73%
Friends/Other Relationships	33	22%
Relationship	22	15%
Other Social Support Topics	71	43%
Employment	76	50%
Housing	62	41%
Education	12	8%
Finances	7	5%
Transportation	6	4%

<u>*Measures*</u>

Dependent Variable. The primary dependent variable for this project is whether or not the

subject was re-arrested during the first year post release (*see* Table 5 below). However, the

intention is to include supplemental analyses to account for the additional time periods (2nd

and 3rd year follow-ups), as well as look at a summary measure of arrest (i.e., whether an

individual was arrested at any point during the three year period). Re-arrest within the first

year is the primary dependent variable because this does not succumb to potential

limitations associated with at-risk time (i.e., time in which an individual can be re-arrested

because they were released from a facility). For example, if an individual within the data

set is arrested within the first year, they may not be released for most or all of the 2nd year

time period. The data includes the total re-incarcerations by time period, but it does not

include any information on sentence length—meaning, there is no distinguishable way to differentiate between individuals whom are re-incarcerated for varying amounts of time within the same year.

In total, 77 subjects were arrested post-release of which 33 received a conviction and 28 were re-incarcerated. Table 5 below outlines the proportion of participants arrested, convicted, and re-incarcerated up to 3 years following their release from the incarceration facility. The values for conviction and incarceration are included to show that majority of these arrests led to removal from the community in which these individuals recently reintegrated into (i.e., incarceration).

Table 5. Post-release Recidivism Rates for Subjects

	No	**Yes**
Re-arrest (n=166)	89 (54%)	77 (46%)
1 year post-release (n=162)		
Arrest	128 (79%)	34 (21%)
Conviction	145 (90%)	17 (10%)
Incarceration	147 (91%)	15 (9%)
2 years post-release (n=134)		
Arrest	88 (66%)	46 (34%)
Conviction	114 (85%)	20 (15%)
Incarceration	117 (87%)	17 (13%)
3-years post-release (n=58)		
Arrest	23 (40%)	35 (60%)
Conviction	45 (78%)	13 (22%)
Incarceration	48 (83%)	10 (17%)

Treatment Conditions. For this project, four different treatment conditions (*see* Table 6) are created to correspond with the hypotheses detailed above. Each of these treatment conditions are used in separate analyses to generate propensity score matches (or comparison groups). The first two treatment conditions represent areas wherein the program cannot manipulate the implementation, but instead can focus participant outreach if there are a limited number of placements due to resources. The latter two treatment conditions represent areas where the program can be guided to try to set goals of reaching an agreement or try to guide topic selection.

Importantly, the small sample size may impact the ability to find a match between the treatment and control conditions (see Table 6 for treatment condition sample sizes; which will be discussed further in the analytic plan and discussion sections) and furthermore, when a study has insufficient power due to a small sample size, then the probability of a Type II error increases. When a Type II error occurs, the results may indicate that there is no effect of the policy, when in fact an effect exists (Mears, 2010).

Table 6. Treatment Conditions by Hypothesis

Treatment	N	Control	N
[17]Spouse/Partner	63	Non-Spouse/Non-Partner	103
Family	100	Non-Family	66
Agreement	87	Non-Agreement	61
Focus on Emotional	119	Focus on Other Topics	47

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[17] The measure of spouse/partner may serve as a proxy for being married rather than treatment heterogeneity. Due to this potential proxy issue, any interpretations and/or conclusions drawn from the results will have to be carefully considered. Still, it is important to note that in these data, not all married participants mediated with their spouse/partner.

Matching Measures. As discussed in the analytic plan outlined below, a total of thirty covariates are used to address existing selection bias in each of the four treatment conditions. It was necessary to limit the number of covariates accounted for in the analyses due to the issue of small sample size (i.e., the more covariates considered the more difficult it may be to identify a match), and a discussion of the decision-making process for including and excluding covariates is outlined in the results section for the propensity score models. Table 7 lists these matching measures and includes descriptive information by important themes: additional demographics, criminal histories, quality of relationships, and facility type. The measures for estimating the propensity scores are important observable characteristics found captured for both the subjects and their selected participants (quality of relationship) and are essential to creating balance between the groups.

It is important to note that the CMM evaluation data have information on several domains, but there are nonetheless several concepts that are likely related to both treatment heterogeneity and recidivism which go unaccounted including, but not limited to: self-control, education (e.g., communication skill levels), and substance dependence and use. For example, some individuals may have formerly developed communication skills placing them at an advantage for learning, comprehending, and applying the mediation tools learned from the services in settings outside of the program. These differences likely relate to issues like the number of topics selected and the ability to reach agreement, in addition to their ability to reintegrate successfully. Therefore, the existence of unaccounted concepts will need to be considered in regard to the findings from this study.

Table 7. Measures for Estimation of Propensity Scores

	Mean	Std. Deviation
Additional Demographics[18]		
Age	33.90	9.03
Children	.73	.44
Criminal Histories		
Age at First Offense	15.38	6.01
First Incarceration?	.22	.41
Length of Stay (Months)	5.64	2.54
# of Prior Convictions	2.34	1.52
# of Prior Arrests	11.83	10.15
# of Charges (Person)	8.88	9.55
# of Charges (Drug)	11.98	12.49
# of Charges (Property)	8.72	12.89
# of Charges (Traffic)	.36	1.07
# of Charges (Sex)	.31	1.11
Quality of Relationships[19]		
Participant Plays a Positive Role	4.40	.93
Happy with Participant	5.20	1.66
Can Confide in Participant	2.96	1.06
Feels Control in Relationship	2.51	1.27
Can Productively Deal with Conflict	3.99	.98
Facility Type		
Prison	.27	.45
Jail	.39	.49
Boot Camp	.34	.47
Half Way House	.01	.11
Pre-Release	.29	.45

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[18] Other demographic measures provided in previous tables: marital status, gender, and race.
[19] Other relationship measures include the identified relationship between the subject and their selected participant (*see* Table 3).

Analytic Plan

Due to the nature of evaluation research, it is often the case that individuals will select into the treatment condition (or in this case, sub-treatment conditions). More specifically, under the CMM program the subjects not only select into the treatment conditions—they define them. This does not mean that an evaluation will not be informative to the implementation of similar programs, but this does mean that these research questions must be approached from several angles in an attempt to triangulate how the aforementioned treatment variations affect the recidivism outcomes of the subjects. Therefore, this thesis employs two analytic approaches to examine the influence of spouse and family mediation partners on the probability of arrest, in addition to the influence of mediation agreements and the focus of mediation topics. The intention of utilizing these two methods is to take advantage of the data set, which measures recidivism in both ways (i.e., binary and released days). Therefore, this project is able to look at both the probability of re-offense (arrest) and time to re-offense, both of which are metrics of a recidivism and re-entry.

To explore potential treatment heterogeneity, the sample is separated out into a series of four different treatment groups to test the various aforementioned hypotheses—with the hope of observing subgroup-specific effects of participation in the CMM program. The analytic plan involves the use of propensity scores to create matched control groups for the various treatment conditions of interest[20] with the available observational data. There are many benefits to implementing propensity score matching in observational

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[20] Advancements for propensity score methods have created the ability to identify treatment groups within the data; however, the concern of the process is to test known (and potentially malleable) variations in the experiences of those participating the CMM program. Therefore, the treatment conditions are identified and deliberately imposed based on the hypotheses listed above.

studies such as addressing selection bias when the researcher has no control over the treatment assignments, preventing extrapolation while using observational data, and improving the ability of the researcher to make causal interpretations (Apel & Sweeten, 2010; Loughran, 2017; McCaffrey et al., 2013; Rosenbaum & Rubin, 2013). In this case, the propensity score attempts to mimic an experiment by creating comparison groups based on observed covariates (measured prior to the treatment that are not affected by the treatment) and captured in the data set. The goal is to create covariate balance between the groups listed in Table 6, so that the match will have the same probability of receiving the treatment condition of interest given their Xs (observables). After the propensity score is estimated, the treated individuals were matched with their controls. Once a score was estimated for each respondent and matched within each treatment condition, the distributions were then evaluated to check the existence of common support between the treatment and the controls (McCaffrey et al., 2013).

