

Capital Gains: Examining the Role of Gang Members Personal Networks and Criminal Careers

by

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Abstract

Gang membership has been labeled a snare in the life-course. Research has established gang members have greater odds of participating in crime, especially violent crime, and have a greater risk of violent victimization. Additionally, due to the criminogenic nature of gangs, gang members are often disconnected from prosocial peers and institutions. As such, gang members tend to be involved in the criminal justice system longer. Yet, what remains to be unclear is the role of personal networks on the criminal trajectories of gang members. The social structures individuals are embedded in are influential on their behaviors. A key criminological finding is the influence of peers on deviant behaviors. Gangs are first and foremost social groups made up of interconnected members. Therefore, ignoring the social world members embed themselves in, we are missing pieces of information to answer key questions regarding gang membership. In this dissertation, the personal networks of gang members are examined in order to determine whether the size and structure of their networks influence their criminal trajectories. Gang membership brings with it more opportunities to participate in criminal activities, co-offenders, and a “brotherhood”. As a result, there should be an increase in social capital associated with gang membership. Social capital is the resources obtained through social relations. The more social capital gang members have access to, the more advantageous their position within the network. Results revealed during active periods of gang membership, gang members’ networks did have a significant increase in social capital. How members built their networks was related to the length of their gang careers. In addition, by using networks, this dissertation moves beyond the gang label and examines how being embedded within a prison gang may influence the criminal careers of non-gang associates. It was found proximity to prison gang members increased the criminal career length for non-gang associates. Further, network measures were found to have a greater impact on the length of criminal careers than the label of gang member. These results were used to conceptually develop and propose a social capital theory of gang membership.

Keywords: personal networks; gang membership; criminal careers; social capital

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Chapter 1. Introduction

This dissertation is a complex journey that is premised in the idea that connections are influential on behaviors. Human relationships and social interactions are the common denominator for everything in life. Therefore, who you know is pivotal for accessing opportunities and resources that other individuals may not have access to. As a result, individuals who are able to access resources embedded through the connections within their networks have higher social capital. Social capital commonly refers to the resources that are obtained through social relations (Lin, 2001). The positions individuals occupy within their networks provide them with different opportunities. As such, how individuals invest in social relations and mobilize their interactions are going to directly influence the amount of social capital they gain.

Criminologists have long been interested in the social aspect of crime. Some of the key criminological theories are premised in the role of social relations and learning through connections with others (Akers, 1985; Bandura, 1969; Sutherland, 1947). One of the most concrete findings within criminology has been the role of peers in explaining involvement in crime (Agnew, 1991; Haynie, 2001; Warr, 1996; 2002). Through associations with criminal peers, individuals are exposed to more co-offenders and opportunities to become involved in crime. This can increase their social capital. In fact, McCarthy and Hagan (1995) coined the term criminal capital. Criminal capital is often used to reference the resources that are gained through the social relations with individuals involved in illicit activities. Greater exposure to criminal opportunities and co-offenders, individuals' criminal capital is increased. Studies have found relationship dynamics (i.e. mentor - mentee) (Morselli et al., 2006), and an individual's willingness to expand their networks through criminal collaborations (McCarthy & Hagan, 2001), to be influential on criminal achievement. Additionally, researchers have found individuals who have larger networks of co-offenders, have longer criminal careers (Piquero et al., 2007). The ways in which individuals build their networks is key to their success and longevity within the criminal justice system. As noted by McCarthy and Hagan (2001), criminal capital is almost exclusively gained through social relations. Therefore, how individuals build their networks and mobilize their positions will directly relate to their overall success. How successful criminals are may influence the length of their criminal careers.

Social capital is inherently a part of gangs because social relations are a central component of gangs. For instance, individuals cannot become gang members without usually having a connection with someone in the gang already. Also, breaking gangs down, they are social groups comprised of interconnected members. Gang members come together in time and space to perform collective actions for the gang (Papachristos, 2006). The majority of crimes committed by gang members involve two or more members, creating pockets of co-offending networks within the larger structure of the gang. These criminal opportunities are largely related to the positions and roles members occupy. This creates group cohesion and behavioral constraints on members. As such, the cooperation and commitment of members may be related to their position and role within the gang. In addition, gang membership may offer a mentor-mentee relationship between older or more experienced gang members and young gang members. If a new gang member has the opportunity to have a mentor, they will have differential access to resources compared to young members who do not have a mentor (Morselli et al., 2006).

It seems intuitive then that gang members would have more social capital than non-gang criminals. Gang members are often glorified, within pop culture and the criminal world, but is this a representation of members' lives once they become involved in gangs? Are gang members personally gaining from their status as a gang member? And if so, does this influence their criminal trajectories? It appears gang members have plenty of opportunities to increase their social capital. Gang members are believed to have access to more criminal opportunities, co-offending relations, and the "brotherhood" of the gang, all contributes to the growth of their capital. But is this the case? Do all gang members experience this growth of capital? If so, then why would any gang member leave the gang? It has been reported that gang membership is in actuality, short lived, with the average member staying in the gang for a modal length of two years (Esbensen & Huizinga, 1993; Hill et al., 1999; Thornberry et al., 2003). Researchers have started to move away from simplistic characterizations of gang members (i.e. gang member/non-gang member, stable/transient) and examine the heterogeneity between members through the concept of gang embeddedness (Pyrooz et al., 2013). Findings from this line of research have revealed the more embedded members are, the longer they remain in the gang. This shows the social capital gained from membership may not equally distributed. Some members benefit more than others

which may be why we see differences in the length of gang careers. However, one gap within this line of research is examining the social relations of members. Gang members do not know who they do not know; therefore, their perception on their position within the gang or overall importance to the gang may not be accurate. As stated, social relations make up gangs. Yet, research has failed to examine the personal networks of gang members. Knowing how gang members networks change over time can provide another layer of information on the heterogeneity between gang members and gang careers. Furthermore, gang membership has been labeled a snare in the life-course, but do the personal networks of gang members influence their residual criminal careers? In other words, if capital is gained from membership, does it impact involvement in the criminal justice system post-gang membership?

The aim of the dissertation is to examine whether the personal networks of gang members do in fact influence their criminal careers. Mapping the networks of gang members, I am able to investigate whether the size and structure of their networks are associated with the length of their criminal careers. In addition, I examine if gang membership changes members networks. It is suspected when individuals become members they are exposed to more capital. I test this by examining network changes pre- to during-gang membership, and during- to post-gang membership. Looking at what happens to networks post-membership can provide insights into whether capital that was potentially gained during membership disappears with the gang label. If it does not, then this capital may be related to the length of their residual criminal careers. On top of measuring network changes, I examine whether networks influence the length of gang careers. Specifically, I examine if networks play a role in the time it takes individuals to become members. Then, once they are members, whether networks influence time spent in the gang. Determining whether personal networks play a role in shaping gang careers and residual criminal careers, may reveal a social capital theory of gang membership.

It may be found that gang membership is associated with an increase in social capital that is a result of the gang label. How networks evolve pre- to during-gang membership will unveil if the label of gang member is associated with more social capital. For example, there may be an increase in network size that is a result of becoming a gang member. If so, this suggests that being a gang member does increase the number of criminal contacts and co-offenders. In addition, examining how the

structure of gang members' networks change can also reveal whether gang membership is associated with more social capital. If the positions gang members occupy within their networks become more advantageous once they become members, will support the idea that there may be a social capital theory of gang membership. Additionally, looking at how networks change from during- to post-gang membership, I can examine whether the social capital that was gained during active periods of gang membership disappears or diminishes once members leave the gang. If a decrease does occur, then there is further evidence for a social capital theory of gang membership.

In the dissertation, I refer to social capital that may be gained through gang membership as a positive. This may seem counter-intuitive. The notion of social capital is usually referred to as prosocial capital, but I am interested in criminal careers and how social capital may be related to longer criminal careers. The social capital gained from gang membership is through criminal opportunities, co-offending, and expanding one's criminal network. Depending on the perspective (i.e. the point of view of the actor), these sources of capital can be a positive.

Due to the group nature of gangs, many scholars and observers assume that gang members surround themselves with other gang members. While this is partially true – gang members do indeed tend to know many similar others - network studies have demonstrated that gang members associate with gang and non-gang members (McCuish et al., 2015; Reid & Maxson, 2016; Papachristos et al., 2012; 2015a). It is important to remember when an individual joins a gang their personal network also becomes part of the gang. Their non-gang family members and friends are now connected with the gang. This can create paths for their family members and friends to become involved in gang life (i.e. membership), or sadly, become victims of gang violence (Papachristos et al., 2015a). In addition to family and friends, individuals who become gang members usually have some criminal involvement prior to becoming a member. Therefore, their non-gang criminal associates are also connected to the gang. This is important as it can expand the boundaries of the gang through creating more co-offending relations outside of the gang, but it also may increase the social capital of the gang member. The gang member acts a broker between the gang and their criminal associates; as a result, their position in the network is prestigious. However, often overlooked is the increase in capital for the non-gang associates. The non-gang associates expand their criminal networks due to being in close proximity with gang

members. What is not clear within research is whether these connections for the non-gang associates influence their criminal trajectories. If these individuals are gaining social capital through exposure to gang members, then it could be reasonable to suspect that their involvement within the justice system may be prolonged.

In the dissertation, I examine whether being embedded within a gang network impacts the criminal career length of non-gang associates. Specifically, using a case study of a prison gang, I map the networks of the prison gang members and measure the social distance of the non-gang associates to all of the gang members. It is hypothesized that the non-gang members who are closer in proximity to the prison gang members will be exposed to more social capital because of their position within the gang network. Determining if embeddedness within a prison gang network increases the criminal career length of non-gang members demonstrates the importance of using networks. Risk for gang membership and entrenchment within the criminal justice system is embedded within the networks individuals find themselves. This will also have important implications for prevention programs as individuals who are close to gang members could be at risk for prolonged involvement within the criminal justice system.

The focus of the dissertation is primarily on the personal networks of gang members, not the networks of gangs. Gang networks are created by mapping the networks of the members of a particular gang. Typically, the gang itself is the research focus (i.e. understand the structure and organization of a gang, know where key players are positioned within a gang). As such, it can be thought of as a group-level of analysis. In contrast, personal networks or ego networks are the networks of an individual person and their connections. Ego networks are consistent with the individual-level analysis of the criminal career framework, and are the main line of inquiry into network redundancy and how redundancy is linked to individual characteristics and behaviors (McGloin & Piquero, 2010, p. 69). Mapping the ego networks of gang members allows for the examination into whether changes within an individual's personal network lead to changes within their criminal trajectory.

The data I use are a subset from the Incarcerated Serious and Violent Young Offender Study (ISVYOS) which is a longitudinal study. This provided me the opportunity to use a prison based sample and measure criminal career lengths. Important to note is that while I use prison data, the focus of the dissertation is not on prison gang members.

The gang members do spend time in prison which I have been able to capture. This gave me the chance to examine whether prison plays a role in increasing members' social capital. Most research on gang members use community based data (i.e. Dong & Krohn, 2016; Gilman et al., 2014; Krohn et al., 2011; Pyrooz, 2014a; 2014b; Thornberry et al., 1993; 2003), with recent work looking at prison gangs and prison gang members (Pyrooz & Decker, 2019). Here, I am interested in how prison influences the networks of gang members. With the increased involvement in the criminal justice system, prison could be a place for gang members to grow their networks, but do they? And if they do, do the connections made in prison have an independent effect on criminal trajectories? This has yet to be examined. Learning whether prisons do play a role in the personal networks of gang members also has important implications for policy, and prevention and intervention programs.

The dissertation examines how personal networks impact criminal trajectories. I use the term criminal trajectories because I use a variety of outcomes in the dissertation. Specifically, I look at criminal career length, time to gang membership, and length of gang membership. There are three main results chapters (Chapters 8, 9, 10). The first results chapter, Chapter 8 - *Build it and they will come? Social networks and the dynamics of gang membership* - I examine whether the networks of gang members influence their gang trajectories. How gang members establish themselves in their personal networks can provide different opportunities to invest in their connections. This in turn may increase or decrease the length of their gang career. The second results chapter, Chapter 9 – *A gang network advantage? The role of personal networks in the criminal careers of gang and non-gang members* - examines whether the personal networks of gang members are different from a matched sample of non-gang members. The goal of this chapter is to examine whether it is the label of gang member that is important or is it the networks that influence criminal trajectories. In the last results chapter, Chapter 10 - *Is it who you know in prison that counts? Exposure to prison gang members and criminal careers* – I test the assumption that the gang label is associated with an increase in social capital by examining a youth prison gang. I do this by calculating the social distance of the prison gang members to each other, as well as to all the other individuals within the gang network. I use social distance as opposed to gang member and test it against criminal career length. Throughout the dissertation, I am examining whether gang membership is associated with an increase in social capital

and whether the increase in capital impacts criminal trajectories. This provides me the opportunity to examine whether there is a social capital theory of gang membership.

As stated previously, there is a reasonable assumption that gang membership is associated with an increase in social capital. By taking on the label of gang member, individuals are exposed to more criminal opportunities. Additionally, networks organically grow when an individual belongs to a group. As a result, during active periods of gang membership, the personal networks of gang members should change in size, as well as in structure. But these assumptions have yet to be tested empirically. This is what I am examining throughout the dissertation.

The first two results chapters follow traditional research designs in the field by examining the role of various predictors in criminal justice outcomes: 1) time to gang membership (Chapter 8), 2) length of gang membership (Chapter 8), and 3) length of criminal career (Chapter 9). The major difference with my study is the reliance on social network measures as the main predictors of these outcomes. In Chapter 8, I focus solely on gang members and outcomes associated with gang membership. Using gang members only, I am able to examine if there are changes within members networks that occur alongside changes in membership status. More specifically, I split the members networks pre-, during-, and post-gang membership to see if there is an increase in social capital once individuals take on the label of gang member. I then examine whether the changes in networks impact the length of their gang careers. In Chapter 9, I use a matched control sample to examine if gang membership and/or the social context influence criminal career length. I hypothesize that it is both. Because of their networks, I expect gang members to have longer criminal careers compared to non-gang members.

In the last analysis chapter, Chapter 10, I change the focus from individual gang members and their networks, to look inside the network of an actual prison gang. Doing this allows me to go further, challenging one of the main assumptions of the dissertation, namely that gang membership does come with an increase in social capital. By using a prison gang as a starting point for creating networks, I am able to see what happens in prison and capture the interconnectivity between gang and non-gang members. As a result, I have a “prison gang network” as opposed to “individual networks of gang members”. A prison gang network allows me the opportunity to 1) move away from comparing gang members to non-gang members and test social distance as a measure

of social capital, and 2) examine whether the connections made in prison do influence the length of residual criminal careers for everyone within the network (gang and non-gang members). Of note, the prison gang was formed while the eight members were incarcerated together. The gang was not a community gang or a gang that was formed in the community and continued inside. The eight youth were incarcerated at the same time in the same correctional facility and formed the gang. Using a youth prison gang is a contrast from the majority of work on prison gangs that have focused on adults (i.e. Pyrooz & Decker, 2019; Skarbek, 2014). Having the opportunity to examine a youth prison gang, I am able to examine the long-term impact of exposure to a prison gang early in criminal trajectories. Does being a youth prison gang member impact the criminal careers of members? Does being connected to a youth prison gang influence the criminal careers for non-gang members? By using networks, I have the ability to move beyond the gang label and examine the group context of a gang, and whether the social proximity of connections impact criminal careers. My intent is to showcase the importance of using networks and how the different levels of analyses complement one another.