The second set of analyses involved the use of hazard models. Hazard modeling is appropriate to address the limited variation in the use of a binary recidivism variable (i.e., recidivate or not) and in turn, the dependent variable measures how much time lapses before an event occurs (i.e., the event in this case is recidivism) (Box-Steffensmeier & Jones, 2004). Instead of exploring the effect of this program on a binary recidivism outcome, hazard models provided the flexibility to evaluate the time until recidivism post-release. The intention of this method was to make inferences regarding the influence of the covariates on the hazard of an event. With the application of hazard modeling to this study, the goal was to make inferences about how the aforementioned specific components are correlated with the time to re-offense (or the non-occurrence of re-offending) for subjects

in the program (i.e., the event represents the change or transition from "being reintegrated" to "being in a state of recidivism").

Furthermore, this methodology accommodates for the fact that all participants did not leave the incarceration facility at the same time and the model considers all participants to have their own hazard of an event (e.g., hazard of recidivating). More specifically, these analyses use the semi-parametric Cox proportional hazard modeling because this modeling makes no assumptions about the shape of the distribution. The analyses are calculated by the subsets or subgroups of the data as outlined in Table 6. These calculations formally test the survival between the groups to determine if any subgroups survive for a longer period of time before the event of re-arrest.

Chapter 4: Results

Propensity Score Results

As outlined by Apel and Sweeten (2010), there are seven good research practices to consider when employing the use of propensity scores. Those good practices include: 1) clearly defined treatment, 2) a theoretically informed model, 3) include confounders that are temporally prior to treatment, 4) demonstrate support, 5) demonstrate balance, 6) employ multiple propensity score methods as tests of robustness, and 7) consideration of the relevant treatment effect. In line with these suggestions, the results from the propensity scored analyses will be presented in a similar fashion; however, less emphasis will be placed on items 1-3 as they are detailed in previous sections.

Hypothesis 1(a): Spouse/Partner as Mediation Participant

As a first step towards specifying a treatment status model, I examined the observable characteristics to check for the potential presence of covariate bias due to selection. To check for balance among the covariates (all of which are captured prior to treatment), t-tests were conducted to obtain the means for the treatment and control groups, standard deviations, t-statistics, and p-values. These values were then used calculate the standardized bias statistics[21] for each covariate (*see* Table 8). Framed within Hypothesis 1(a), this t-test determines if there is a significant difference in the means of the subjects who select a spousal partner and those who do not. A covariate is considered out of balance when the absolute value of the standardized bias statistic is greater than 20, as well as statistically significant at an alpha-level of 0.10 (Rosenbaum & Rubin, 1985).

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[21] The standard bias statistic tests the difference in means of the covariates between treatment and control groups. In the standard bias statistic equation $\bar{x}, s^2$ and *n* represent the sample means, standard deviations, and sample sizes (Apel & Sweeten, 2010; Cohen, 1988; Rosenbaum & Rubin, 1985). The equation is: $t = \dfrac{\bar{x}_t - \bar{x}_c}{\sqrt{\dfrac{s_t^2}{n_t} + \dfrac{s_c^2}{n_c}}}$

Table 8. Test of Covariate Balance for Hypothesis 1(a)

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Spouse	*No Spouse*			
Demographics					
Age	35.85	34.00	-1.28	0.203	20.82
Male	0.86	0.83	-0.37	0.705	8.30
Race	1.09	1.20	1.77	0.079**	-29.89
Children	0.74	0.73	-0.29	0.774	2.26
# Children	2.64	2.19	-1.37	0.172	23.28
Criminal Histories					
Age at 1st Offense	15.97	15.02	-0.98	0.324	19.84
Length of Stay	5.51	5.73	0.54	0.589	-8.56
Prior Arrests	11.62	11.95	0.20	0.838	-3.25
Prior Convictions	6.19	3.38	0.22	0.828	51.38
Prior Incarcerations	4.68	4.71	0.04	0.969	-0.68
Quality of Relationship					
Happy w/Participant	5.38	5.09	-1.07	0.286	17.93
Deal w/ Conflict	4.06	3.95	-0.07	0.477	11.44
Feels Control	2.54	2.49	-0.27	0.790	3.98
Plays Positive Role	4.63	4.24	-2.69	0.008**	44.99
Can Confide	2.86	3.12	-1.56	0.101**	-24.53

These results suggest that race, whether or not the participant partner plays a positive role in the subjects' life ("plays positive role"), and if a subject feels as if they can confide in the participant ("can confide"), are out of balance between the treated and control groups. Testing covariate balance can help the researcher to make strategic decisions about the inclusion or exclusion of covariates in the calculation of the propensity score (i.e., especially in cases with a limited sample size where matching may be unattainable with the inclusion of all potential confounders). Therefore, this test of covariance balance guides which covariates should be prioritized in the propensity score models for each hypothesis and those out of balance must be included in the final logit models.

The propensity score was calculated using a logit model and initially included all covariates to predict who will select a spousal partner to participate in mediation services—the goal is to eliminate observable bias with the inclusion of as many covariates as possible. Several propensity score methods were attempted (i.e., nearest neighbor without replacement, nearest neighbor with calipers, stratification), but many of these methods largely reduced the sample size and/or left many observations unmatched. Therefore, the best-suited method was nearest neighbor matching (one-to-one) with replacement. The results of the post-estimation balance showed that the unbalanced covariate—race—did not achieve balance (i.e., less than 20% bias) and additional covariates had to be removed from the logit model. As Apel and Sweeten (2010) suggest, creating balance is an iterative process and the propensity score specification must be revisited when a variable is still out of balance. In attempt to create balance with the inclusion of all covariates, interaction and square terms were added to assorted logit models. To achieve balance in the end, the total number of covariates in all logit models had to be reduced[22].

The final propensity score model for Hypothesis 1(a) included, race, plays a positive role, can confide (3 covariates identified as out of balance), as well as age, male, children, age at 1st offense, length of stay, prior incarcerations, how happy a subject reported they were with a participant, if a subject felt they can deal with conflict effectively, and a lack of feeling control in the relationship. After prioritizing the out of balance covariates, the measures for the quality of the relationship remained in all iterations of the

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[22] The removal of covariates occurred one variable at a time based on the theoretical relevance of that variable to the selection into the treatment. For example, prior arrests and prior convictions were removed from the models while prior incarcerations remained. The assumption is that individuals incarcerated more frequently have less released time to meet someone to marry or they are more at risk for divorce because they cannot remain in their homes with their spouse.

logit models due to their importance with regard to the participant each subject selected. After ensuring the inclusion of these covariates, criminal history variables were removed in the following order—prior arrests and then prior convictions. The thought process behind this order of removal is that prior incarcerations is the most relevant to the subjects' relationships to outside participants because it is harder to maintain contact and relationship quality when an individual is physically separated from that relationship.

Once the final propensity score was estimated, common support between the treatment and control distributions were reviewed (see Figure 2 and Figure 3). The figure on the left represents common support for the original logit model; whereas, the figure on the right illustrates the final model. Both figures have been provided as a visual aid to show how the overlapping area between the treated and control groups has improved due to this iterative process.

Figure 2. Common Support Prior to Balance – H1(a)   **Figure 3. Common Support Post-Balance – H1(a)**
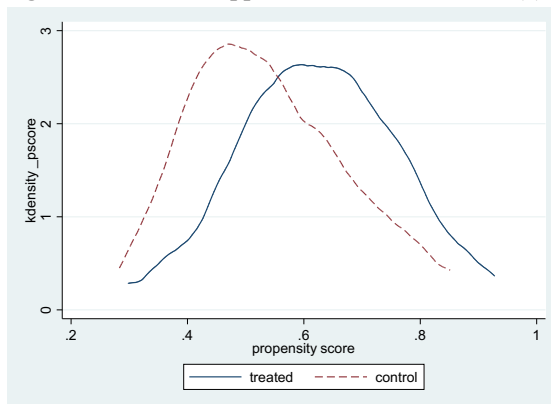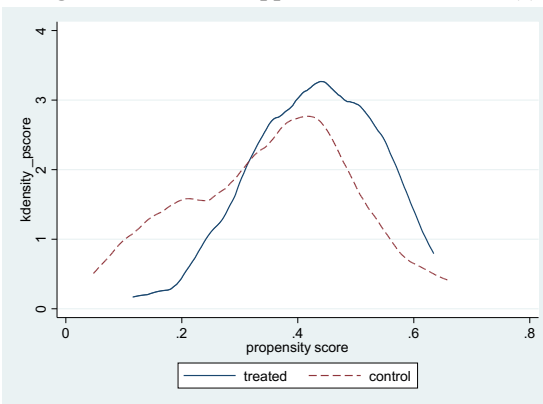
As can be seen between the two figures, there exists more common support once the final propensity score model is employed. The next step involved performing the matching routine, utilizing the final calculation of the propensity score, and then checking balance in the matched samples to make sure overt bias has been limited. The percentage of bias for each of the previously unbalanced covariates suggests that this propensity score

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specification creates balance across all covariates included in the final logit model (*see* Table 9 below). The results of the treatment effect will be reviewed at the end of this section (*see* Table 16).

Table 9. Post-Estimation Balance for Hypothesis 1(a)		
Out of Balance Covariate	**Pre-estimation Bias**	**Post-estimation Bias**
Race	-29.89	8.6
Plays Positive Role	44.99	-5.5
Can Confide	-24.53	3.0

Hypothesis 2(a): Familial Member as Mediation Partner

Each of the hypotheses in this study (H1(a) through H4(b)) are employing the propensity score method and in an effort to be concise, each step in the iterative propensity score process will not be repeatedly discussed for each of the hypotheses. Therefore, covariate balance is tested, several logit models are explored, post-estimation balance is checked and achieved, for all of the following hypotheses, but the discussion of the function of these steps remains only in the section for Hypothesis 1(a) above. The next sections focus on which covariates were out of balance and which covariates were included in the final logit models estimating the propensity score. As can be seen in the following table, male, race, children, and the number of children subjects have, were all imbalanced covariates prior to propensity score matching.

Table 10. Test of Covariate Balance for Hypothesis 2(a)

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Family	*No Family*			
Demographics					
Age	35.78	33.08	-1.90	0.059	29.45
Male	0.88	0.78	-1.60	0.101**	26.96
Race	1.12	1.23	1.76	0.079**	-28.18
Children	0.78	0.66	-1.68	0.094**	26.85
# Children	2.65	1.91	-1.90	0.059**	29.45
Criminal Histories					
Age at 1st Offense	15.19	15.67	0.49	0.618	-7.89
Length of Stay	5.69	5.57	-0.28	0.778	4.30
Prior Arrests	12.32	11.08	-0.77	0.441	12.27
Prior Convictions	6.52	5.98	-0.62	0.534	10.01
Prior Incarcerations	4.92	4.36	-0.81	0.418	12.98
Quality of Relationship					
Happy w/Participant	5.16	5.27	0.43	0.669	-6.58
Deal w/ Conflict	4.08	3.87	-1.39	0.165	21.03
Feels Control	2.51	2.50	-0.05	0.961	0.78
Plays Positive Role	4.44	4.32	-0.83	0.409	12.81
Can Confide	3.04	2.84	-1.14	0.256	18.96

Unlike with the testing of the first hypothesis, the final specification of this propensity score model included all covariates, except prior arrests, to achieve balance (i.e., absolute value less than 20). The number of arrests was the first covariate to be removed, as it is the criminal history covariate that involves the least amount of physical separation from family members. Furthermore, Figure 4 suggests there exists a substantial amount of common support between the treatment and control groups after the post-estimation balance considering the limited sample size. It is a difficult task to obtain substantial common support with a small number of subjects in the treatment and control groups because there are fewer chances for individuals to be matched with someone that looks similar to them across so many different measures.

Table 11. Post-Estimation Balance for Hypothesis 2(a)		
Out of Balance Covariate	**Pre-estimation Bias**	**Post-estimation Bias**
Male	26.96	-6.3
Race	-28.18	8.8
Children	26.85	-6.6
Number of Children	29.45	-1.2

Figure 3. Common Support Post-Balance – Hypothesis 2(a)
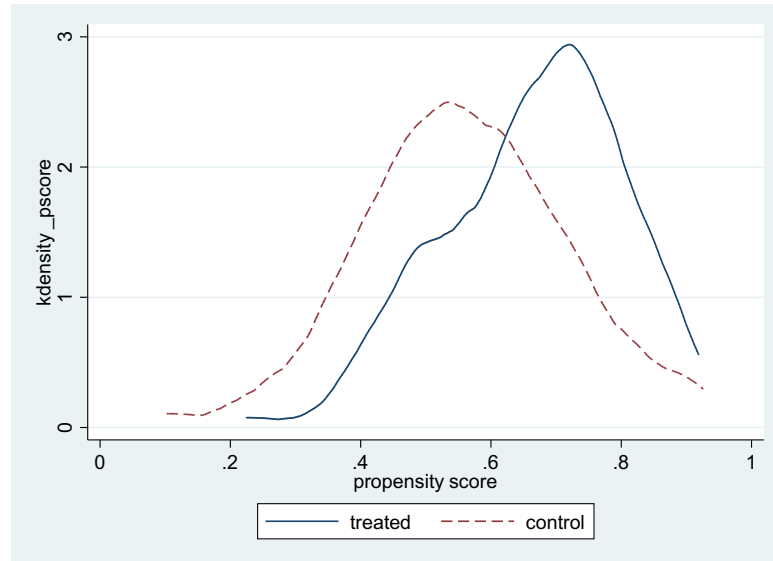
Hypothesis 3(a): Execution of Agreement

More similarly to hypothesis one, achieving balance required a greater reduction in the total number of covariates included in the logit model to calculate this propensity score. The final logit model excluded age at first arrest, treating the participant as a confidant, length of stay, presence of children, and the total number of children a subject has. The decision-making process for removing covariates in this logit model was more difficult because balance was not easily achieved. An argument can be made for each of the five quality of relationship covariates and their potential involvement in the decision to reach agreement before discontinuing services; however, the logit models (in any of their many iterations) could not achieve balance with all five of these relationship-based measures in

the model. After several iterations, treating the partner as a confident was the only relationship variable that could be removed on its own (without sacrificing the exclusion of multiple relationship measures) to achieve balance. In addition, the presence of children and the total number of children a subject has are theoretically relevant to the ability to reach an agreement, especially when the topics requiring mediation focus on parenting, visitation, and child support. However, as previously discussed, there exists a broad range of topics in the mediation sessions and not all mediations take place between co-parents or parents. Therefore, these covariates were removed from the final logit model because the measures related to offspring left the other covariates imbalanced. In sum, four covariates were initially out of balance prior to propensity score matching, including: prior arrests, prior convictions, prior incarcerations, and feelings of control (*see* Table 14 for standardized bias statistics), but in the end, balance was obtained for all of these items (*see* Table 13).