The remainder of the dissertation is laid out as follows. The literature review is covered in Chapters 2-4. Chapter 2 outlines what social network analysis is and sets the theoretical background. Social capital theory is the backbone to the dissertation; therefore, I go through, in some detail, what social capital theory is, where it is derived from, and how it relates to gangs. Also in Chapter 2 is an overview of social contagion theory. Throughout the dissertation, I use social contagion in combination with social capital. Going through what social contagion theory is and how I use the concept of contagion will be discussed. Chapter 3 focuses on gangs and what we know about gangs. Specifically, I examine how gang membership may influence criminal career length, with a particular focus on gang embeddedness. Chapter 4, I go into prison. This dissertation has the unique opportunity to examine the connections made in prison to see if they are important for criminal careers. Understanding why prisons could be a place to grow networks is covered in this chapter, along with evidence to show connections in prisons may influence prolonged involvement in the criminal justice system. In Chapter 5, I outline the aim of the dissertation. Chapters 6-10 cover the data, sample, methods, and results. The dissertation finishes with a discussion (Chapter 11) that covers each results chapter, then, Chapter 12 is the conclusion. Here, I highlight the

main insights learned from the dissertation, and lay the groundwork for thinking about a gang-specific theory of social capital.

Chapter 2. Social Network Analysis

2.1. What is social network analysis?

Everyone is part of a social network. In most cases, individuals are linked to multiple people, groups and/or organizations making them involved in more than one network. Networks are a different way of thinking about the social systems and processes that encompasses everyone (Borgatti et al., 2009). Simply, social network analysis (SNA) is “a set of actors and the ties among them” (Wasserman & Faust, 1994). Within SNA, there are many theories, principles, and concepts. Taken as a whole they make up the network perspective. While there are individual theories under the umbrella of SNA, they all assert that it is the ties and interactions among people that are the main drivers of behaviors, not individuals themselves. One of the main assumptions of SNA is interdependence. This deviates from traditional social science which assumes independence. As stated by Papachristos (2011) “variables themselves do not act, people do” (p. 106). According to a network perspective, it is the interconnectedness between people that are the mechanisms of action (Perry et al., 2018, p. 5). The patterns of interactions between people are the central focus of network researchers. SNA provides us the ability to move beyond direct connections, which capture only who individuals know, to indirect connections (i.e. a friend of a friend). Indirect connections are just as important as direct connections on behavioral outcomes as the resources embedded within these connections flow through the network. Through the use of SNA, the position individuals occupy within the larger social structure can be determined. Knowing the position of individuals within the network, the amount of resources and opportunities they are exposed to is revealed.

Social network analysis is not a new phenomenon. It has been traced back to the 1930s with the work of Jacob Moreno and Helen Jennings¹. In 1932, there was an increase in girls running away from a group home in New York. Moreno, a psychiatrist, and Jennings, a social psychologist, believed that the reason for this increase was less

¹ Jennings has been labeled a pioneer of social network analysis by those who are familiar with her work. She was involved with the work done by Moreno, and together they developed quantitative methods used to develop sociometry. However, she is often not given credit for her work with Moreno. In 1938 there was one publication with Moreno and Jennings

to do with the individual characteristics of the girls and more to do with their position within the larger social structure (Moreno, 1937). Moreno and Jennings mapped the social structure of the group home using a “sociometry” which showcased the interconnectivity among the girls. It was determined that the location of the girls within the network did in fact explain who ran away (Moreno, 1937). This provided Moreno and Jennings a tangible understanding of the larger social structure in which the girls were embedded in and how influential behaviors and attitudes flowed through specific interactions. Moreno (1941; 1943; 1951) continued the advancement of SNA using graphical displays of data leading to the emergence of graph theory. Graph theory, the mathematical structure that studies the dynamics between nodes, has provided researchers the ability to analyze all the interactions within a network. This has allowed researchers to examine the structure and organization of groups as a whole, as well as the individual or ego networks of members (Barnes & Harary, 1983).

While SNA is not new, the use of it within criminology has only taken place within the last twenty years. Yet, crime is an interaction between two people (e.g. victim/perpetrator, co-offenders) with offenders embedded within criminal networks (Warr, 2002). One of the most robust findings within criminology is the influence peers have on behavior (Haynie, 2001; Krohn et al., 1988; Thornberry & Krohn, 1997; Weerman, 2011), with the majority of offenders committing crime with at least one other individual (Reiss, 1988; Warr, 2002). Key criminological theories such as differential association theory which asserts criminal behavior is learned through social interactions (Sutherland, 1947), social control theory which posits that individuals with low self-control are more likely to interact and form deviant networks (Gottfredson & Hirschi, 1990), and others such as social learning (Akers, 1985), collective efficacy (Sampson & Groves, 1989) and opportunity perspectives (Osgood et al., 1996) are all centered around the social interactions among individuals. However, the mechanisms underlying why peers are influential on behavior are only beginning to be understood. Krohn (1986) argued that implementing a network approach is an important theoretical advancement as the networks in which individuals are embedded can help explain patterns of behavior. As noted by Bouchard (2020), through the use of network data, the main components of key criminology theories can be tested using more appropriate data and methods.

In previous research, gang membership has been used as an indicator of social capital. However, the dichotomous distinctions (gang member/non-gang member, transient/stable) simplify the complexity of gangs and networks. As stated previously, gangs are comprised of interconnected members. The network of the gang is built from the personal networks of each member. Therefore, knowing whether there are differences across the personal networks of gang members, we can unpack another reason as to why there is heterogeneity between gang careers. There has been excellent research on gangs and gang members using SNA,² in this dissertation my overarching goal is to examine how gang membership is associated with criminal trajectories. I use two levels of analyses - individual and group. The first two results chapters (Chapters 8 and 9) I focus on the personal networks of gang members and examine if the personal networks of gang members impact criminal trajectories. In Chapter 10, I change the unit of analysis to the group and examine a prison gang. Of note, I do not focus too much on the structure of the gang or the role of the gang within the correctional facility (i.e. informal social control, control of contraband). I am interested in determining whether exposure to prison gang members and being embedded within a prison gang network influences criminal trajectories. While I look at various criminal outcomes (i.e. criminal career length, time to gang membership, length of gang membership) and use two levels of analyses, the aim of the dissertation is to examine whether gang membership (i.e. label of gang member) is associated with an increase in social capital, and if that social capital plays a role in criminal careers.

2.2. Theoretical background

2.2.1. Social capital theory

Social capital theory has become a popular theory in criminology, especially in studies looking at organized crime, drug trafficking, and delinquent peer networks (for examples see Bouchard & Nguyen, 2010; Bouhard & Ouellet, 2011; Bouchard & Spindler, 2010; Haynie, 2001; Malm, et al., 2017; Morselli, 2001; 2003; 2010; Spindler & Bouchard, 2011). Taken as a whole, these studies highlight the importance of structural

² There have been a number of studies within criminology that have examined gangs using SNA. For a review of this literature, recommended reads are Papachristos (2009), Papachristos et al. (2012; 2015); Green et al., (2017); McGloin (2005), McCuish et al. (2015); Ouellet and Hashimi (2018); Bouchard (2020); Ouellet et al. (2019); and Bichler (2019)

connections within networks. They demonstrate the position individuals occupy in the network, who they are connected, and the structure and size of networks are key for obtaining social capital. Individuals who have access to more capital, have more advantageous outcomes (i.e. less risk of detection or arrest, higher levels of offending or delinquency, longer criminal career).

Lin (2001) proposed a theory of social capital that was derived from a general theory of capital. The central theme to his theory is that resources are embedded in social relations. He states that capitalization is a process whereby capital is gained through the production, investment, and consumption processes. The idea of capital can be traced back to Marx and in the 19th century. In Marx's analysis, capital is the surplus by the bourgeoisie who control the production, commodities, and the distribution of wealth. Capital encompasses the resources that an individual owns (i.e. commodities). Through the exchange of products and circulation of commodities, a capitalist obtains the excess wealth. The bourgeoisie control the distribution of wealth, basing Marxism on the "exploitive social relations between two classes" (Lin, 2001, p.7). There are two central elements of Marx's theory concerning social capital: capital is a process rather than a commodity, and capital entails social processes. In order for goods to be bought and sold, there has to be social relations and agreements established; therefore, without social activity there could be no capital (Lin, 2001). According to Marx, capital is a process and an end result. Capital is passed through various social relations (i.e. production process, exchange process) and as a result of these processes, any leftover resources are added capital. With the evolution of society, the idea of capital has shifted to the neo-capital theory as class differential has been modified, and in some cases eliminated.

There have been three neo-capital theories proposed: human, cultural, and social. The focus of this dissertation is on social capital, but before getting into social capital theory, I am going to explain human and cultural capital. These two theories were the foundation for the theory of social capital. By explaining these two forms of capital first, it sets the stage for a more in-depth discussion on social capital. The notion of human capital was first introduced in Adam Smith's 1776 publication *The Wealth of the Nations*. Smith included the abilities, knowledge, and skills into the idea of capital. Due to laborers having a specific set of skills and training, they could demand higher payment. Human capital is the capital that is embedded within individuals, and is

measured by the training, experience, and education one has. By having higher levels of education and experience, an individual's skills are specialized, making their work more valuable. Anyone is capable of gaining knowledge, skills, experience, and education; therefore, capital can be acquired by everyone. Consequently, the social structure and processes change. Human capital can be seen as an investment increasing the value of work carried out by actors. Not everyone agreed with the notion of human capital, and in 1970's the idea of cultural capital emerged.

Some neo-capitalists disagreed with the idea that everyone had the ability to gain capital and move up in the status hierarchy. In response to those criticisms, Bourdieu in the 1970s developed cultural capital which is "a system of symbolism and meaning" (see Lin, 2001, p. 14). Cultural capital is premised on the idea that the upper class imposes their cultural expectations through social processes such as education, which is then learned and internalized by the next generations. Consequently, the system remains to be dominated by the elite because their culture is reinforced through social practice (see Lin, 2001). Bourdieu labeled this 'symbolic violence.' The main premise for cultural capital is education. This can be argued to be a form of human capital as human capital is the skills, knowledge, and experience an individual gains to specialize their skillset. One of the main ways to gain human capital would be through education. Bourdieu, however, differentiated cultural from human capital. He states that it is the process of education and what is learned through education, not education itself. His idea of symbolic violence mirrors Marx's theory more than human capital because the culture of the upper class is reinforced maintaining the two class system - the dominant and the dominated. Nevertheless, Bourdieu's cultural capital does resemble human capital. Laborers gain education allowing them to develop their skills. This results in the laborers receiving higher compensation for their services which in turn can generate a surplus for them.

Both human and cultural capital theories shift from the classical capital theory by focusing more on micro-level explanations. That is not to say these theories disregard macro-level explanations because they do not. The system-driven dominance of the elite is present in both theories, but theorists have shifted the focus onto individual actors. They both emphasize the importance of action taken by the actors, stressing the constant interplay between structural constraints and an actor's decision to act. It is this interplay which is the process of capitalization (Lin, 2001). Lin (2001) conceptualizes

social capital as the resources that are embedded in structural positions which are accessible through social ties. According to Lin (2001), it is the structural position within the network, not the individual that holds the capital. In other words, the resources are embedded within specific structural positions in the network, not the individual actors. The individuals occupying specific positions obtain the capital associated with that position. So as individuals change from positions, the capital does not. Therefore, the resources that are embedded within the social structure of the network are different from the personal resources within individuals. For example, gang membership is fluid. It is well known that individuals are gang members for approximately one to two years (Thornberry, 1993; 2003). As members come and go, the capital that is gained from being part of the gang does not leave with each individual member. The capital is associated to the position each member occupies during their time in the gang. For members who become more embedded, they occupy new positions within the gang, giving them more capital. As long as the capital within the larger social structure remains, the network is stable. This helps explain why even with gang membership being fluid, gangs are durable.³

There are two perspectives under the social capital umbrella. One focuses on the attainment of social capital for the group (Bourdieu, 1980; 1983; 1986; Coleman 1988; 1990; Putman, 1993; 1995), the other focuses on the procurement of social capital for the individual (Burt, 1992; Flap, 1988; 1991; 1994; Lin, 1982; 2000). Briefly, the group perspective examines how social capital is gained and maintained by the group as collective assets, and how those assets enhance the status of the group. In contrast, the individual perspective focuses on how individuals invest in social relations, and then use the relations to obtain the resources to enhance their status (Lin, 2001). While these two perspectives describe social capital differently, they both stress that social capital is embedded within structural social relations which are mobilized by individuals when they want to take purposive action (Lin, 2001). Therefore, social capital is the process of investing in social relations in order to gain resources from other actors in the network. Additionally, the two perspectives are mutually beneficial. Whether the social capital is a collective asset for the group or an asset for the individuals, the capital benefits both the group and the individuals. For example, if a gang invests in social relations outside of the

³ Same rationale can apply to all groups—terrorist organizations, organized crime (i.e. mob, mafia, cartel), business organizations

gang in order to expand its boundaries, the gang has gained status and power, as well as created new positions for individual members. As discussed above, it is the position that holds the capital; therefore, how invested gang members were in their social relations within the gang may offer them access to the new positions acquired by the gang.

There are three intersecting components to social capital: structure, opportunity, and action. First, structure links embeddedness of resources to positions within social structure. Recall, social capital is embedded within the position, not the individual holding the position. There are rules and expectations that are attached to each position which lead to "...uniform actions and interactions among social positions, so the value and resources is upheld and maintain and expanding such resources remain the purpose of collective actions" (Lin, 2001, p. 34). In other words, the position dictates the behavior and role of the individual occupying it. Second, opportunity is concerned with the location of the positions within the social structure. Some individuals are going to have access to greater amounts of capital because of the position they are in (Lin, 2001). The resources that are embedded in the positions that surround individuals are going to spill over to them as social capital can be gained through direct and indirect ties. As a result, differential opportunity emerges because access to embedded resources within the social structure is not equally distributed throughout the network. Individuals who have social relations with individuals who occupy more prestigious positions or individuals who broker relations between actors may have access to more capital (Burt, 1992; Lin, 2001).