Table 12. Test of Covariate Balance for Hypothesis 3(a)

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Agreement	*No Agreement*			
Demographics					
Age	35.9	33.8	-1.44	0.153	23.89
Male	0.80	0.88	1.31	0.193	-22.43
Race	1.16	1.15	-0.21	0.835	2.66
Children	0.76	0.72	-0.47	0.641	9.09
# Children	2.25	2.50	0.70	0.485	-12.69
Criminal Histories					
Age at 1st Offense	15.32	15.41	0.09	0.932	-1.44
Length of Stay	5.57	5.92	0.80	0.423	-13.70
Prior Arrests	13.29	10.21	-1.79	0.074**	30.67
Prior Convictions	7.05	5.47	-1.73	0.087**	29.35
Prior Incarcerations	5.38	3.93	-1.98	0.05**	34.06
Quality of Relationship					
Happy w/Participant	5.27	5.03	-0.86	0.392	13.94
Deal w/ Conflict	4.10	3.95	-0.99	0.321	16.20
Feels Control	2.59	2.26	-1.61	0.101**	26.77
Plays Positive Role	4.39	4.37	-0.09	0.930	2.13
Can Confide	3.02	2.83	-1.05	0.296	17.76

**Denotes statistically significant difference at $\alpha = .10$

Table 13. Post-Estimation Balance for Hypothesis 3(a)

Out of Balance Covariate	Pre-estimation Bias	Post-estimation Bias
Prior Arrests	30.67	2.7
Prior Convictions	29.35	4.3
Prior Incarcerations	34.06	3.8
Feelings of Control	26.77	2.8

At this point, it should be noted that some counterfactuals are missed in the previously presented illustrations of common support (Figures 1-4), in addition to those illustrated below (see Figure 5); meaning, some individuals are out of range of the control distribution. I am unable to screen these individuals out with the use of a caliper due to the limited sample size and as a result, they go unmatched. Although these subjects go

unmatched, the goal is not to include everyone in the matching process if there does not exist a similar match based on their extremely unique characteristics. For example, there exists a subject in this sample whom has fifty-one prior arrests. If this extreme case were kept in the propensity score matching process, then he/she would likely add bias to the analysis of the treatment effect on the treated. Meaning, the exclusion of these cases (see various sample sizes in Table 16 above) is a strength of the propensity score matching method.

Figure 5. Common Support Post-Balance – Hypothesis 3(a)
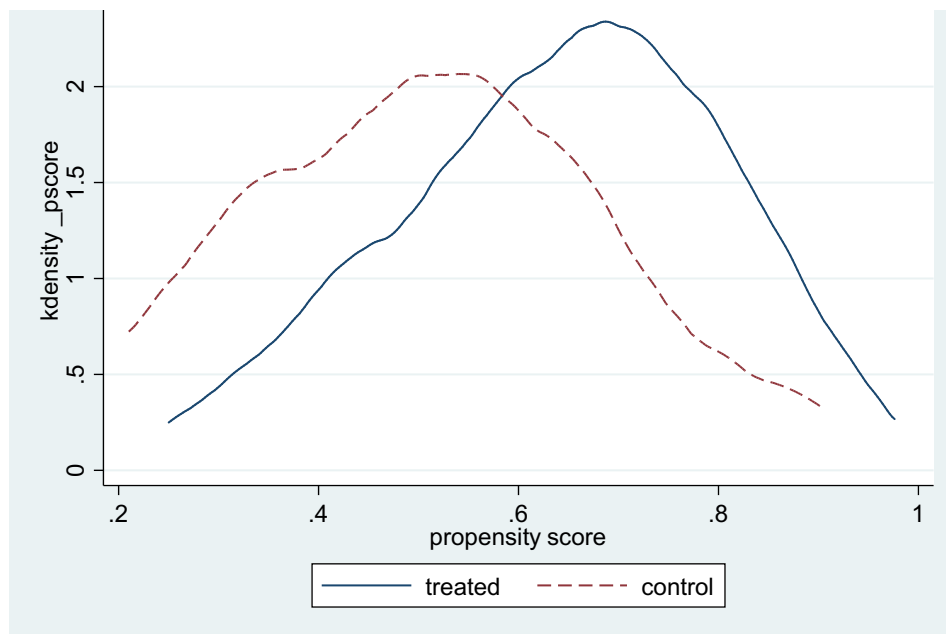
Hypothesis 4(a): Focus on Emotional Support Topics

Table 14 shows the results from the test of covariate balance prior to propensity score matching when considering a greater focus on emotional support topics. There are only four statistically significant covariates with a standardized bias statistic greater than |20| including whether or not the subject has children, their race, and two measures of relationship quality—happy with their participant and can deal with conflict effectively.

Creating the propensity score for this hypothesis, as well as the others above, required the same iterative process and the removal of covariates one at a time until balance was achieved. For Hypothesis 4(a), the propensity scores are based on a final logit model, predicting the treatment of focusing on emotional support as a function of excluding the following covariates: whether or not a subject reported having children and the number of prior arrests. The presence of children was selected as the first covariate to remove during the iterative process since the total number of children was included and prioritized due to its imbalance. Following that covariate, prior arrests were omitted from the final logit model since the other criminal history variables were more relevant to discussions in mediations (i.e., without conviction and incarceration, a subject would not be involved in this program).

Table 14. Test of Covariate Balance for Hypothesis 4(a)

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Emotional	*Non-Emotional*			
Demographics					
Age	34.46	35.23	0.55	0.584	-8.14
Male	.86	0.81	-0.77	0.44	13.49
Race	.12	0.23	1.89	0.06*	-29.02
Children	.76	0.66	-1.35	0.178	175.41
# Children	2.18	2.87	1.89	0.061*	-32.57
Criminal Histories					
Age at 1st Offense	15.31	15.55	0.23	0.816	-3.88
Length of Stay	5.69	5.53	-0.36	0.721	6.39
Prior Arrests	12.49	10.15	-1.34	0.182	24.13
Prior Convictions	6.52	5.77	-0.81	0.419	14.17
Prior Incarcerations	4.91	4.17	-0.99	0.324	17.40
Quality of Relationship					
Happy w/Participant	5.03	5.64	2.14	0.034*	-40.08
Deal w/ Conflict	4.08	3.79	-1.72	0.088*	28.60
Feels Control	2.56	2.36	-0.092	0.359	16.05
Plays Positive Role	4.34	4.51	1.04	0.299	-19.41
Can Confide	2.91	3.11	1.09	0.278	-19.04

**Denotes statistically significant difference at $\alpha = .10$

After specifying the final logit model for the propensity score calculation, common support (see Figure 6 and 7 below) was reviewed as well as the post-estimation bias for the out of balance covariates. The figure on the left shows the common support from the initial logit model containing all covariates and the figure on the right exemplifies the improvement after many iterations. In addition, all three post-estimation bias statistics for the previously out of balance covariates are reported in Table 15. The standard bias statistics were largely reduced and now fall within the acceptable level of less than an absolute value of 20.

Figure 6. Common Support Prior to Balance – H4(a) **Figure 7. Common Support Post-Balance – H4(a)**
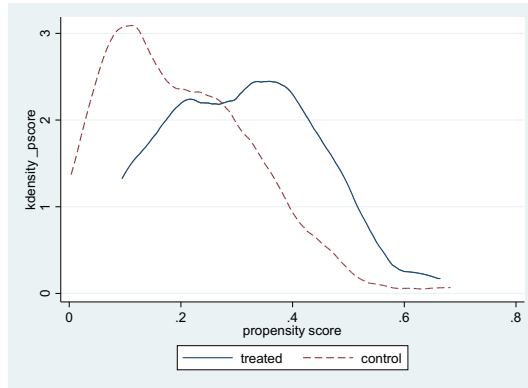
Table 15. Post-Estimation of Covariate Balance – Hypothesis 4(a)
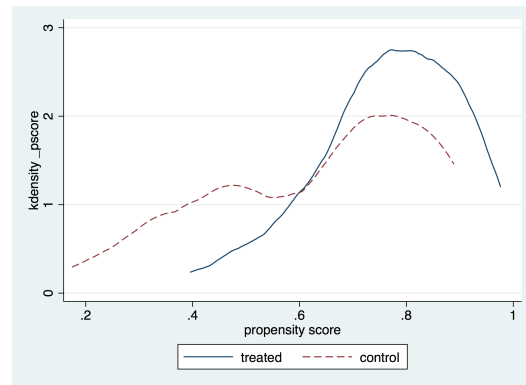
Out of Balance Covariate	Pre-estimation Bias	Post-estimation Bias
Race	-29.02	13.8
# Children	-32.57	12.1
Happy w/ Participant	-40.08	-7.4
Deal w/ Conflict	28.60	-14.5

Table 16. Average Treatment Effect on the Treated (ATT) by Hypothesis

Hypothesis	Coef.	Std. Error	P > |z|	N
Spouse as Partner	-.048	.101	.64	165
Family Member as Partner	.092	.129	.48	139
Focus on Emotional	-0.86	.093	.352	139
Agreement Reached	-.014	.137	.92	126

Table 16 shows the average treatment effect on the treated (ATT) of the CMM program on post-release arrest for each hypothesis of interest[23]. The results for the ATT are presented here rather than presenting the results from the average treatment effect (ATE) since the ATE is the population-level treatment effect (i.e., as if everyone was moved from untreated to treated). Calculating and presenting the results from the ATE is not appropriate for this project due to the fact that subjects select into these different

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[23] Prior to calculating the ATT, the differences in the 'effects' on arrest prior to and after matching were reviewed. The magnitudes of the relationships on arrest decreased after matching, suggesting that self-selection into these different treatment variations can largely overestimate the effect on the recidivism of subjects; however, the relationships did not reach statistical significance after matching which may be due to the limited sample size for each test of sub-treatment (i.e., the sample size restricts the matching methods employed (only one-to-one matches), as well as limits the power in the models).

formats of treatment and the goal behind the design of the CMM is to be participant driven

(i.e., the program is malleable based on participant needs and resources). In addition,

subjects may not even have the option to select into certain treatment variations (e.g.,

spousal participant) and thus, it would be unrealistic and less informative to estimate ATE

of the program for the purpose of programmatic recommendations. Conversely, the ATT

essentially represents the effect of the various sub-treatments for those who ultimately

receive treatment (i.e., the effect on those who elect into these different treatment

variations). The coefficients for the results above suggest a negative relationship between

the treatments and recidivism, except in the case of selecting a family member as a

mediation participant. However, these coefficients are not interpretable since they are not

statistically significant for any of the hypotheses of interest. The non-significant effects

found here will be explored further in Chapters 6 and 7.

Hazard Model Results[24]

The hazard models investigate whether any of the four categories of treatment

heterogeneity are associated with significant differences in the time to re-arrest. In hazard

models, a "failure" is the occurrence of arrest and therefore, a hazard ratio less than one

translates into a decrease in hazard experienced. The results from the Cox proportional

hazard models are reported in Tables 17-20 (*see below*). The hazard ratios for all of the

treatment conditions tested were not statistically significant and thus, inferences from these

tests cannot be made. Although the results were null across all four hazard models, they

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[24] These models were also explored by running the analyses with all of the sub-treatment measures in one model; however, these results were not included in the final product of this paper because there appeared to be issues due to multicollinearity in the treatment variations. Therefore, all sub-treatment investigations for the time to re-arrest were ran in individual models.

are still informative in terms of the success of this program, which be discussed at length in the upcoming sections.

It is notable that these analyses highlight other criminological theoretically important relationships. For example, all models support the idea that as subjects get older, there is a strong relationship with a longer tenure in the community after their returns home. Furthermore, criminal histories—in terms of prior arrests and prior convictions—are associated with increased hazards of arrest (*see* Table 17-20). However, the measure of prior incarcerations suggests an opposite relationship with the number of released days and hazard of arrest. This criminal history item is statistically significant in all Cox proportional hazard models except for the test of Hypothesis 3; in addition, the hazard ratios are all less than a value of one, suggesting that prior incarcerations correlate with longer durations outside of incarceration facilities. There are two theoretical reasons why this may occur: 1) subjects in these facilities learn better methods to avoid surveillance and detection during their ongoing criminal activities or 2) the severity of punishment carries a greater deterrent effect for subjects. Although these results adhere to themes from the criminological literature, this study did not intend on testing these mechanisms and thus, does not do a sufficient job of investigating them.

Table 17. Cox Proportional Hazard Model Results – Predicting Hazard of Arrest (Hypothesis 1b)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Spousal Partner	0.747	0.226	Null
Control Variable Results			
Demographics			
Age	0.915***	0.024	Decrease in Hazard
Male	0.548	0.234	Null
Race	1.138	0.454	Null
Children	2.388	1.843	Null
# Children	1.122	0.101	Null
Criminal Histories			
Age at 1st Offense	0.971	0.031	Null
Length of Stay	1.087	0.065	Null
Prior Arrests	1.078**	0.035	Increase in Hazard
Prior Convictions	1.157*	0.098	Increase in Hazard
Prior Incarcerations	0.848*	0.080	Decrease in Hazard
Quality of Relationship			
Happy w/Participant	0.862	0.099	Null
Deal w/ Conflict	0.789*	0.103	Decrease in Hazard
Feels Control	0.887	0.106	Null
Plays Positive Role	1.014	0.180	Null
Can Confide	1.159	0.165	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

Table 18. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 2b)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Familial Partner	0.772	0.228	Null
Control Variable Results			
Demographics			
Age	0.910***	0.024	Decrease in Hazard
Male	0.553	0.235	Null
Race	1.188	0.465	Null
Children	2.478	1.906	Null
# Children	1.139	0.108	Null
Criminal Histories			
Age at 1st Offense	0.970	0.031	Null
Length of Stay	1.080	0.066	Null
Prior Arrests	1.082**	0.035	Increase in Hazard
Prior Convictions	1.147*	0.095	Increase in Hazard
Prior Incarcerations	0.859	0.080	Null
Quality of Relationship			
Happy w/Participant	0.863	0.099	Null
Deal w/ Conflict	0.802	0.108	Null
Feels Control	0.881	0.105	Null
Plays Positive Role	0.970	0.172	Null
Can Confide	1.174	0.170	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

Table 19. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 3b)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Agreement Reached	1.268	0.377	Null
Control Variable Results			
Demographics			
Age	0.923***	0.024	Decrease in Hazard
Male	0.568	0.259	Null
Race	1.223	0.523	Null
Children	2.339	1.824	Null
# Children	1.081	0.099	Null
Criminal Histories			
Age at 1st Offense	0.970	0.032	Null
Length of Stay	1.119*	0.068	Increase in Hazard
Prior Arrests	1.081**	0.036	Increase in Hazard
Prior Convictions	1.159	0.104	Null
Prior Incarcerations	0.838*	0.083	Decrease in Hazard
Quality of Relationship			
Happy w/Participant	0.878	0.105	Null
Deal w/ Conflict	0.787	0.125	Null
Feels Control	0.886	0.115	Null
Plays Positive Role	1.025	0.185	Null
Can Confide	1.141	0.167	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

Table 20. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 4b)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Focus on Emotional	1.121	.385	Null
Control Variable Results			
Demographics			
Age	.912**	.024	Decrease in Hazard
Male	2.486	1.918	Null
Race	1.117	.104	Null
Children	.502	.211	Null
# Children	1.061	.462	Null
Criminal Histories			
Age at 1st Offense	.965**	.031	Decrease in Hazard
Length of Stay	1.088*	.064	Increase in Hazard
Prior Arrests	1.079	.035	Null
Prior Convictions	1.149	.094	Null
Prior Incarcerations	.858	.080	Null
Quality of Relationship			
Happy w/Participant	.877	.101	Null
Deal w/ Conflict	.772	.104	Null
Feels Control	.873	.105	Null
Plays Positive Role	.991	.175	Null
Can Confide	1.139	.164	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

Chapter 5: Discussion

The goal of this project was to further evaluate a promising re-entry program to determine the influence of potential treatment heterogeneity on its subjects. The evaluation of programs assisting releasees in their returns home is important to the field of criminology, as it can lead to the establishment of evidence-based practices and inform the best use of limited resources in the criminal justice system. As a whole the United States is facing problems associated with mass re-entry, in tandem with routinely observed high

rates of recidivism, and this revolving door is mirrored within the context of the State of Maryland. The CMM program is a unique response to this problem and past, present, as well as future evaluations of the program can guide programmatic implementation at the current sites, as well as others interested in utilizing a re-entry mediation model.