Lastly, is action. Central to social capital is accessing the resources embedded within the social structure and mobilize them for purposive action. As individuals gain more capital, the position they hold in the network is protected and may even increase their status. There are two types of action: instrumental and expressive. Instrumental action is action that is taken to achieve specific goals. Individuals who take instrumental action are more likely to connect to individuals who provide different knowledge and access creating heterophilous relations. Those taking instrumental action have a greater likelihood of acquiring advantageous resources because they are willing to interact with individuals who are dissimilar to them (Lin, 2001). In contrast, expressive action is taken for an individual's own sake. The means and the ends are inseparable from each other. Individuals who take expressive action are more likely to seek out homophilous relations

because they are looking for connections that they can confide in, trust, and share their lifestyle with (Lin, 2001). Ultimately, individuals seeking instrumental action are more likely to achieve higher social capital because they are increasing their network diversity.

Instrumental action complements Granovetter's theory--strength of weak ties. The focus of this theory is on the position of the ties within the network. Granovetter (1973) argued that individuals who have more ties to multiple networks, have more social capital. These individuals are more valuable because individuals who have ties to multiple networks have the ability to access populations, information, and resources that would not be accessible through the use of strong ties. Individuals who only seek strong ties, or expressive action, are more likely to share homophilous traits. This in turn makes the information shared between individuals redundant. Due to everyone being similar and strongly connected, the resources that are embedded in the network are the same, giving positions relatively little capital. Granovetter (1973) proposed that individuals with weak ties have more opportunity for mobility and growth in their network, increasing their capital.

The notion of redundant ties was further developed by Burt (1992) and his structural holes theory. Where Granovetter (1973) was focused on the position of ties, Burt's perspective is focused on the location of the position within the network. Redundant ties are connections that lead to the same information. This limits the flow of new information and/or resources because everyone is connected to each other. In contrast, non-redundant ties are the ties that only one individual has, and without that individual, other connections would not be possible (Burt, 1992). Burt (1992) labeled the space between non-redundant contacts as a structural hole. A structural hole is "...a relationship of nonredundancy between two contacts. The hole is a buffer, like an insulator in an electric circuit" (p.18). With the hole being between two non-redundant contacts, there are resources being added into the network. Individuals who occupy the "empty" space connect actors who would otherwise be disconnected. By branching out and creating new opportunities, an individual may accumulate more ties as they become connected to more networks. The more networks one is connected to, the more structural holes they fill, increasing their social capital. This relates back to Granovetter (1973) and the strength of weak ties. When an individual is connected to multiple networks, they are taking instrumental action resulting in more weak ties. This increases the individual's social capital (Burt, 1992; Granovetter, 1973; Lin, 2001). Gang members

who are willing to co-offend with individuals outside of their gang increase their social capital. They are exposed to more offenders and offending opportunities which expands their criminal network. As a result, they become more versatile in offending as they increase their criminal knowledge and skillset.

Social capital is the backbone to the current dissertation. It is important to understand why the capital embedded within the structural position is more powerful than the capital possessed by each individual actor. The concept of human capital is the knowledge and skills that individuals possess. Human capital is largely gained through education. In contrast, social capital is the process of investing in social relations in order to gain resources embedded within the network (Lin, 2001). While individuals bring their human capital with them into the positions they occupy, the amount of social capital an individual possesses extends as far as their network. In other words, the resources that an individual can access through their direct connections make up only a small percentage of the individual's social capital. It is the chain of indirect connections that makes up an individual's social capital (Lin, 2001). This is important because the position individuals occupy provides them with resources, but they can also access resources beyond their position. Knowing where individuals are located and their social distance to everyone else in the network, their overall level of social capital can be known. It can and has been argued that human capital provides people access to certain individuals and positions. Therefore, without human capital, the accumulation of social capital could not happen. There have been studies looking at the various forms of capital, and it has been found that human capital supplements social capital. Specifically, it was found that when social capital was high, status attainment was high, regardless of the level of human capital (high or low). Only when social capital was low did human capital have a stronger effect on status (Boxman et al., 1991; Flap & Boxman, 1998). These studies demonstrate that when an individual has a higher level of social capital, human capital has little to no effect.

Research within criminology has measured social capital in a myriad of ways examining many different outcomes. Research has used network size (Bouchard & Ouellet, 2011), network composition (Bouchard & Nguyen, 2010) betweenness centrality (Morselli 2001; 2003; 2010), organizational structure (Bouchard & Spindler, 2010; Haynie, 2001; Malm et al., 2017; Spindler & Bouchard, 2011), and network redundancy (i.e. density) (McGloin & Piquero, 2010) as measures of social capital. While the goal of

these studies may not have been to examine social capital directly, they each show how individuals who have access to more capital, are more successful or have greater criminal achievement (i.e. less risk of arrest or detection, greater offending versatility). The findings from these studies indicate that social capital should have an association with criminal career length. For example, Morselli (2001; 2003) noted a link between brokerage and criminal success. In both of these studies, Morselli mapped the personal network of a successful criminal (i.e. Donald Marks and Sammy the Bull) and found most of their criminal success was based on their ability to broker relationships. They both were able to position themselves in their networks and use their connections to access more resources. This resulted in longer and more successful careers. Similarly, Morselli (2010) found members of the Hells Angels who occupied more brokerage positions, were less likely to be arrested. Bouchard and Nguyen (2010) found youth who were embedded within the networks of older cannabis cultivators were less likely to be arrested or detected than youth embedded in younger networks. Youth who had the opportunity to learn from more experienced cannabis cultivators were able to gain more knowledge and skills. This increased their chances of success because of their position in the specific networks. Examining the link between network size and time to arrest, Bouchard and Ouellet (2011) noted that the size of a dealer's network influenced survival times, with larger networks decreasing time to failure. In other words, dealers with larger networks took longer to be arrested. These studies show social capital does increase criminal success which can translate to longer careers. However, research has yet to examine if there is a link between criminal length and the personal networks of gang members.

As I touched on in the introduction, gang members should have plenty of opportunities to gain social capital. Gang members have more access to co-offenders and criminal opportunities. In addition, by becoming a gang member, personal networks naturally grow in size. Once individuals are labeled a gang member, they have an increase in status which can translate to more capital. In the dissertation, I want to know, from a network perspective, if gang membership increases social capital, and if so, does that impact criminal trajectories. I use social capital in a couple of ways.

For Chapters 8 and 9, I quantify social capital through the use of network measures (i.e. network size, betweenness centrality, constraint, and density). Specifically, for Chapter 8, I examine whether there are changes in betweenness

centrality and network size that occurs with changes in gang membership status. I suspect both betweenness centrality and network size to influence gang careers. I examine if there is a significant increase in both of these measures from pre- to during-gang membership. If so, then this shows that when individuals become gang members, there is an increase in capital. I then examine whether the network measures are associated to the overall length of their gang careers (time it takes to become a member and length of membership). In Chapter 8, I combine social capital with social contagion to examine whether social capital influences the changes in gang membership status. For Chapter 9, I use all four network measures and examine how they relate to criminal career length. However, in this analysis, I include a matched control sample of non-gang members to examine whether connectivity and/or gang membership impact criminal careers. In Chapter 10, I do not measure social capital directly. I hypothesize it is the close exposure to a prison gang that increases the length of residual criminal careers. Through their connections within the network, individuals acquire social capital. By being embedded within a prison gang network, individuals may have access to opportunities or resources that others within the prison do not have. The individuals use the capital gained to their advantage (i.e. expand their criminal networks) prolonging their involvement in the criminal justice system. Similar to Chapter 8, the concept of contagion is used along with social capital to determine if capital can flow through connections influencing behaviors.

2.2.2. Social contagion theory

While social contagion theory did not originate as a criminological theory or even a network theory, it has been adapted to both. The underlying concepts and principles are based on the social relations between individuals, with a particular emphasis on the social proximity between individuals. Furthermore, social contagion theory is a way to understand the flow of diffusion through networks. Social contagion theory postulates that human behavior flows across networks through social ties (i.e. influenza, drug use, obesity, political mobilization) (Christakis & Fowler, 2007; 2008; 2010; 2012; Jones et al., 2017). This research has shown that human behavior is a network process which reinforces the importance of structural connections that is central to social capital theory.

Social contagion theory and social capital theory complement one another. Both theories highlight the importance of structural connections with the positions individuals

occupy exposing them to opportunities and resources. Social contagion focuses more on the flow of resources and how the resources lead to a change in status; whereas, social capital theory is mainly concerned with the positions individuals occupy. Resources flow across the networks through social relations, making the positions individuals occupy directly related to the amount of resources they are exposed to. In the dissertation, social contagion and social capital are used in combination with one another. The idea that behaviors flow through connections in a contagious process has been used within criminology, with and without a network perspective.

Research has continuously shown that gang members commit higher rates of violent crimes than non-gang members. Gang members also commit higher rates of violent crimes during periods of active gang membership than pre- or post-gang membership (Thornberry et al., 1993; 2003). As a result, the mechanism(s) underlying the increase in violence has been a hot topic within criminology. Thornberry et al. (1993) proposed three models to explain why there is an increase in violence with gang membership, commonly known as the selection, facilitation, or enhancement hypotheses. There have been multiple studies testing the three models, with studies finding support for the facilitation and enhancement hypotheses (Lacourse et al., 2003; Gatti et al., 2005; Thornberry et al., 1993; 2003; Wong et al., 2013). The facilitation hypothesis is rooted in the group processes of the gang that accounts for the increase in violence. There is something about the group nature of gangs that facilitate violence above and beyond the individual characteristics of gang members (Thornberry et al., 1993; 2003). The enhancement hypothesis is a combination of the selection and facilitation hypotheses. While the model posits that gang members have a predisposition to commit crime, the increase in crime during periods of gang membership is because of the group nature of the gang. Taken as a whole, it may be that the collective behaviors characteristic of gangs influence and reinforce violent behaviors. Decker (1996) expanded on the idea of collective behavior and examined the role of contagion that could account for gang violence. Loftin (1984) stated that gang violence has elements of contagion as violence, even the threat of it, spreads continuously between gangs. According to this perspective, the spike of violence that is associated with gang membership is a result of the contagion of violence (Loftin, 1984). The reciprocal nature of gang violence leads to an ongoing battle for dominance and respect causing the threat of violence to always be present. This in turn increases the solidarity to the gang.

Using Loftin's idea of contagion, Decker (1996) concluded that gang violence is an organizational feature of gangs, with the spread of violence representative of a contagion. In other words, gang violence works its way through interconnected individuals.

The conclusion that gang violence is a structural component of gangs that flows between individuals is perfect for the application of SNA. Papachristos and colleagues have taken the concept of social contagion applying a network approach, with a specific focus on gunshot victimization. The social contagion model put forth by Papachristos and colleagues is adapted from the health sciences proposing violence spreads through networks in the same way as infectious diseases. Diseases spread through networks via social ties—individuals get sick from other individuals. Using that same idea, Papachristos and colleagues hypothesized that the diffusion of gun violence will spread through networks the same way as an epidemiological process spreads through networks (Green et al., 2017, p. 327). Due to the reciprocal nature of gang violence, social contagion is the mechanism of diffusion that occurs through a network spreading the violence. Mapping the spread of violence by focusing on the victims, researchers are able to systematically examine gang violence and the risk of victimization. Using social distance to operationalize contagion, research has found individuals who are closer to gunshot victims are at an increased risk of becoming victims (Green et al., 2017; Papachristos et al., 2015a; 2015b). As such, gang violence is not random. It flows through the social networks of gang members. Importantly, findings from this body of research have also found that indirect connections contribute to victimization risk. In other words, not only do an individual's criminal associates increase risk of victimization, so do associates of one's criminal associates (Papachristos et al., 2015b). It is being part of the larger social structure that increases risk of victimization.

As described above, social contagion research within criminology has mainly focused on violence and victimization that is associated with gang membership. In the current dissertation, I expand the operationalization of social contagion. Specifically, I use it in two ways, both in combination with social capital theory. First, in Chapter 8, I am capturing a change in status. However, I do not have information on all of the alters in the gang members networks, so gang membership as a contagion cannot be measured. This is something I would like to do in the future. I would like to expand the personal networks of the gang members by two or three handshakes. Doing this, I would be able

to examine in more detail the direct connections, but also the indirect connections. In addition, I would gather attribute information on the alters to know who is a gang member and who is not in order to examine if there is a “contagion of gang membership”. But for this dissertation, I am examining how networks change alongside changes in gang membership status. It is the combination of contagion and capitalization that guides this analysis.

Second, in Chapter 10, I use the concept of social proximity as a measure of contagion. While social contagion requires a change in status for a true contagious effect, I do not examine a change in status. I am using residual criminal career length as my outcome of interest. It is through the process of contagion in which the capital is gained. By being embedded within a prison gang network, the flow of capital is believed to be passed through the connections. As such, it is the concept of contagion I am using, more than a true test of contagion. The idea is the more embedded individuals are within the gang network, the more capital they will receive which will lead to longer residual criminal careers. The same rationale as being closer to an infector or a gunshot victim, the greater the chances of being sick or shot, is applied here.

Chapter 3. Gang Membership: A Turning Point in the Life Course

The dissertation focuses on the personal networks of gang members and how they may influence various criminogenic outcomes. As noted in the previous chapter, the position gang members occupy in the network has a direct role in the amount of social capital they have access to. Therefore, the structural connections gang members have may influence not only their gang career, but their criminal career as well. Yet, no research to date has examined whether the personal networks of gang members influence these outcomes. It has been well established that gangs are social groups and membership increases the number of consequences for gang members, I want to know if the networks of gang members play a role in these consequences. There is reason to believe that they will.

Over the years since Thrasher's (1927) seminal work on gangs in Chicago, we have learned a lot about the collective behaviors of gangs, risk factors for gang membership, and how gang membership is a turning point in the life course. Gang researchers have adapted a developmental and life-course (DLC) perspective to gang membership which has taught us about the long-term consequences of gang membership (i.e. Dong et al., 2015; Krohn & Thornberry, 2008; Krohn et al., 2011; Moule et al., 2012 ; Pyrooz et al., 2013; Pyrooz, 2014b; Thornberry et al., 1993; 2003). A DLC perspective recognizes that human behavior is not static. It is constantly changing over time as individuals enter and exit various developmental stages throughout the life-course. As individuals age, they move along various trajectories gaining the necessary social and human capital to successfully transition into the next developmental stage. Transitions are normative, taking place in sequential order as individuals' progress through life. However, when these transitional sequences are disrupted, negative consequences can occur. Gang membership has been labeled as a disruption or snare in the transitional sequences of developmental stages. As noted by Thornberry et al. (2003), gang membership is a turning point in the life-course because membership has the ability to "redirect a person's life" (p. 7).