One of the uncommon features of this program is its participant-driven design; individuals who participate in the program essentially select into different sub-treatments in terms of the pro-social participants they select to mediate with, the issues they choose to discuss, and the pursuit of formal resolution before discontinuing services. As such, there may exist potential treatment heterogeneity for those whom participate, and this heterogeneity may be leveraged to improve the success of the program without overturning the current re-entry mediation model. Of course, the mediation program does not have much control over whom the releasee chooses to join them in mediation (i.e., spouse or family), but if a family member or spouse/partner cannot attend mediation sessions due to travel or financial issues, this may highlight a need for more funding to provide assistance to the pro-social participants in their participation. Second, if certain pro-social partners are found to be more important in the subjects' returns home, then this may indicate a need for more resources to search for spouses/partners or family members that cannot be reached at the initially provided contact information.

Turning to the other potential sorts of treatment heterogeneity, the program can actively encourage signing an agreement and/or discussing particular topics. For example, a list of potential emotional support topics may be provided to participants prior to the completion of the program or the benefits of a formal agreement may be conveyed to participants to peak their interest in the pursuit of this stage of the program. Both of these

potential programmatic developments do not negate the core principle behind the re-entry mediation model and the services can remain participant driven. On the whole, however, the results generally suggest that such encouragement may not pay important dividends since the null findings suggest effectiveness without evidence of treatment heterogeneity.

To test the hypotheses outlined above, this thesis implemented two different analytic methods—propensity score matching and Cox proportional hazard models—to take advantage of both recidivism measures available in the data set. Although the propensity score matching method reduced the magnitude of the relationship noted between the treatments and arrest, suggesting an overestimation due to selection, the final results were statistically insignificant. In other words, it did not appear than any of the sources of variation in the mediation treatment are associated with the probability of arrest post-release for subjects. Additionally, when considering the size of the p-values found in these models, it is unlikely that the null findings suggest a Type 2 error. Furthermore, reviewing the results from this thesis in the context of the prior evaluations—which find overall positive results in terms of recidivism—indicates that the CMM program works well for subjects, regardless of their selection of pro-social relationships, topic focus, or reaching resolution. To determine if the null findings may be replicated in future work, it would be informative to obtain a larger sample size, so that the propensity score analyses would not require overreliance on a small number of observations in the generation of matches. As previously stated, the small number of subjects, required a nearest neighbor one-to-one matching method with replacement; yet, a larger sample size would have provided the opportunity to employ a one-to-many without replacement matching method.

When investigating the time to re-arrest, the results of the hazard models were also null and provided no evidence of treatment heterogeneity. As there existed limitations with the measurement of emotional support (*see* the next section), Appendix B provided supplemental analyses with an alternative coding structure for this treatment variation to determine if the null findings were dependent on the selection of topics included in the calculation of emotional support. Consistently with the findings of this paper, the supplemental analysis in both Appendix A and B do not show evidence of treatment heterogeneity in the CMM program.

Limitations

The greatest limitation involved with this project is the inability to obviate concerns about selection. Employing the propensity score matching method in an attempt to address this selection concern showed a reduced magnitude in the relationship between the sub-treatments and recidivism (examined before and after matching), which indicates that there was some selection bias in the results prior to matching. The issue of selection is particularly problematic in the current situation because it is inherently involved in the design of the program—subjects control their own treatment experiences as the mediation services are largely participant driven.

Further, the CMM is at least partly built on the presumption that participants should be actively involved in the nature of their mediation treatment, which means it is particularly challenging to deal with unobserved bias through a research design or analytic model. In this way, future work may benefit from turning away from establishing a clean causal estimate, and instead focus on understanding the process of and how the mediation resonates in meaningful ways for participants. As Paternoster (2017) recently argued,

holding criminology to the hard science standards for causality limits our capacity to truly understand the role of agency in desistance. If the ultimate goal of re-entry mediation is to promote desistance through successful re-entry, then it arguably should understand how the agency to structure one's mediation experience may interact with and affect agency to stop offending. Accordingly, future research would benefit from in-depth qualitative work that aims to understand not only the mediation experience, but also to shed light on selection itself.

This study is also limited by the fact that it was difficult to capture different forms of social support—specifically emotional support—due to the limited information provided. For example, several topics had to be omitted from the consideration of support type due to their ambiguity. For instance, discussing children may involve both types of support. A mediation partner may discuss how important the subject is to the child and that the participant wants/encourages the subject to resume their paternal role, which can be interpreted as a discussion of emotional support rather than other forms of social support. On the other hand, a discussion of children may involve informal discussions of child support or requirements of co-parenting and discussing children in this way would be more akin to a practical support discussion. Therefore, any inferences drawn from the results regarding the importance of emotional support may be impacted by missing discussions on arguably important topics areas because of an inability to code these cases as a focus on emotional support (*see* Appendix B for more information). Future research would certainly make greater gains on this point if those leading the mediation took more detailed notes about the substantive nature of the conversations, not only the general topic areas.

As mentioned throughout the document, this study is also limited by its small sample size. In the propensity score matching models, in particular, all analyses focused on less than 200 participants. If there were differences in recidivism based on treatment experiences, but they were small or modest, it is simply unlikely that my analyses would have detected them. Accordingly, it is possible that the results reflect a false negative. In order to address this question, it would be beneficial to either take advantage of additional years of data from CMM, or instead identify a similar program in the nation that involves many more subjects. Although the possibility of the false negative does exist, it is unlikely based on the size of the p-values recorded in all of the models; yet, it would still be beneficial to replicate these findings in future work with a greater number of subjects.

A final limitation of this study involves the operationalization of spouse/partner in the data set. It should be noted that the data set in this study involved the combination of items collected via multiple surveys (and from multiple points of view), as well as information from administrative records. As a result of this data collection process, the number of reported spouses/partners varied depending on the original source capturing this variable; meaning, some subjects considered their participant a spouse/partner and the participant did not report the same relationship and vice versa. This contradiction in relationship status only occurred for a few cases, but future data collection efforts for this program may consider confirming the relationship status during the first mediation session while both participants are present. The degree to which this limitation affected the results is low, given that supplemental analysis in the Appendix A demonstrates that there was no difference in outcomes for those individuals who mediated with a committed (romantic) partner versus those who did not.

In the end, this study speaks to the importance of considering potential treatment heterogeneity in programs that are built in a way to be flexible and accommodating to participants' needs. After all, prior research on criminal justice policies and programs that are not accommodating in this way, nonetheless suggest that variations in treatment experiences can have meaningful effects on criminal outcomes (e.g., Agustyn and McGloin, 2018). Though the results did not provide any evidence of such treatment heterogeneity effects, the study itself serves as an example of how evaluations can and should investigate treatment heterogeneity within participants of the program rather than only considering the influence of selection bias in terms of those participants versus non-participants. In summary, the null effects across the models testing a variety of sub-treatment effects highlights that this program may well be universally effective for subjects returning to their communities. To be clear, the fact that the CMM program provides the flexibility to accommodate a wide variety of needs for those beginning the re-entry process may mean that the self-directed nature of the mediation curbs differential treatment effectiveness across specific formats. In this way, CMM may serve as an example to promote successful reintegration by leveraging limited resources, providing support to releasees and their families/friends, while remaining a cost-effective re-entry effort.