Gangs can be described as "dense social networks that restrict the flow of conventional information, ideas, and knowledge in favor of criminal alternatives" (Pyrooz,

2014a, pg. 61). The criminal and violent nature of gangs increases the cohesion among members strengthening their commitment and bond to the gang, while simultaneously decreasing connections to prosocial institutions and influences. Through the adaption of DLC to gang research, researchers have gained a deeper understanding on the age-graded risk factors for gang membership, and the spillover effect it has across multiple developmental domains (Gilman et al., 2014; Melde & Esbensen, 2011; Pyrooz et al., 2013; Pyrooz, 2014a; Sweeten et al., 2013; Thornberry et al., 2003). Specifically, research has found gang members have higher rates of incarceration, victimization, school dropout, teenage parenthood, substance dependency, and lack of employment skills (Gilman et al., 2014; Krohn et al., 2011; Thornberry et al., 2003). Due to the comorbidity of consequences, gang members often continue their involvement within the criminal justice system even after they leave the gang. However, what is less clear is whether gang membership influences criminal careers as a whole, including post-gang membership. The negative consequences of gang membership across various developmental domains hinder gang members' ability to acquire the appropriate prosocial and human capital to transition successfully into the next stages of life. Additionally, for most gang members, their networks become largely comprised of gang members and non-gang criminals providing ongoing access to criminal activities. As a result, gang membership may influence the length of residual criminal careers.

3.1. Gang membership and residual criminal careers

The dissertation treats the length of the criminal career as an outcome of particular interest. A criminal career, as defined by Blumstein et al. (1986) is “the longitudinal sequence of crimes committed by an individual offender” (p. 12). The criminal career perspective examines the participation in criminal behaviors (i.e. those who partake in offending vs. those who do not), the frequency of participation, and seriousness of crimes committed (Blumstein et al., 1986). The criminal career perspective emphasizes the need to examine the onset, continuation, escalation, and desistance from offending and the factors that are associated with a longer career. In other words, what variables increase the length of time individuals spend offending. In addition, what factors play a role in the escalation of offending. Examining longitudinal patterns of offending, researchers have learned how within-individual changes play a role in the continuation of offending. Certain life events (i.e. marriage, trauma), individual

characteristics (i.e. impulsivity, low IQ), neighborhood (i.e. low SES), and familial relations (i.e. parental supervision, family ties) have been shown to be influential in the stability and change of offending patterns over the life-course (Farrington, 2000; Sampson & Laub, 1993).

The dissertation is not focused so much in changes in criminal careers over the life-course. Rather, I examine how social networks may be associated to the length of criminal careers. Also, I do not associate criminal career length with criminal achievement. My primary concern is the length of time gang members spend involved in the criminal justice system. Noted by Melde and Esbensen (2011) simply leaving the gang may not be adequate to negate the long-term consequences associated with membership. Due to the criminogenic nature of gangs, gang members experience many hardships which disrupt the age-graded transitions causing behavioral repercussions. As a result, gang members have an increased risk of being involved in the criminal justice longer, even after they leave the gang. Moore (1991) found over 60% of former gang members remained in the criminal justice system into adulthood. In his ethnographic study Hagedorn (1998) found adolescent gang membership was related to incarceration in adulthood. He noted 63% of gang members in adolescence had been incarcerated in adulthood. In the study by Levitt and Venkatesh (2001), gang members had higher rates of arrest and incarceration in adulthood, were significantly more likely to have been shot, and were more likely to make their living illegally. Similarly, Gilman et al. (2014) reported that adolescent gang members were 3.0 times more likely to have committed crimes, 2.4 times more likely to have been incarcerated, and 3.7 times more likely to obtain their money illegally in adulthood.

Dong and Krohn (2016) examined whether gang membership in adolescence influenced the continuation of offending post-membership above and beyond the influence of associating with delinquent peers. The authors found that gang membership in adolescence does increase the risk of continued violence and increases the probability of arrest for former members in adulthood. This effect was found over and above peer delinquent associations (Dong & Krohn, 2016). The authors noted a negative relationship with age of onset - the younger youth were when they became involved in gangs, the greater the odds of being arrested in adulthood. These lasting effects are seen even for individuals who were members for less than a year. Thornberry et al. (2003) found the risk of arrest for transient gang members in adulthood increased by 1.7

times, while the risk of arrest for stable members increased by 4.0 times. Moreover, it was found that the more precocious role exits experienced in adolescence, the risk for arrest in adulthood increased by 50% (Thornberry et al., 2003). While the negative effects are more pronounced the longer individuals remain in a gang, any time spent in a gang can interrupt trajectories leading to hardships later in life. Melde and Esbensen (2013) examined within-individual changes of gang and non-gang members. The authors found gang membership was associated with a 21% increase in violence. More importantly, it was found that levels of offending were found to be higher post-gang than pre-gang. In a more recent study, Pyrooz et al. (2017) examined the relationship between incarceration and gang membership. In this study they proposed three models to describe the relationship between incarceration rates among gang members. They found overwhelming support for the intensification model. Simply, the intensification model is based on gang members entering prison as gang members, remain gang members in custody, and when they are released from prison they continue on as gang members. While this study is not examining the link between gang membership and criminal careers exactly, the authors did conclude that gang membership increased involvement within the criminal justice system. This supports the research described above which has shown gang membership especially during adolescence increases the rate of offending and arrest in adulthood.

The relationship between gang membership and offending is robust. There is a significant increase in the rate of offending during periods of gang membership. As such Thornberry et al. (1993) developed the selection, facilitation, and enhancement hypotheses to try and explain the relationship between gang membership and offending. While there has been very little evidence for a pure selection hypothesis, some research has found support for the facilitation hypothesis, with the majority of research finding evidence for the enhancement hypothesis (for an overview see Pyrooz et al., 2016). This suggests two things. One, gang members may have a stronger susceptibility for criminal behaviors. Gang members may have been on a path for prolonged involvement in the criminal justice system naturally. Two, as a result of the group processes of the gang and the criminal opportunities that are a by-product of gang membership, gang members utilize their time in the gang to increase their social capital. In other words, gang members have a natural predisposition for offending, plus the added social capital from

gang membership may set them up for longer criminal careers, even after they leave the gang.

A more recent area of gang research has focused on prison gangs and gang members (Mitchell et al., 2018; Pyrooz & Decker, 2019; Pyrooz et al., 2020). Recall, the primary focus of the dissertation is not on prison gang members. While I do capture time spent in prison, the majority of gang members were not active gang members while in prison. Therefore, looking at how prison experiences especially prisoner re-entry and the role gang membership plays on recidivism can provide more information as to why gang members may be more at risk for longer criminal careers. Pyrooz et al. (2020) examined the relationship between gang affiliation and recidivism using data from the LoneStar Project. In this study, the authors used a discrete-time survival analysis in order to capture changes in gang status and time to recidivism after release from prison. Examining across three gang affiliations - current gang members, former gang members, and non-gang members - the authors found current, former, and non-gang members followed different recidivism pathways (Pyrooz et al., 2020). Unsurprisingly, current members had the shortest survival times, followed by former members, then non-gang members. In addition, using survey data, the authors found gang members had a 1.63 greater risk of arrest post-release, and former members had a 1.48 greater risk of being arrested compared to non-gang members. Of note, there was no significant difference between current and former members. While no differences were found between former and non-gang members for risk of conviction or incarceration, the results from the study suggests that gang membership can prolong involvement in the criminal justice system. Self-identified former members were still at the same level of risk of being arrested as current members.

Taken as whole, these studies demonstrate the consequences of gang membership are not confined to active periods of gang membership. The consequences go beyond the gang label. As stated by Krohn et al. (2011) “gang involvement in adolescence ultimately contributes to offending in adulthood via an indirect process that unfolds over the life course through its effects on the transition to adulthood and subsequent impact on life chances in economic and family areas” (p. 1015). The myriad of consequences that are associated with gang membership (criminogenic and non-criminogenic) contribute to prolonging members criminal trajectories. Yet, what we still do not know is whether networks matter or play a role in facilitating longer criminal

careers. There has been advancement in research to move beyond simplistic characterizations of gang membership in order to capture the heterogeneity within gang careers. Using gang embeddedness, we have learned how the position gang members occupy influences the length of time spent in gangs. Yet, researchers have not used network methods to examine this. Using network methods to measure gang embeddedness, researchers can quantify the position gang members have within the gang network and whether their position within the network influence the length of their gang careers. In addition, using networks, the location of non-gang members within the network can be identified. Expanding gang embeddedness to incorporate a network approach the larger social structure in which individuals are immersed is captured. This extends the operationalization to include direct and indirect connections.

3.2. Expanding gang embeddedness with network methods

Until recently, research has relied on individual-level studies of gang membership using a gang member/non-gang member dichotomy. This dichotomy, however, assumes gang members are a homogenous group. Yet no two gang members are the same. Every gang member has a different level of involvement within the gang, identification to the gang, and their role within the gang. As pointed out by Thrasher (1927), “no two gangs are just alike”. Thus, members’ experiences, their length of membership, their commitment to the gang, and the lasting consequences of gang membership are different. To capture the heterogeneity across gangs and between gang members, research has examined how gang embeddedness is linked to the continuity and changes of gang membership (Pyrooz et al., 2013).

Granovetter (1985) proposed the concept of social embeddedness which is the idea that behaviors are embedded within networks of social relations. He stressed that actions are embedded within overlapping networks, with each network providing different opportunities, resources, and restrictions that are influential on behavior. Granovetter (1985) noted that economic theories with under-socialized and over-socialized concepts of human behavior caused a “grievous misunderstanding” (p. 482). He emphasized that actions are socially embedded within networks of social interactions, with behaviors being constrained by the social relations that exist within the networks. He further noted that individuals do not behave as atoms outside of social contexts nor do they mindlessly adhere to particular behaviors within certain social contexts. Rather, both relational and

structural components of individuals' social networks are influential on behavior (Granovetter, 1985, p. 487). Therefore, social embeddedness requires a social context within which individuals behave, but individuals have the power to decide how to embed themselves within their networks. The ways in which individuals embed themselves and in what networks will in turn influence their behaviors.

While there has been movement toward understanding the social worlds of gang members through concepts such as gang embeddedness (Pyrooz et al., 2013), the use of network methods have not been used. Gang embeddedness as operationalized by Pyrooz et al. (2013) is "the adhesion of the gang member to the gang" (p. 243). Gang embeddedness accounts for the heterogeneity within gangs as it captures the differences in members' status within the gang, their level of commitment to the gang, and their identification as a gang member. Gang membership is fluid with members' adherence to the gang consistently evolving. This is associated with continuity and change in membership status. Gang embeddedness moves gang research beyond simple dichotomous characterizations such as transient vs stable members, capturing greater variability within gang membership (Pyrooz et al., 2013). This includes the length and consequences of gang membership. The effects of gang membership are not going to be experienced equally among members; therefore, knowing how embedded members are can help distinguish why the negative effects of membership are worse for some members. Gangs reduce members' exposure to prosocial institutions causing lower levels of educational attainment, inability to secure stable employment and relationships while increasing their exposure to violent crime and victimization. Consequently, the more embedded members are, the fewer opportunities to obtain prosocial capital. This is especially detrimental for adolescents transitioning into adulthood. Research has shown the more embedded members are, the longer time spent in a gang (Pyrooz et al., 2013). Thornberry et al. (2003) found being involved in a gang for less than one year increased the negative consequences; therefore, members who are more embedded are more at risk of suffering from multiple consequences throughout their life-course.

The concept of gang embeddedness appears to be inspired from a network perspective, but existing research on it haven't used network methods. While network data is not needed to answer questions on individual member's embeddedness within the gang as measured by Pyrooz et al. (2013), it is required if we want to study the

larger social structure in which gang members are embedded. Research using surveys has the ability to ask youth how many friends they have, how many friends are gang members, how many friends are involved in delinquent activities etc., but youth do not know who they don't know. In other words, youth may not know how many friends of their friends are involved in gangs, or how many friends their friends have. Furthermore, most youth are not connected to every gang member in their gang. As a result, they cannot know their level of embeddedness. Using network methods is more of a direct measure of embeddedness as the larger social structure surrounding youth is known. This is important because indirect connections are just as important as direct connections (Lin, 2001). Recall from Chapter 2, the resources embedded within the network are accessible to everyone in the network. Depending on the location of an individual's position and the social ties they have, there is differential opportunity in accessing these resources (Lin, 2001).

In the dissertation (Chapter 10) I use social distance as my measure of gang embeddedness. Using social distance captures how close, or how many handshakes away, individuals are to all gang members within the network. Doing this, I am able to quantify how close the gang members are to each other. Not all gang members are directly connected. Therefore, using social distance, I am able to examine if the gang members who are closer to all the other gang members in the network have longer criminal careers. In addition, using network methods, I am able to quantify where non-gang members are located within the network. Individuals may not need to identify as gang members to receive the potential effects. Therefore, using networks to understand how entrenched non-members are within the network is important because of how influential peers are on criminal behaviors. We know social proximity is an important indicator for negative outcomes (Papachristos et al., 2012), and the more embedded individuals are within gangs, the greater the negative consequences (Pyrooz et al., 2013). Thus, the more embedded (i.e. close in proximity) non-gang members are within the prison gang network the more social capital they will have access to. It is hypothesized that social distance will be related to length of residual criminal careers. The closer or more embedded individuals are within the gang network will result in more capital which will contribute to longer criminal careers.

By expanding gang research to include a prison gang network and measure embeddedness through social distance, I am able to move away from the gang label and

comparisons of gang and non-gang members and focus on the group context of gangs. Using a network approach, I am able to capture the social context around the gang members above and beyond the people they know about. This is how I am able to extend the analysis to the non-gang members and examine how being embedded impacts their criminal careers. It is important to note that I am not directly measuring social capital. In other words, I do not capture social capital through the use of specific variables. I propose that being embedded exposes individuals to more opportunities and resources which could be why there is an increase in criminal career length. I am measuring proximity of connections and whether that influences criminal trajectories. I first have to establish that networks are important, then I can start to uncover the mechanisms underlying why.

Chapter 4. The Role of Prisons in Building Personal Networks

4.1. Prison - A place to grow networks?

There has been discussion surrounding offenders' abilities to form relationships in prison. The total institution (Goffman, 1961) of prisons impedes inmates' freedom to select their friends or people they connect with. Rather, who inmates connect with is largely based on the decisions made by correctional staff and who is in the prison at the same time. Additionally, the fluidity of the prison environment can further hinder inmates' ability to form connections with each other. The criminogenic environment of prison can also make it hard to form relationships as many inmates have violent histories. Therefore, connecting with the wrong person can lead to victimization. The uncertainty of who to trust and the need to always "watch your back" can make the prison environment more anxiety provoking. This can cause inmates to isolate themselves. For young offenders, the prison environment may be especially difficult to navigate, making it harder for them to develop connections with other inmates. Hautaluoma and Scott (1973) found the length of time spent incarcerated was influential on young offenders. The longer youth were incarcerated, the more they became "prisonized". Yet, it was found the closer young offenders were to being released, the more time they spent socializing with correctional staff than other inmates. Cairns and Cairns (1994) found adolescents in prison have limited resources for friendship formation. The authors noted that the population and structure of a prison blocks adolescents' abilities to form friendships. However, Clarke-Mclean (1996) used social-cognitive mapping and found youth were able to build friendships and clusters of friend groups were identifiable within the custody center. While the clusters do not show group intimacy, they do show that youth in prison are able to form friendship networks. Additionally, Clarke-Mclean (1996) found there to be stability among the clusters even with the fluidity of youth coming in and out of the correctional facility.

Using egocentric networks with adolescent offenders, Reid (2017) and Reid and Maxson (2016) found that juvenile offenders were able to form connections, growing their personal networks while in prison. Reid (2017) found incarcerated adolescents were capable of building friendship networks. While there were indications of homophily

in terms of race, it was found that the racial lines were fluid. Additionally, she noted gang members have gang and non-gang friends within their networks. This was also found for non-gang youth - they nominated gang involved youth as part of their friendship groups. The study found adolescents who had larger networks had higher rates of institutional misconduct (Reid, 2017). Of note, larger networks are an indication of higher social capital - youth who have more social capital are involved in higher rates of institutional misconduct. Reid and Maxson (2016) compared the friendship composition of gang and non-gang adolescents and found no differences in the structural composition of the networks. The authors did find higher rates of homophily within gang members' networks - gang members had more friends of the same race, and had a higher proportion of gang members. Further, gang members had a greater number of friends who were younger than 18 years of age (Reid & Maxson, 2016).

Schaefer et al. (2017) focused on the social structure of a "good behavior" unit with a particular focus on the relationships between inmates. Focusing on the relationships between inmates, the authors were able to examine whether inmates were able to form meaningful relationships. The results revealed the unit was comprised of 8 communities and 12 subgroups. The subgroup analysis highlighted how some inmates were part of multiple communities. By using the two analyses together, the authors were able to find a subgroup of brokers who connected or bridged the communities' together (Schaefer et al., 2017). On average, inmates nominated four "friends" or other inmates who they got along with. This finding is consistent with school-based friendship networks. The authors did note that the level of reciprocity was not as high as found in school networks indicating that the relationships between inmates may be a bit weaker. Overall, this study found the prison network to be structurally similar to school-based networks and the prison unit to be fairly cohesive with all inmates having connections to other inmates (Schaefer et al., 2017). The results from these studies show that while the prison environment is unconventional, inmates are able to meet new people and form relationships. However, what is unclear from these studies is whether the connections made in prison impact criminal trajectories; do the connections made in prison influence residual careers? By connecting with other inmates, it seems intuitive that inmates would gain social capital that could translate to longer criminal careers. In other words, through the connections with other criminals, inmates have access to more criminogenic resources such exposure to more co-offenders, criminal knowledge, and/or skills. As

such, there is reason to believe that prisons are a place where inmates can grow their criminal social capital.

4.2. Prison – School of crime?

Prisons are total institutions that dictate when and what inmates can eat, where they can go, when they can go outside, and what activities they can participate in. Importantly, prisons force inmates to interact within a closed environment. This limits an inmate's choice on who to associate with, but it also pushes inmates together who may have not connected on the outside. It is the connections between inmates and the type of connections that have been argued to be the cause of prison peer effects (Bentham, 1830). This laid the foundation for the argument that prisons are a school of crime rather than a place of reform or rehabilitation (Bayer et al., 2009; Bentham, 1830; Clemmer, 1950; Nguyen et al., 2017). It has been argued that prison peer effects are a by-product of social learning mechanisms. In Sutherland's (1947) differential association theory, he postulates that through interactions with others, individuals learn criminal behaviors, skills, and attitudes. Consequently, criminality is learned, developed, and passed on through continuous interactions. Clemmer (1950) applied Sutherland's (1947) differential association theory to prisons. He noted through connections with other inmates, especially those who are more experienced, inmates become "prisonized". As a result of prisonization, there is a greater adherence to antisocial behaviors because "the process of acculturation occurs" causing inmates to exchange skills, knowledge, traditions, and assets (Clemmer, 1950, p. 315). Through the connections made in prison, inmates grow their criminal network accumulating more criminal social capital.

In this dissertation, what is most of interest to me is the potential link between social connections made in prison, and the residual criminal careers of gang members post-incarceration. There have been a few studies that have examined how connections made in prison can increase recidivism (Bayer et al., 2009; Damm & Gorinas, 2020; Harris et al., 2017; Roxell, 2011). Roxell (2011) examined the co-offending networks among prison inmates who were incarcerated together. This study analyzed whether relationships that are formed in prison result in new co-offending relationships once released. The study found 70 participants, or 2% of the study population co-offended together post release. Further, results showed the 70 individuals were a part of 36 co-offending relationships committing a total of 48 offences (Roxell, 2011). However, six

individuals had co-offended prior to incarceration, meaning 64 individuals co-offended post prison release. Interestingly, the 64 individuals had larger criminal networks than the rest of the study population, showing an increase in criminal social capital. These results indicate that these 64 individuals leveraged their connections in prison, and used them to expand their networks increasing their pool of co-offenders ultimately giving them more criminal social capital.

Bayer et al. (2009) examined the prison peer effect on recidivism in a sample of adolescent offenders from Florida. In total, the study had 8,216 adolescents who were 17 years or younger at the time of release from custody. In addition to re-offending information, data included criminal histories, correctional facility assignment, personal characteristics, and home neighborhood (Bayer et al., 2009, p. 110). The results support a prison peer effect especially for adolescents who associated with peers inside prison with similar patterns of offending. Specifically, this effect was found for felony sex crimes, petty larceny, burglary, felony drug offences, misdemeanor drug offences, and aggravated assault. Adolescents who had a history of committing those offences and associated with peers within the prison, who had also committed those offences, were more likely to recidivate. Additionally, reinforcing peer effects were found for felony drug offences and auto theft for adolescents who were not in correctional facilities (Bayer et al., 2009). Similarly, Damm and Gorinas (2020) examined crime-specific recidivism and found for certain types of crimes prison did increase criminal social capital. While they found no support for “introductory peer effects” or connections with inmates who specialize in other types of crimes, they did find strong support for “reinforcing peer effects” (Damm & Gorinas, 2020). Inmates who interacted with more experienced offenders who committed the same types of crimes, increased the risk of recidivism. However, this was only found for certain offenses - drugs, threats, and vandalism and arson. Of note, for sex and violent offenses, the effect was opposite. Inmates who had exposure to other inmates, who also committed sex or violent offenses, had a decrease in recidivism.

Harris et al. (2017) examined the impact of cellmates on recidivism. Data for this study included 10,116 males matched to their longest cellmate who were first-time released from prisons in Pennsylvania. Results do not support the school of crime hypothesis. The authors found the longest cellmate’s criminal experience was negatively associated with recidivism. Nonetheless, within the four-year post release outcome, 51%

of the sample had been re-arrested, and 46% had been re-incarcerated (Harris et al., 2017). This study looked at the quantity of time spent with one cellmate hypothesizing that length of time has an influential effect on recidivism. However, the quality of the association or relationship may be a better measure of the school of crime hypothesis. The importance of a relationship is more likely to influence behavior.

Nguyen et al. (2017) tested the school of crime hypothesis. Rather than looking at recidivism, the authors used criminal earnings as their dependent variable. Through associating with prisoners, inmates increase their criminal social capital which should result in them earning more from crime. Using a sample of 615 young offenders, the authors examined the prevalence of friends who had committed crimes that generate income within the correctional facility and the sentence length (Nguyen et al., 2017). Results found both sentence length and exposure to peers to be significant predictors of illegal earnings post-release. Inmates who had more associates who engaged in income-generating crimes had higher criminal earnings. Interestingly, when the authors examined sentence length, they found shorter sentences to be just as rewarding as longer sentences. The results suggest that through access to new opportunities and association with more experienced offenders, inmates can increase their criminal social capital leading to greater criminal rewards once released. The school of crime hypothesis demonstrates how influential prison can be on offending trajectories. Associating with, and learning from other inmates can increase an inmate's criminal social capital. However, we still know very little on whether these connections impact criminal career length.

Not only can associating with inmates increase criminal social capital because of the social relations between two criminals, there may be a mentor-mentee relationship. Younger or less experienced inmates could connect with older or more experienced inmates. This relationship dynamic can further increase inmates' criminal social capital. Mentees gain capital by establishing relationships with their mentors. Recall social capital is gained through relationships when action is taken to gain resources through the relationships. Additionally, the mentor signals to others in the network that the mentee should be given opportunity and support. The mentor "vouches" for the mentee which increases their position within the network. Inmates with mentors will learn more quickly who holds the powerful positions and may learn how to develop relations with individuals within those positions.

Most research on mentorship has taken place in conventional settings which has found individuals with mentors have more career growth and success (Long, 1990; Long & McGinnis, 1985; Tenner, 2004). Mentorship provides security to mentees in a sense that mentees may feel more confident to expand their networks and explore “weaker ties”. Weaker ties are usually less trustworthy than strong ties so they are riskier, but the potential to gain more opportunities and resources is greater (Granovetter, 1973). Therefore, having the support of a mentor, mentees may be more willing to branch out and make these riskier moves. As noted by Morselli et al. (2006) “mentorship addresses the need for security that strong ties offer, while opening doors to more efficient extensions that emerge from weak ties” (p. 20).

Examining the networks of long-term offenders, Morselli (2005) noted that the majority of these offenders were embedded in the established networks of one or two mentors. Research has also shown that offenders who are willing to collaborate with other offenders have more criminal earnings (McCarthy & Hagan, 2001; Tremblay & Morselli, 2000). Morselli et al. (2006) examined the relationship between mentorship and criminal careers. They found that one-third of their sample had a mentor who introduced them into criminal offending. Importantly, on average, participants reported they first committed crime with their mentor at 15 years of age. Of note, 37.1% met their mentor in a criminal context, including prison. For the participants who had a mentor, they reported earnings of almost nine times greater compared to participants without a mentor. The authors also noted that mentors had a lasting impact on their mentees criminal careers. The authors stated “...our findings suggest strong foundations in crime offer an advantageous position for continuous achievement and the presence of a criminal mentor is pivotal for achievement over one’s criminal career” (p. 36). Altogether, this study shows the majority of participants met their mentors during mid-adolescence and the relationships did have an impact on the length of their criminal careers. Furthermore, a third of the sample met their mentor in a criminal context. While this study is a cross-sectional design, it had limitations in terms of measuring criminal careers, it does show that the connections made, especially early on, can have lasting impact on criminal trajectories.

Examining the association between the structure of peer networks within prison and behavior is important as it adds another layer of insight into the relationship between peers and behavior. Prison is a unique opportunity for individuals to grow their personal

networks through the addition of new criminal connections. These connections may offer new skills, accepted norms of behavior, and resources that can further entrench individuals in the criminal justice system. In the current dissertation, I examine whether prison connections do have an independent effect on criminal trajectories. Specifically, I measure prison ties as a proportion. I calculated the total number of unique connections for every gang member. I then separated them into community and prison connections. By dividing the total number of prison ties by the total number of ties, I was able to get a proportion of prison ties. It is believed that the ties made in prison will have an independent effect on criminal career lengths. By expanding their networks, gang members have access to more capital through new contacts. As mentioned in Chapter 2 is the importance of indirect connections. By taking instrumental action and growing their networks, gang members have access to more people who they can gain social capital from. As they mobilize within their networks and invest in social relations, the positions they occupy become more advantageous. By connecting with other offenders, especially older and more experienced offenders, gang members have a chance to use their time in prison to expand their networks, enhance their criminal skillset, and grow their criminal social capital. Consequently, their involvement with the criminal justice system may be lengthened.

Chapter 5. Aim of the Dissertation

In this dissertation I am, in some way, proposing the need to get serious about the networks of gang members, and their potential consequences on criminal careers. I use network measures as the main independent variables to see whether and how they impact trajectories. The dissertation is comprised of three results chapters (Chapters 8, 9, 10; Chapter 7 provides a description of each chapter). While the three results chapters examine networks from a different perspective, the underlying objective of each analysis is to examine whether gang membership is associated with an increase in social capital and if the increase in social capital influences criminal trajectories.

It is well accepted that gang members have more risk factors across multiple developmental domains than non-gang members, and that gang membership acts as a snare in the life-course. Gang membership increases exposure to crime, especially violent crime, victimization, and criminal justice system involvement. It also decreases educational attainment, while increasing risk of teenage parenthood, substance use, and unstable employment. Furthermore, the more embedded members are the fewer connections to prosocial institutions and peers. As a result, criminal careers are extended. Yet, few studies have included the personal networks of gang members. The role peers play in deviant behavior is one of the most concrete findings in criminology. The social structure youth are embedded in is influential on their behavior. Therefore, ignoring how youth build their networks, we are missing pieces of information to answer key question regarding gang membership.

Most gang research to date has examined the risk factors associated with gang membership and the consequences of gang membership. I extend the risk factors beyond the traditional ones used in developmental and life-course criminology and include network measures. Doing so, I am able to analyze how the personal networks of gang members impact not only their gang career, but their overall criminal career. Furthermore, one of the main goals of this dissertation is to expand gang research to non-gang members. Gang members associate with non-gang members, meaning that non-gang members are in the networks of gang members. With gang violence spilling through networks like a social contagion, other consequences of gang membership should as well. This dissertation examines how being a contemporary of a prison gang

influences their criminal trajectory. Furthermore, the networks of gang and non-gang members are compared to determine whether gang members' networks are fundamentally different than non-gang members. Gangs are known to facilitate the increase in violence and criminality that accompanies membership, but what is the mechanism behind this facilitation? Research has talked about the group processes of gang membership that leads to the facilitation effect. In this dissertation, I take a step toward answering this question by examining whether gang members have different networks than non-gang members. If they do, then gang membership does facilitate a change in the ways in which gang members establish themselves in the larger social structure than non-gang members. Importantly, the data used for this dissertation is a prison based sample, meaning the non-gang members are just as criminally entrenched as the gang members. The effect of gang membership is more isolated than using a community based sample, as the risk/protective profiles between the two groups are matched. Extending gang research into prison, I am able to uncover if youth continue to develop their networks in prison and how that may have long-term consequences.

Chapter 6. Data

The data for the current dissertation is a subsample from the Incarcerated Serious Violent Young Offender Study (ISVYOS). The ISVYOS is a longitudinal study which includes interviews with approximately 1700 male and female youth who were incarcerated in secure or open facilities within British Columbia, Canada. The ISVYOS is divided into Cohort I (1998-2001) and Cohort II (2005-2011), with the division based on whether youth were interviewed before or after the implementation of a new youth justice act. In 2001, Canada introduced the *Youth Criminal Justice Act (YCJA)* which replaced the *Young Offenders Act (YOA)*⁴. The YCJA represented almost a complete overhaul in juvenile justice within Canada, especially sentencing provisions. The YCJA moved sentencing provisions to mirror adult sentences for youth who commit serious and violent offences, but provided new avenues for diversion and alternatives to incarceration for youth who commit less serious and violent offences (Roberts, 2003). Therefore, the youth in the study are separated by the legislation in which they were sentenced ensuring consistency in the guidelines and provisions used when they were sentenced. In addition to the interviews, official records, accessed through British Columbia Corrections' computerized database Corrections Network (CORNET), were used to obtain information on each offender's movements in and out of custody. CORNET provides information pertaining to the criminal offence for each movement, date of conviction, and the type of sentence received. Additionally, each offender has a case management file containing participants' pre-sentence report(s), criminal record, and information regarding their behavior while in the institution which is accessed through CORNET. CORNET makes it possible to study the participants from adolescence through to adulthood. For the current dissertation, data was collected from the date information was first available (i.e. participants date of first CJS contact) until March, 27th, 2019. March 27th was the last date of coding, giving me approximately 11 years of data (age of first contact $M = 15.14$; $SD = 1.61$, age of last contact $M = 26.20$; $SD = 2.65$). Coding started in September, 2017, taking approximately 18 months to complete.