Appendix A: Investigation of the Marriage Effect

The purpose of this appendix is to provide sensitivity analyses looking into whether or not H1(a) is a true test of a marriage effect or conversely testing the same relationship as H2(a) (i.e., a relationship of family member participant). In an effort to tease out the differences between selecting a spouse as a mediation partner versus a family member, the intent was to test the following hypotheses:

- **H5:** *Subjects who select committed non-cohabitating partners as mediation participants will have a lower probability of re-arrest.*

- **H6:** *Subjects who select cohabitating but non-married partners as mediation participants will have a lower probability of re-arrest.*

- **H7:** *Subjects who select a romantic partner (of any type) as mediation participants will have a lower probability of re-arrest.*

The thought behind testing these additional hypotheses is that if the average treatment effect on the treated was not sustained in the results of H5, H6, or H7, then this would mean that the results of H2(a) would be more supportive for capturing the effect of choosing a marital partner to attend mediation sessions. Although this was the goal of this section, the 6th hypothesis was not tested due to the limited number of individuals reporting a cohabitating non-married partner (n=3). A treatment group limited to such a small number of individuals cannot be tested within these models. Therefore, the results from the propensity score matching method for *only* H5 and H7 will be described below.

Hypothesis 5: Committed Non-Habiting Partners

Prior to selecting the covariates for the logit model which would calculate the propensity score, the covariates were reviewed for balance. Table 21 below contains the

results from the test of covariate balance for Hypothesis 5 and it can be seen that the standard bias statistic for three covariates were larger than an absolute value of 20 and statistically significant. These covariates include the age of the subject, whether or not they have children, and the number of children they have. These covariates are particularly important to a subjects' relationship with a significant other and thus, important to achieve balance. Again, to determine which covariates will remain in the final logit model to calculate the p-score is an iterative process. Under this hypothesis, the iterative process required several more attempts to achieve balance than the previous hypotheses, but in the end, the final logit model included ten covariates.

Table 21. Test of Covariate Balance for Hypothesis 5

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Committed	*Non-Committed*			
Demographics					
Age	31.21	35.71	2.7	0.007**	-50.22
Male	0.84	0.85	0.1	0.916	-2.74
Race	1.11	1.18	0.97	0.331	-19.56
Children	0.57	0.78	2.63	0.009**	-45.48
# Children	1.53	2.6	2.77	0.007**	-98.11
Criminal Histories					
Age at 1st Offense	14.6	15.6	0.9	0.369	-18.73
Length of Stay	5.78	5.6	-0.38	0.707	7.06
Prior Arrests	9.54	12.48	1.56	0.121	-28.66
Prior Convictions	5.24	6.61	1.36	0.175	-24.70
Prior Incarcerations	4.19	4.84	0.81	0.420	-14.35
Quality of Relationship					
Happy w/Participant	5.59	5.09	-1.63	0.105	30.21
Deal w/ Conflict	3.84	4.04	1.09	0.274	-20.82
Feels Control	2.54	2.49	-0.19	0.852	4.13
Plays Positive Role	4.29	4.42	0.7	0.484	-13.36
Can Confide	3.12	2.92	-0.94	0.351	19.27

**Denotes statistically significant difference at $\alpha = .10$

The covariates excluded from the model were those that seemed less theoretically relevant to the selection of a cohabitating partner. For example, with regard to the criminal histories of the subjects, the age at first offense and number of prior arrests were omitted while length of stay and prior convictions were kept. This decision was made based on the idea that more incarcerations and the length of stay likely mean more time apart from the committed partner. Although the quality of the relationship covariates are extremely important to any tests regarding the relationship between mediation partners, all of these covariates were unable to remain in the final logit model due to balance issues. Therefore, the final logit model included the subjects age, whether or not they had children, the number of children they had, their gender, race, length of stay, prior incarcerations, their happiness with the committed partner, to what extent they believed their partner plays a positive role in their lives, and if they are able to confide in this partner. The results of the post-estimation bias can be found in Table 22 below and all three of the formerly out of balance covariates obtained a standard bias statistic less than |20|.

Table 22. Post-Estimation of Covariate Balance

Out of Balance Covariate	Pre-estimation Bias	Post-estimation Bias
Age	-50.22	3.4
Has Children	-45.48	8.7
Number of Children	-98.11	11.4

As with all of the other propensity score matching instances detailed in this project, a nearest neighbor one-to-one matching method with replacement was utilized. The average treatment effect on the treated for the relationship between selecting a committed partner is reported in Table 25, along with the previously discussed results from H1(a). Although the coefficient is positive rather than negative for the committed partner

relationship, the results were also statistically insignificant. In addition to performing the propensity score method, a Cox proportional hazard model was used to determine if a committed partner carried a differential effect compared to a spousal partner. Table 23 below shows the results from the hazard models and the main effect of interest—committed partner—is insignificant and thus, selecting a committed partner has a null effect on a subject's time to arrest (*see* Table 23 below). Meaning, this treatment variation is not associated with an increase or decrease in the duration (or days) of release before re-arrest for those participating in the CMM program. To reiterate, the results from the hazard models for both hypothesis 1(a) and 2(a) were also null and did not suggest that the relationship between participants and subjects may matter more or less to the success of the re-entry process.

Table 23. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 5)

Variable	Hazard Ratio	SE	Effects on Released Days
Treatment Results			
Committed Partner	1.547	.542	Null
Control Variable Results			
Demographics			
Age	.913***	0.024	Decrease in Hazard
Male	0.532	0.226	Null
Race	1.328	0.514	Null
Children	2.711	2.088	Null
# Children	1.127	0.103	Null
Criminal Histories			
Age at 1st Offense	.969	0.032	Null
Length of Stay	1.102*	0.065	Increase in Hazard
Prior Arrests	1.083**	0.035	Increase in Hazard
Prior Convictions	1.162*	0.097	Increase in Hazard
Prior Incarcerations	0.846*	0.081	Decrease in Hazard
Quality of Relationship			
Happyw/Participant	0.852	0.099	Null
Deal w/ Conflict	0.784*	0.103	Decrease in Hazard
Feels Control	0.852	0.105	Null
Plays Positive Role	1.006	0.179	Null
Can Confide	1.159	0.165	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

Hypothesis 7: Romantic Relationship as Partner

The division for the treatment and control groups in this section is a determination of whether or not the subject selected a romantic partner, of any type, to attend mediation sessions with. In this sub-treatment, the relationship status between the subject and participant can be any form, including but not limited to the following: married, spouse, cohabitating, committed, etc. Based on this determination, there are 86 subjects selecting a romantic partner (i.e., n=86 in the treatment group and n=80 in the control group). Testing for covariate balance suggested that the only covariate out of balance prior to matching

was the number of children a subject reported to have. As such, this covariate was prioritized in the calculation of the final logit model.

The first covariate removed from the propensity score calculation was the number of arrests experienced by the subject. Considering this hypothesis focuses on romantic partnerships, the quality of relationship covariates, as well as those determining released time, were also prioritized. Therefore, the number of arrests was removed first as the other criminal history measures account for time released, which is important to the opportunity for obtaining and maintaining a romantic relationship. Once removed from the logit model, the imbalance measured by the standard bias statistic was reduced from 38.98 to 17.8 (i.e., less than an absolute value of 20).

Table 24. Test of Covariate Balance for Hypothesis 7

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Romantic Partner	*Non-Romantic*			
Demographics					
Age	35.18	34.19	-0.071	0.479	15.40
Male	0.80	0.04	1.51	0.133	21.11
Race	0.13	0.18	0.85	0.399	-13.34
Children	0.76	0.71	-0.68	0.499	11.24
# Children	2.71	1.98	-2.26	0.026**	38.98
Criminal Histories					
Age at 1st Offense	15.50	15.30	-0.165	0.869	3.32
Length of Stay	5.70	5.60	-0.22	0.828	3.94
Prior Arrests	11.12	12.60	0.92	0.360	-14.60
Prior Convictions	5.91	6.74	0.989	0.324	-15.39
Prior Incarcerations	4.41	5.00	0.86	0.388	-13.67
Quality of Relationship					
Happy w/Participant	5.23	5.17	-0.22	0.824	3.63
Deal w/ Conflict	3.93	4.06	0.87	0.387	-13.25
Feels Control	2.41	2.61	1.04	0.298	-15.73
Plays Positive Role	4.37	4.41	0.28	0.779	-4.31
Can Confide	2.97	2.95	-0.16	0.871	1.89

**Denotes statistically significant difference at $\alpha = .10$

Table 25. Average Treatment Effect on the Treated (ATT) by Hypothesis

Hypothesis	Coef.	Std. Error	P > |z|	N
Spouse as Partner	-.048	.101	.64	165
Cohabitating Partner	-	-	-	-
Committed Partner	.133	.139	.96	139
Romantic Partner	.079	.053	.13	165

The average treatment effect on the treated for the hypothesis testing the selection of a romantic partner was insignificant, similarly to the results of the tests of the selection of a spouse/partner and committed non-cohabitating partners (see Table 25 above). As with

all of the other hypotheses tested in this thesis, Cox proportional hazard models were employed to determine if a relationship existed between selecting a romantic partner and the time to re-arrest. As can be seen in the following table (Table 26), the results from the Cox proportional hazard models are null for the relationship of selecting a romantic partner and the time to re-arrest.