⁴ In Canada, offenders are considered to be young offenders between the ages of 12-17, and adults when they turn 18. Youth who commit specific offenses, labelled as serious and violent, can be sentenced as an adult. The decision to try a young offender as a youth or an adult is dependent on the prosecutor

With 26 being the average age of last contact, for nine years of the study period, youth were involved in the adult system.⁵ Important to understand are the two correctional streams for adults within Canada - the federal system and the provincial system (see Figure 1). Where offenders are placed is dependent on their sentence. If offenders receive a sentence that is two years plus one day or more, they receive a federal sentence. In contrast, offenders who receive a sentence that is two years less one day, they receive a provincial sentence. Provincial correctional centers also house offenders who are on remand. In other words, offenders who did not get released on bail and are awaiting trial or sentencing are placed in provincial correctional centers. The ISVYOS only has access to CORNET, which is British Columbia's provincial correctional database. Put another way, offenders who receive a federal sentence, their files cannot be accessed for the time they are in the federal system. Even though the ISVYOS does not have the ability to track federal sentences, does not mean there are not federal offenders within the sample. There are many instances when offenders receive a three to four year sentence, then once they are released from federal custody they re-appear in CORNET because they have resumed their criminal activities. CORNET does list the length of federal sentence received and the date sent to federal custody, so we are able to track offenders who are in the federal system and when they are expected to be released. For offenders who have received a life-sentence or were still in custody at the time of coding, their last date of contact was last date of coding (March 27th, 2019).

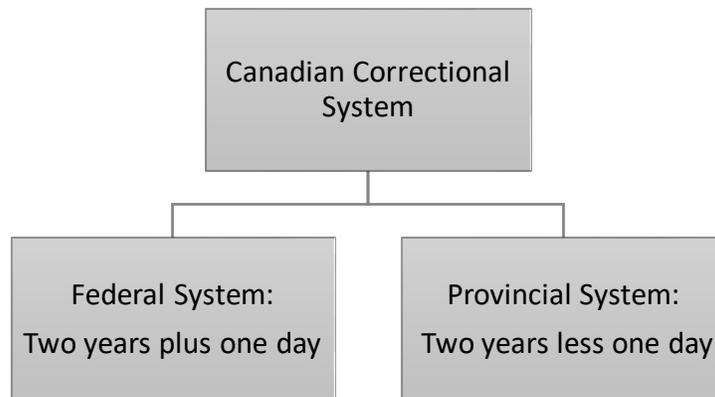


Figure 1. Breakdown of the Two Correctional Streams in Canada

⁵ While the term youth is used throughout the dissertation, they are all adults now. I use the term youth because they were young offenders when they first became involved in the study

The British Columbia Ministry of Child and Family Development (MCFD) acts as the legal representative for all incarcerated youth and gave the ISVYOS consent to recruit youth incarcerated in centers throughout the province. Youth were recruited for interviews if they were English-speaking, capable of understanding interview questions (i.e., lower functioning youth were excluded), and were willing to provide accurate information. Regarding the latter criterion, two youth were permanently removed from the interview schedule because they continued to purposefully provide research assistants (RAs) with false information about themselves. Before beginning the interview, individuals approached for recruitment were informed that their involvement in the study would not affect their stay at the custody centre. Participants were also informed that information they provided would be kept confidential, except in circumstances where they made a direct threat to harm themselves or someone else. Approximately five percent of youth declined to participate in the study when approached by RAs. Youth assented to participate by signing a form indicating that they understood the details of the study as described in the information sheet. To help ensure confidentiality, participants were interviewed in an isolated room away from other youth and staff.

Within the ISVYOS are data based on a subsample within Cohort II. Cohort II interviews were conducted in two youth correctional facilities in British Columbia. In total, there were 963 youth interviewed during this phase of the study. The dissertation uses a subsample from Cohort II ($N = 260$) that was collected at one of the correctional facilities between November, 2009-December, 2011. This sample was collected with a specific focus on adolescent gang members, and is comprised of two distinct groups. One group is defined by their involvement in gangs (current or former gang members), and the other defined by no involvement with gangs. In order to determine gang membership, youth who indicated gang involvement during their intake interview were approached to undergo a second interview, referred to as the “gang interview”. This was done in order to confirm gang membership. Questions asked in the gang interview were specific to gang activity. Examples of questions include “was the fight part of a gang fight?”, “what colours do you wear?”, “what gang are you in?”, “how old were you when you joined the gang?”, “were you initiated into the gang?” Youth who answered yes to the questions were labeled as gang members. These have been consistent indicators of gang membership and what constitutes a gang (Curry & Decker, 1998), and previous research

has validated self-reported measures of gang membership (Curry, 2000; Curry & Decker, 1998; Decker et al., 2014a). There were 69 (65 male, 4 female) gang members confirmed. Due to the small number of female gang members, they were excluded from the current dissertation bringing the number of gang members to 65. Upon further examination, two males did not have a correctional service number,⁶ and five males had sealed records, bringing the total number of former and current gang members to 58.

While, the foundation of the dissertation is the networks of the gang members, they are not the sole focus. Non-gang members ($n = 69$) are used in addition to the gang members in two of the results chapters (Chapters 9 and 10). I will provide explanations on each subsample later in this chapter, but it is important to know that the sample is not only comprised of the 58 gang members. The figure below outlines a brief overview of the samples in each of the results chapter. More details to follow.

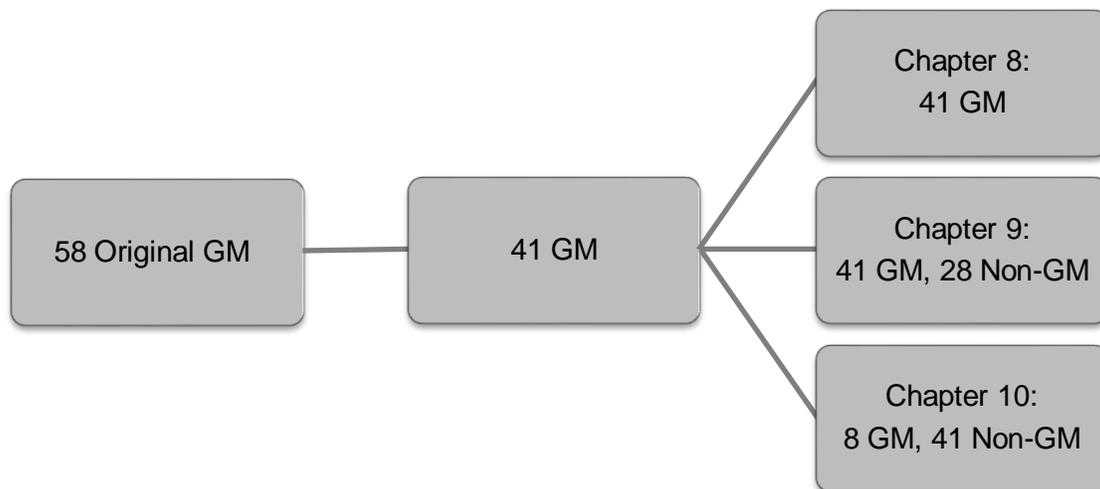


Figure 2. Breakdown of the Dissertation Subsamples

6.1. Procedure: How the networks were created

The personal networks of the gang members were mapped using three sources of information - community logs, prison logs, and alerts. All three sources of information were accessed through CORNET. Community logs are completed by probation officers and are updated to reflect an arrest, the issuance of a warrant, missed appointment,

⁶ Everyone inmate in a provincial institution British Columbia is given a correctional service number. This number is used to access their documents on CORNET. Without a number, their records cannot be searched

what occurred in an appointment, and/or any police contact. All information regarding the youth while in the community that concerns their probation or sentence conditions, law enforcement, traveling, and/or moving get entered into the community logs. These logs also contain information on the youth's common associates, co-offenders, victims, and any ongoing conflicts with peers or family members. Community logs also provide insight into the youth's home life as information on their parents, siblings, mental health, substance dependencies, and living situation are included.

Prison logs are entered daily by the correctional staff. Prison logs are a synopsis of what the inmate did that day (see Appendix A for a two-day example of a prison log). For example, information about who the youth ate with, who they hung out with during yard time, what they did during yard time, their general behavior on the unit, how tidy their cell is, cellmates, time spent in segregation, and any interactions with staff are all provided within these logs. Prison logs provide an insight into inmate behavior and their associates, as well as inmate's position within the unit (i.e. does he eat at the back table, is he being manipulated by the "heavies" on the unit)⁷. Prison logs also contain information regarding gang membership or gang association. Every time an individual enters the correctional facility, their intake assessment provides information on the inmate's current gang membership status, or affiliations. Also noted in the logs are no contact orders or contact concerns with other inmates within the facility due to gang conflicts or alliances. All information is time stamped giving me the ability to estimate length of gang membership.

The alerts section do not contain the same level of detail as the prison and community logs, but provide additional information on no contact (NC) or contact concerns (CC) that the youth have. In addition, alerts provide the reason for the NC or CC order. Commonly, NC or CC orders are conditions placed on co-offenders, or when there is a victim, a NC or CC order is imposed on the perpetrator. On some occasions, there may be NC or CC order if there is an ongoing conflict between two individuals. This is more common to occur in custody than in the community. If there is a conflict between two inmates, it will be noted and a CC order will be put in place to limit the interaction between the two offenders to reduce the chances of an altercation.

⁷ Heavies are inmates that control the unit. These inmates have the power and prestige inside

Any interaction that occurred between the gang members and at least one other individual was coded as a relation (see Appendix B for an example of an edgelist). For Chapters 8 and 9, the personal networks are comprised of community and prison ties; whereas for Chapter 10, the gang network includes prison ties only. Of note, the majority of ties did occur in prison highlighting the level of interconnectivity within prison, but also the amount of time that each gang member spent in prison during the study period.

6.2. Sample

For the current dissertation, there are three results chapters (Chapters 8, 9, and 10) with each having a unique sample. All three samples were built off of the 58 gang members. Each subsample is explained in further detail below.

6.2.1. Gang Members

The first analysis for the dissertation (Chapter 8) focuses solely on gang members and outcomes only associated with gang membership. Recall, the initial identification of gang members came from the gang interview that was conducted after youth indicated some gang involvement in their intake interview. Important to note, youth were not interviewed after the gang interview was conducted. Therefore, the majority of the information on gang membership was self-reported by youth either to their probation officer and/or to correctional staff. Meaning information regarding gang membership status was largely derived from community and/or prison logs. At some point during the study period, all of the youth were active gang members in the community. However, membership did not end when they entered prison. For many gang members, they continued to identify as a member of their gang within the community while in custody. Then once released, they went back to being active members of their gang.

Specifically for this chapter I am interested in two outcomes: the time it takes youth to become gang members, and then once they are gang members, how long are they members. Researchers have established common risk factors associated with gang membership, but the role networks play has been neglected. It is known that peers play a critical role in the development of behaviors and attitudes. Thus, knowing how gang members set up their personal networks and who they connect with can further our

understanding on why some youth become gang members faster and why some remain involved in gangs longer.

The research questions for Chapter 8 require two time periods: 1) time to gang membership, and 2) length of gang membership. Time to gang membership was calculated using the date of first CJS involvement and the date of first gang involvement. Length of gang membership was calculated using the date of first gang involvement and the date of last gang involvement or date of coding for those who were current members at the time of coding. For the majority of youth, their last date of gang involvement was taken from their prison logs. That being said, prison entry did not equate to end of gang membership. On intake, correctional officers inquire about gang membership status. As such, within their prison logs, youth have time stamped gang status information. This makes calculating length of gang membership possible. The first time youth noted no gang involvement on intake was used as their last date of gang membership. There were instances of intermittent periods of membership status. In other words, at one intake, youth would report no gang involvement, but at their next intake they would report gang involvement. Therefore, youth needed to have consistent reporting of no gang involvement in both community and prison logs.⁸ When this was achieved, the date of no gang involvement that was first reported was used as the youths last date of gang involvement.

When the two time periods were calculated, it was noted that 17 gang members did not have information on their date of last gang involvement. Further, there was very little gang information contained in their records making an “estimated end date” not feasible. The only date regarding gang membership for these 17 youth was the date of their gang interview. Other than this date, there was no information about gang membership status. As a result of not having reliable information as to when these 17 youth ended their gang involvement, I had to drop them from the analysis. This gave me a final sample of 41 gang members.

⁸ There were a few instances when youth would report to their probation officer that they were gang involved, but on prison intake they would report no gang involvement or vice versa. So I used both logs in conjunction with each other to be as confident as possible on gang status given the limitations of the data

Within their CORNET records, each of the 41 gang members had specific information in regards to gang membership⁹, as well as the youth themselves had to confirm membership. Of note, having gang ties or associates who were gang members was not enough to be coded as a gang member. The youth had to self-report gang involvement before I considered them as members. Therefore, the majority of self-report information came through official records. For example, youth who flashed gang colours, had gang tattoos, and/or reported to correctional staff and/or probation officers they were a gang member was considered self-reported gang membership. In the instances where the youth admitted to being a gang member, to be coded as an active member, they had to name the gang they were a member of. In some cases, youth would note the gang(s) and/or individual(s) they were in conflict with, giving an indication of which gang they belonged to. There were also instances where youth would discuss, mostly to their probation officers, about being kidnapped or jumped because of gang conflicts. Additionally, a few youth mentioned to their probation officer about having drug debts and owing money to their gang. It was also common after youth left gang life, but remained in the criminal justice system, to request a contact concern or a no-contact order against the gang. This was done if the youth was afraid for their safety due to potential backlash from leaving the gang. Through these various sources of information, I am as confident as I can be that the 41 youth were gang members, and the length of time they were active members. Of the 41 gang members, 35 are former members and 6 are current members.

6.2.2. Gang Members and Non-Gang Members

The goal of Chapter 9 is to begin to uncover the network dynamics of gang members and the role they may have in facilitating further entrenchment within the criminal justice system. Previous research has found the larger social context in which gang members embed themselves to be more important than the label of gang member for the risk of victimization (Green et al., 2017; Papachristos et al., 2012; 2015b) and offending versatility (Bouchard & Spindler, 2010). This raises the question, are the

⁹ Sometimes the correctional staff would note if the youth was welcomed onto the unit, and who they were welcomed by. If they were gang members who welcomed the youth, they would note something along the lines as “members of the RS welcomed the inmate”. Or in a probation report, the officer would note if the youth was seen by police hanging around with certain associates who were known members. This provided supplemental information to youths gang involvement, but was not used as a sole indicator of gang membership.

personal networks of gang members structurally different than non-gang members? If so, it may not be the label of gang member that increases the involvement within the criminal justice system. Instead, it may be the social context that surrounds gang members that facilitates this entrenchment.

I follow the criminal trajectories of gang members and a matched control sample of non-gang members to examine the role gang membership plays on the entrenchment within the criminal justice system. The gang members are the same 41 gang members as described above. The non-gang members are a matched sample. The non-gang members were selected from a larger SNA study using data from Cohort II of the ISVYOS that was completed for Public Safety Canada in 2019.¹⁰ In total, there were 44 non-gang members that were identified from the project. To be labeled a non-gang member, these youth gave no indication during their intake interview they were gang involved and there was no information in CORNET about gang membership at the time of coding for the project. Recall, the intake interviews for Cohort II took place between 2005-2011 so information contained in their records up to the date coding started was used to check whether they had any gang involvement. Of the 44 non-gang members, eight were females and excluded from this dissertation. An additional eight males were excluded because they did not have any follow-up information. Of the eight males, three died during adolescence and five had sealed records so the information on these eight was very limited. To ensure the samples were matched, it was decided it was best they be eliminated. This brought the sample to 28 non-gang members. The 28 non-gang members were then compared to the 41 gang members on the number and type of risk factors (i.e. family, individual, school), length of involvement in the criminal justice system, types of convictions received (i.e. violent, drug, property), and the number of convictions received. This was done to ensure, as best as I could, the only difference between the two groups was gang membership. Upon review, all 28 non-gang members matched the 41 gang members, giving me a final sample of 69 (28 non-gang members and 41 gang members).

¹⁰ For more information about this project, please see *Altering Pathways to Gang Involvement and Violence: Building a Foundation for Evidence-Based Policy*

6.2.3. The CS Gang and Associates

During the coding of the gang members, information about a youth prison gang that had formed in one correctional center kept coming up. Looking into this, it was noted that there were eight youth who were incarcerated together at the same time in the same youth correctional facility who formed a prison gang, known as the CS gang. Of these eight, four were part of the original gang members identified from the gang dataset.¹¹ Of note, the CS gang was the only active prison gang in the correctional center at this time. The sample for Chapter 10 was generated from the ego networks of the eight youth who formed the CS gang while incarcerated together. From examining the network, I was able to identify who the eight CS members were connecting with and when the connections took place.

The objective behind Chapter 10 is to challenge the assumption that gang membership is associated with an increase in social capital by shifting the focus from the personal networks of gang members to a prison gang network. By doing this, I am able to move away from the gang label and use social distance as a measure of social capital. Using social distance, everyone in the network (gang and non-gang members) are included in the analysis. This gives me the opportunity to examine 1) whether being embedded within the network of an active prison gang has an impact on the criminal careers of the CS members and non-gang associates, and 2) whether prison experiences (i.e. connections made in prison) are influential on criminal career length. To determine who was connected to the CS gang during the time it was active, I distinguished between ties that were formed during or after the CS gang's somewhat short-lived operation. The CS gang was active for approximately ten months (October 2008-August 2009). All connections within that timeframe are counted towards the during-CS network (i.e., direct exposure), whereas ties formed after this timeframe are counted towards the post-CS network. Figure 3 visualizes the breakdown of these subsamples and networks.

¹¹ Four did not identify as gang involved during their intake interview as their first noted gang involvement was with the CS gang

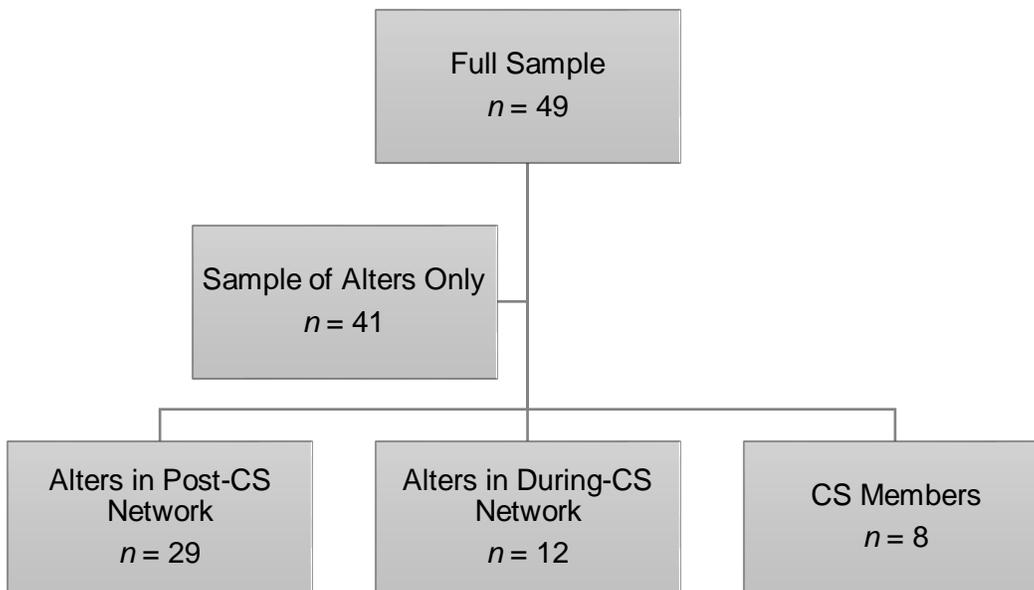


Figure 3. Breakdown of Sample and Networks

After the networks were split into the two time periods, only alters who were part of the larger ISVYOS were kept. By doing this, I was able to measure the criminal histories of the alters in the network¹². The during-CS network has 20 nodes (8 CS members + 12 alters) and 86 ties. The post-CS network includes all prison ties that occurred five years from when the CS gang disbanded.¹³ Custody records on CORNET indicated that a conflict resulted between two CS members; one CS member was friends with an individual that had a “street beef” with the other CS member. This created a rift throughout the CS gang. Also, the suspected leader of the gang was moved to another correctional facility to limit his ability to recruit new members. He was also known for causing conflicts between youth. The last documentation of the CS gang was August 2009; therefore, the post-CS network includes all connections between 2009-09-01 to 2014-09-01. The post-CS network has 37 nodes (8 CS members + 29 alters), and 116 ties.¹⁴ In total, the final sample size for the study is 49: 8 CS members, 12 alters in the during-CS network, and 29 alters in the post-CS network (see Figure 3). Figure 4 shows the full network ($n = 49$) with node color differentiating the three groups - grey nodes are

¹² Ethical stipulations required that the study investigators were only able to access CORNET data for individuals that were already participants from the ISVYOS

¹³ Five years was selected because the main objective is to determine whether exposure to prison gang members impacts the length of residual criminal careers, so I wanted to make sure the timeframe was not too far removed from the time the CS gang was active

¹⁴ There were six alters in the during- and post- CS networks which we placed in the during-CS network as that is when the first connection occurred

CS members, white nodes are alters in the during-CS network, black nodes are alters in the post-CS network -, and size by social distance - larger the node, the shorter the social distance. As seen in Figure 4, the alters in the during-CS network are more interconnected with CS members, while there are a larger number of alters in the post-CS network located on the periphery of the network in dyadic relations with CS members.

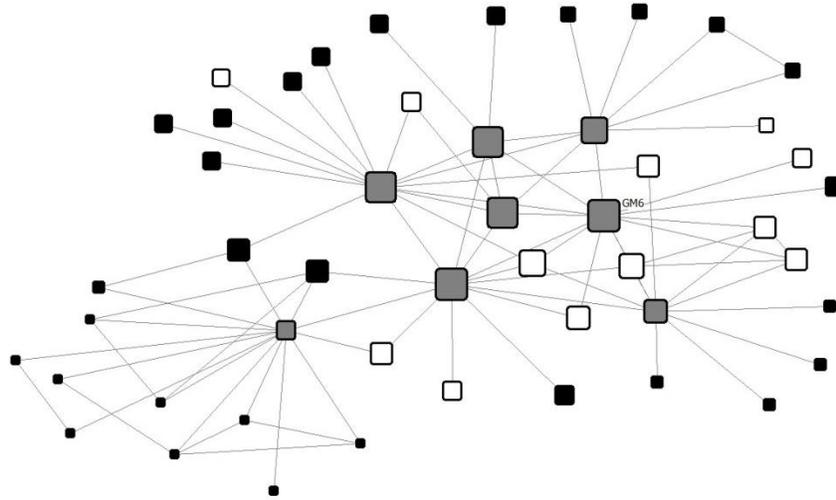


Figure 4. CS Prison Network (n = 49)

Note 1: Grey Nodes = CS Members

Note 2: White Nodes = During CS Alters

Note 3: Black Nodes = Post CS Alters

Note 4: GM6 = Suspected CS Leader

Note 5. Node size by social distance; larger nodes, shorter social distance

Chapter 7. Method and Measures

The three results chapters have different research objectives that shaped the direction of each chapter. The literature review gave an overview on the current state of research, while highlighting the gaps this dissertation aims to fill. The results chapter aims to address the gaps in different ways. As a result, each chapter has different research questions, variables, and methods. These are described below.

7.1. Build it and they will come? Social networks and the dynamics of gang membership

7.1.1. Overview of research objectives

Researchers have established common risk factors associated with gang membership, but the role networks play has been neglected. It is known that peers play a critical role in the development of behaviors and attitudes. Thus, knowing how gang members set up their personal networks and who they connect with can further our understanding on why some youth become gang members faster and why some remain involved in gangs longer. I move beyond the traditional risk factors and examine if network structure and social capital are influential to gang membership.

A theoretical underpinning for this analysis is social contagion. Contagion requires a change in status. The objective of this analysis is to examine if networks play a role in gang membership status. Therefore, I am interested in whether networks influence an individual's status from non-gang member to gang member, then gang member to non-gang member. Of note, I do not test social contagion directly. It is the change in gang membership status that is the contagion captured in this chapter. As I am not examining the people around the gang members, I cannot directly measure a "contagion effect". I am examining how changes in networks may facilitate the changes in status through a social capital lens.

Understanding how gang members build their networks pre-gang membership may influence how quickly they become gang members. For example, if a youth has a larger network, the more capital they bring into gang because all of their connections come with them. This capital is even greater if most of their connections are co-offenders

or individuals also involved in the criminal justice system. These connections can expand the gang's boundaries creating more criminal opportunities. Once youth become gang members, how they establish themselves can impact the length of time they spend in the gang. By establish themselves I mean how they take advantage or use the label of "gang member" to grow their own network and broker relations. This not only increases their social capital, it also increases the gang's capital. Recall, social capital can be examined at the group or individual level, but the two are not independent from each other. The amount of capital gained through membership, may influence the length of time spent in a gang. For the youth that leave the gang, what happens to their networks? If there is an increase in social capital that is associated with gang membership, do individuals lose these benefits once they leave the gang? Using networks to examine these changes combines capitalization and social contagion. Overall, I am looking at how networks pre-, during-, and post-gang membership facilitate these changes in status. Gang membership is not a homogenous experience, as such, some individuals may gain access to more capital once they become a gang member, while others do not. Does this influence the length of time spent as a gang member? It is part of the network process of becoming one with your environment, and I am curious if networks play a role in these decisions.

7.1.2. Measures

Dependent Variables

Time to gang membership captures the time it takes a youth to become a gang member from the time they are first involved within the criminal justice system. To calculate time to gang membership, the date of first gang involvement was subtracted from the date of first CJS contact. There were four youth who were gang members prior to becoming involved in the CJS, but for the remaining 37 youth, it took on average 906.00 ($SD = 750.78$) days (approximately 2.5 years) to become gang members (see Table 3).

Length of gang membership is the amount of time youth were active gang members. To capture length of gang membership, I subtracted the date of last known gang involvement with the date of first gang involvement. There were six youth who were current members at the time of coding, so the last date of coding was used as their

“end” date. The average length of gang membership was 2000.70 ($SD = 990.62$) days or about 5.5 years.

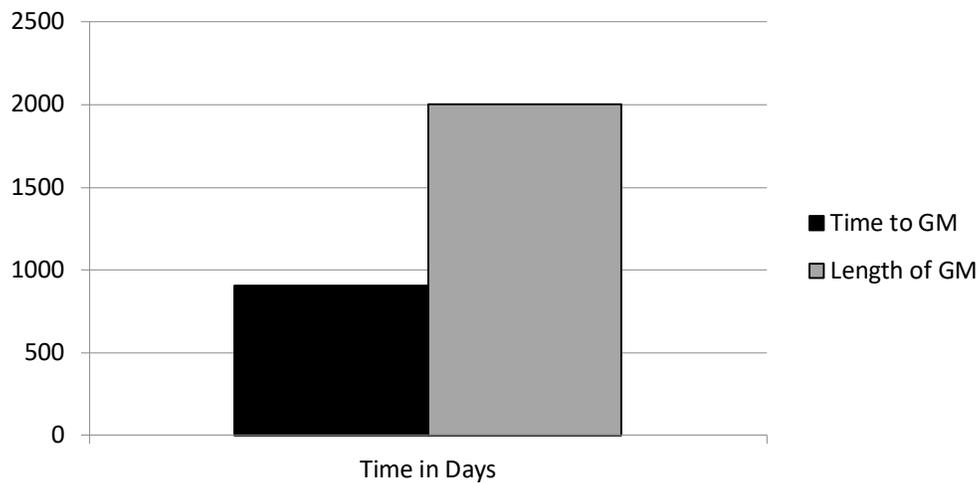


Figure 5. Histogram of Dependent Variables

Independent Variables

The overarching goal of this study is to understand how networks may impact the length of gang careers. Therefore, I use two network variables as the independent variables. Recall the networks used for this chapter are the personal networks of 41 gang members, so the network variables are egocentric (i.e. relate to each individual, not the network as a whole). The two measures capture the structure of each gang member’s network as well as the amount of social capital the gang members have. Each network was separated into pre-, during-, and post-gang membership so I can capture changes in networks that occurred alongside changes in gang membership status.