Table 26. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 7)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Romantic Partner	1.51	.424	Null
Control Variable Results			
Demographics			
Age	.91***	.024	Decrease in Hazard
Male	.54	.231	Null
Race	1.14	.491	Null
Children	2.57	1.971	Null
# Children	1.10	.099	Null
Criminal Histories			
Age at 1st Offense	.97	.031	Null
Length of Stay	1.09	.065	Null
Prior Arrests	1.09**	.035	Increase in Hazard
Prior Convictions	1.13	.092	Null
Prior Incarcerations	.88	.084	Null
Quality of Relationship			
Happyw/Participant	.86	.099	Null
Deal w/ Conflict	.79*	.104	Decrease in Hazard
Feels Control	.89	.106	Null
Plays Positive Role	1.01	.180	Null
Can Confide	1.16	.168	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

In summary, these additional investigations in Appendix A did not help to decipher a distinction between the mechanisms of H1(a) and H2(a) and it cannot be concluded if the tests highlight a marriage or family effect. Although these findings did not meet the goal

of this exercise, they are still important to consider with regard to future work. Any considerations of the differential effects of family support or a marriage effect in other samples should consider this overlap and how it may obscure the conclusions which can be drawn.

Appendix B: Further Investigation of Emotional Support

The purpose of this appendix is to provide supplemental analyses for the fourth treatment variation involving the focus on emotional support topics. The sole difference in the results examined below is that discussions of children were included in this version of the coding for the emotional support category. Essentially, this section provides an alternative coding for the sub-treatment of interest to assess how, if at all, this change may influence the findings. The topic of children was selected as the ambiguous area to re-introduce to the coding of this variable since the majority of the subjects reported having at least one child and it was a common area of focus during many of their mediation sessions. To reiterate, the hypotheses to be tested are the following and they have not changed from the main body of this thesis:

- **H4(a)**: *Subjects who focus more on emotional support topics during mediation sessions will have a lower probability of re-arrest.*
- **H4(b):** *Subjects who focus more on emotional support topics during mediation sessions will experience longer tenure in the community without experiencing re-arrest.*

As shown in Table 27 below, the tests of covariate balance revealed that two covariates were imbalanced prior to propensity score matching—age and the number of children

reported by the subject. As both of these covariates were statistically significant and their standard bias statistic values were greater than an absolute value of 20, they were both prioritized in the calculations of the logit model utilized to calculate the propensity score. To achieve balance, only one covariate was removed from the logit model, which was whether or not the subject reported having children. This covariate is important to this hypothesis as it investigates discussions surrounding children; however, whether or not a subject has children, as well as the total number of children they have, are captured in the measure of the number of children. Since the number of children captures whether or not a subject has children, it was determined to be more important to prioritize the other covariates capturing other demographics, criminal histories, and the quality of the relationship. In summary, the percentage of bias was reduced to an acceptable level (see Table 28 below) in the final logit model that contained all covariates except the binary measure for children.

Table 27. Test of Covariate Balance for Hypothesis 4(a) – Alternative Coding

Covariate	Treatment	Control	t-stat	p-value	Std. Bias Statistic
	Emotional	*Non-Emotional*			
Demographics					
Age	33.89	38.72	2.62	0.009**	-51.60
Male	0.84	0.89	0.79	0.433	-14.65
Race	0.14	0.21	1.03	0.304	-18.32
Children	0.74	0.68	-0.72	0.480	13.03
# Children	2.24	3.05	1.81	0.072**	-37.40
Criminal Histories					
Age at 1st Offense	15.62	14.18	-1.16	0.247	31.91
Length of Stay	5.74	5.14	-1.15	0.253	23.72
Prior Arrests	11.79	11.96	0.08	0.937	-1.71
Prior Convictions	6.14	7.14	0.89	0.371	-17.94
Prior Incarcerations	4.58	5.28	0.79	0.432	-15.40
Quality of Relationship					
Happy w/Participant	5.16	5.39	0.66	0.512	-15.74
Deal w/ Conflict	4.01	3.89	-0.59	0.552	11.87
Feels Control	2.53	2.39	-0.52	0.606	11.88
Plays Positive Role	4.4	4.36	-0.22	0.830	4.57
Can Confide	2.93	3.14	0.98	0.329	-19.63

**Denotes statistically significant difference at $\alpha = .10$

Table 28. Post-Estimation of Covariate Balance – Hypothesis 4(a)

Out of Balance Covariate	Pre-estimation Bias	Post-estimation Bias
Age	-51.60	18.2
# Children	-37.40	15.3

Table 29. Average Treatment Effect on the Treated (ATT) by Hypothesis

Hypothesis	Coef.	Std. Error	P > |z|	N
Original Coding	-0.86	.093	.352	139
Alternative Coding	-0.43	.091	.636	142

Table 29 above shows the average treatment effect on the treated for the original

and alternative coding of emotional support calculated in the propensity score models.

Comparing the original coding to the alternative shows that the magnitude of the effect decreased in the alternative coding, yet this propensity score model did not achieve statistical significance. Therefore, it does not appear that excluding ambiguous categories lead to different conclusions and it appears that a focus on emotional support does not show evidence of treatment heterogeneity. As a last step in this appendix, hypothesis 4(b) was again tested with the different coding of emotional support wherein discussions of children were included as an emotionally supportive topic area. Table 30 below outlines the results of the new hazard model and the alternative coding of emotional support remains null. Furthermore, it should be noted that this model, consistently with the results from the other Cox proportional hazard models, only finds statistically significant results for age and two of the criminal history measures.

Overall, the results of the models in Appendix B can be interpreted as meaning the exclusion or inclusion of different emotionally supportive topics did not change the conclusions that can be drawn from this paper. In total, there exists an overwhelming lack of support for treatment heterogeneity among the subjects of the CMM program and as a result, the re-entry mediation sessions look to be beneficial to participants' recidivism regardless of their selection into the different variations of these services.

Table 30. Cox Proportional Hazard Model Results - Predicting Hazard of Arrest (Hypothesis 4b)

Variable	Hazard Ratio	SE	Hazard
Treatment Results			
Alternative Coding of Emotional Support	.942	.753	Null
Control Variable Results			
Demographics			
Age	.912***	.024	Decrease in Hazard
Male	.494	.207	Null
Race	1.021	.439	Null
Children	2.529	1.947	Null
# Children	1.107	.101	Null
Criminal Histories			
Age at 1st Offense	.966	.031	Null
Length of Stay	1.090	.065	Null
Prior Arrests	1.082**	.036	Increase in Hazard
Prior Convictions	1.148*	.095	Increase in Hazard
Prior Incarcerations	.854	.083	Null
Quality of Relationship			
Happy w/Participant	.873	.099	Null
Deal w/ Conflict	.781*	.104	Decrease in Hazard
Feels Control	.879	.105	Null
Plays Positive Role	.990	.175	Null
Can Confide	1.147	.165	Null

***Significant at the .01 level; **Significant at the .05 level; *Significant at the .10 level

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