The first independent variable, network size, is the total number of unique alters in an individual’s network. Network size was captured by calculating the number of new alters that appeared in each egos network for every year they were involved in the criminal justice system. Network size can be an indication of social capital thus knowing the size of a person’s network before they become a gang member can possibly provide information as to why some members become gang involved faster. Theoretically, individuals with larger networks have more to offer the gang in terms of resources and criminal opportunities which may be a reason for becoming members more quickly. Furthermore, once a person becomes a gang member, there is greater exposure to

criminal opportunities and co-offenders which can increase the size of their networks. If this is the case we will see a growth in network size from pre-gang membership suggesting that members are expanding their criminal networks by taking advantage of the opportunities that are associated with gang membership. This should mean longer time spent in the gang. Examining how youth build their networks can be informative as to why some youth become involved in gangs faster, and why some remain in the gang longer. For example, an ego in this sample, Ice Pick, had a network size of 24 before gang membership. Of those 24 contacts, 20 of them were co-offenders, while 4 were conflict ties. Once he became a gang member, he only added 4 new contacts into this network. Two of the contacts were co-offenders and two were a result of a beef. For Ice Pick, being in a gang did not increase his social capital, which may be why he was only a gang member for a short time (less than one year). In comparison, Bruiser had a network size of 17 before gang membership (see Figure 6). Once he became a gang member, his network grew 3.5 times to a size of 62. Furthermore, before gang membership, Bruiser's network was largely built around negative ties. Yet, when he became a gang member, his network was mostly comprised of co-offending and social ties. Bruiser was a gang member for almost five years. Gang membership clearly benefited Bruiser more than it did Ice Pick.

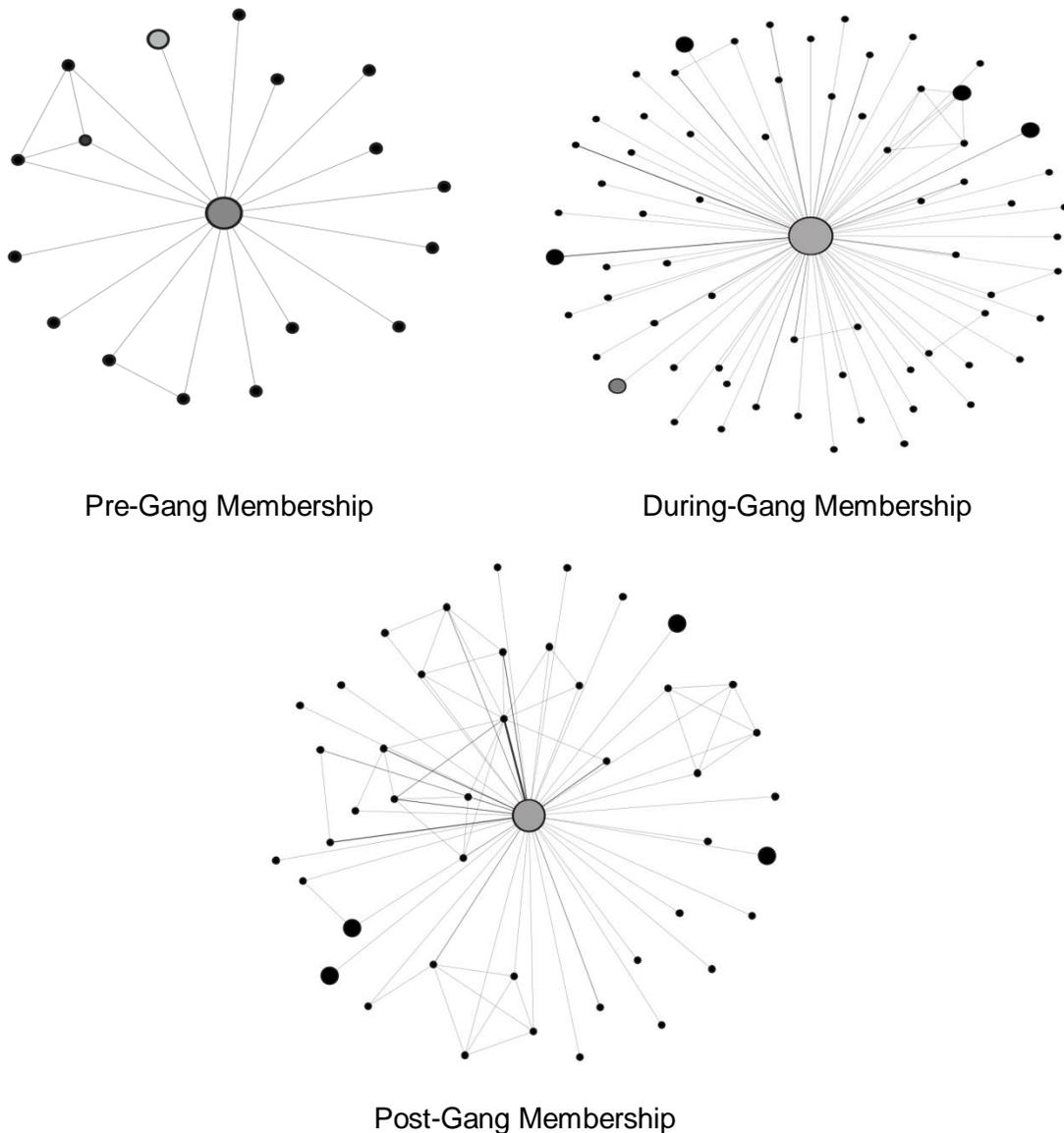


Figure 6. The Changes in Network Size and Structure Pre-, During-, and Post-Gang Membership

Note 1 Bruiser is the ego in all three networks¹⁵

Note 2. Large grey node is Bruiser, black nodes are the alters

Note 3. Five alters appear in two networks, but there is no alter that appears in all three networks. Of the five, 4 alters are in the during- and post-gang membership networks (larger black nodes), while 1 is in the pre- and during –gang membership networks (larger grey node)

The second network variable used was *ego betweenness*. Simply, betweenness captures the ego’s ability to broker relationships between two people who are not directly

¹⁵ Bruiser first entered the CJS at age 13. He became a gang member at age 17, and was a gang member until he was 22. He remained in the CJS for three years after he left gang life as his last age of contact was 25

connected. Having a high ego betweenness score can indicate higher social capital because two people are dependent on the ego to be connected to one another. There have been multiple network studies that have shown individuals who are able to broker relationships and position themselves strategically to be more successful within the larger organization (Morselli 2001; 2003; 2010). It is hypothesized that gang members who are able to establish themselves as brokers and position themselves strategically will take less time to become a gang member and stay in the gang for longer.

Control Variables

The control variables selected for this analysis are known risk factors for gang membership. *The number of convictions* youth received while they were involved in the criminal justice system. Similar to network size, the number of convictions per year youth were involved in the CJS was calculated. Using a prison based sample, I am able to capture changes in the number of convictions within a criminally entrenched sample. This allows me the opportunity to see if the changes in the level of criminality found using community based samples are mirrored with a prison based sample. I calculated the number of convictions pre-, during, and post-gang membership as I did for the network measures so I am able to see how the number of convictions changed as gang membership status changed. *The proportion of prison ties* controls for the connections gang members made while in prison. I wanted to determine if connections made in prison are quantitatively different than ties made in the community. The school of crime hypothesis asserts prisons are a school not a place of reform (Bentham 1830; Clemmer, 1950). Therefore, examining whether connections in prison have an independent effect on gang membership from overall network size is important for policy and intervention and prevention programs. Similar to the number of convictions and the two network variables, I split the variable into pre-, during-, and post-gang membership in order to determine if there are differences in the number and type of ties made in prison with gang membership status.

The remaining control variables are either static risk factors or were asked to youth during their intake interview; as a result, they cannot be broken into pre-, during, and post- gang. *Age of first contact into the criminal justice system* is the age at which youth first entered the CJS. In Canada, the age of responsibility begins at age 12. For the current sample, the average age of first CJS contact was 14.08 ($SD = 1.30$).

Race/ethnicity is categorized into Whites, Indigenous, and Other¹⁶. As seen in Table 3, 31.7% of the sample is Indigenous demonstrating the overrepresentation of Indigenous individuals within the CJS. In British Columbia, 6.2% of the general population is Indigenous (Statistics Canada, 2013). *Foster care* is a dichotomous variable capturing youth who had been placed into foster care at some point in their life. Almost half of the current sample (48.8%) was placed into foster care (see Table 3). *Early involvement in physical fighting* measures youth who were involved in fighting before the age of 12. As seen in Table 6, 70.7% of youth were involved in fighting during childhood. Lastly, *family criminal record* captures youth who have family members involved in the criminal justice system. Nearly three quarters (73.2%) of the youth involved in the study have family members who have had criminal justice system involvement.

7.1.3. Analytic strategy

The first section of the analysis examines the changes across gang membership status. Descriptive statistics are used to capture the changes in the network measures and the number of convictions and prison ties that occurs with changes in gang membership status. The second section examines time to gang membership, and the third section examines length of gang membership. Both dependent variables are analyzed at the univariate and multivariate level. Due to the dependent variables being time variables, I use Cox proportional hazard model. Cox proportional hazard model is semi-parametric as it does not require a baseline hazard rate to be specified (Allison, 2014). The model estimates the hazard or probably of an event occurring within a specified time period. I use a continuous-time Cox regression with both dependent variables calculated in days as smaller time units gives more power to the model (Allison, 2014). There were four youth who were gang members before the start of the time period. This is known as left-censored observations, and they were excluded from this analysis.

¹⁶ Other race/ethnicity includes Black, Asian, and Middle Eastern youth

7.2. A gang network advantage? The role of personal networks in the criminal careers of gang and non-gang members

7.2.1. Overview of research objectives

The goal of this analysis is to understand the network dynamics of gang members. I follow the criminal trajectories of gang members and a matched control sample of non-gang members to examine the role gang membership plays on the entrenchment within the criminal justice system. Previous research has found gang members have higher levels of involvement within the criminal justice system. Gang members have higher rates of arrests and incarceration than non-gang members (Gilman et al., 2014; Levitt & Venkatesh, 2001), as well as higher rates of victimization (Melde & Esbensen 2013; 2014; Krohn et al., 2011; Pyrooz et al., 2014a; Taylor et al., 2008). While these studies have provided insight into the group processes of gang membership that facilitate the involvement within the criminal justice system, few studies have examined if the personal networks of gang members matter. Papachristos and colleagues found the social distance to gang members was more important than gang status for risk of victimization. Also, Bouchard and Spindler (2010) noted it was the organization of the gang that increases crime variety not gang membership. These studies suggest that it is not gang membership that necessarily matters. Rather, it is the ways in which gang members embed themselves within the larger social context. The results of these studies indicate that the networks of gang members may be structurally different. If so, it may not be the label of gang member that increases the involvement within the criminal justice system. Instead, it may be the social context that surrounds gang members that facilitate this entrenchment. Research has yet to examine this in relation to criminal career length.

In this chapter, I examine if it is the social context and/or the label of gang member that influences the length of criminal careers. There is reason to believe that it is a combination of gang membership and social context. It is known that gang members have an elevated status within the criminal world (Augustyn et al., 2019). This may provide them with more opportunities to expand their criminal networks. Not only are gang members exposed to more criminal opportunities through their gang, but the status of gang member may result in non-gang criminals wanting to associate and/or co-offend

with them. This provides gang members with access to social capital that non-gang criminals do not possess. As a result, the social context that surrounds gang members should benefit them, ultimately increasing their criminal careers. Importantly, the non-gang members in this study are as criminally entrenched as the gang members. Majority of studies to date have used community based samples which may inflate the effects of gang membership. Using a prison based sample provides me the ability to isolate the effects of gang membership more so than using a community based sample.

7.2.2. Measures

Dependent Variables

The dependent variable for this study is criminal career length. *Criminal career length* was calculated by subtracting the last date in the CJS from the first date of CJS contact. The average criminal career length is 11.06 years ($SD = 2.94$) (see Table 1). Breaking it down by gang membership status, gang members average criminal career length is 10.77 years ($SD = 2.41$); whereas, the control group average length is 11.50 years ($SD = 3.60$).

Independent Variables

In addition to network size and ego betweenness used in Chapter 8, density and constraint are added as independent variables. *Density* measures the amount of connectedness among the alters. In other words, the more the alters are connected to one another, the more dense or cohesive the network. Density can be an indication of a network that has strong social support or social bonds as the higher the level of interconnectivity among the alters, the more the network resembles a tight-knit group. While being in a dense network can have benefits (see McGloin & Piquero, 2010), there have been arguments made that being in a cohesive network can be a disadvantage. Granovetter's (1973) strength of weak ties argument along with Burt's (1992) structural holes theory have demonstrated that being part of many loosely connected networks can be more advantageous as individuals are exposed to a greater number of unique opportunities increasing their social capital. Yet, how density relates to gang membership is not as well-known. Gang members who have denser networks may have higher levels of trust with their alters which could translate into taking higher risks. For example, gang members who only co-offend with individuals they trust may traffic larger

quantities of drugs, or commit more violent offenses such as extortion or murder. However, gang members who limit themselves from new opportunities may not be as successful. While there is logic to co-offend with only those who one trusts, the benefits to expand one's criminal network are also apparent. As a gang member, increasing the number of co-offenders increases the opportunities received. As a result, social capital increases which in turn increases members overall value to the gang. There is evidence to support both sides of the argument. Network studies have found the cohesion of a gang to be important for the survival of the gang, but the way in which cohesion helps a gang survival is dependent on how well the gang is established and its size (Ouellet et al., 2019). Overall, the density of a gang member's personal network can impact the exposure to co-offenders and the number of criminal opportunities.

Constraint is a measure of Burt's (1992) structural holes. Constraint is an inverse measure with higher values indicating fewer structural holes in the network (Perry et al., 2018). Constraint captures the degree to which the alters in the network are not independent from one another. This is why higher constraint values indicate fewer holes as it means there are more alters connected to one another. Gang members who have high constraint scores may not be exposed to new opportunities or co-offenders as they are receiving greater amounts of redundant information. Previous research has found criminals who are more successful in monetary earnings are loosely associated to organizations and operated as autonomous parties rather than being connected to fixed organizations (Morselli & Tremblay, 2004). Gang members with lower constraint scores is indicative of individuals having looser connections with more people which may help expand their criminal network. In addition to the two new network variables, gang membership is used an independent variable. Gang membership is a binary (yes/no) variable and includes current and former members.

Control Variables

The control variables for this analysis include the same variables used in Chapter 8: proportion of prison ties, age of first criminal justice system contact, race/ethnicity, foster care, early involvement in fighting, and family members involved in the criminal justice system. *The average proportion of prison ties is 0.57 (SD = 0.32). The average age of first CJS contact for this sample is 15.14 (SD = 1.61). Of the 69 youth, 38 (55.1%) were placed in foster care, 51 (73.9%) were involved in physical fights before the age of*

12, 50 (72.5%) had *family members involved in the CJS*, and 41 (59.4%) are *White*. Due to the sample size being larger, I added in two additional control variables. *Hard drug use* (heroin, cocaine, crack cocaine, and methamphetamine) is a scale variable from 0-4 on how many of the noted drugs youth had used. On average, youth tried 2/4 drugs ($SD = 1.40$). Lastly, *the number of convictions as a youth offender* is the number of convictions each offender received between the ages of 12-17. The average number of convictions was 4.5 ($SD = 3.44$).

Table 1. Descriptive Statistics (n = 69)

	<i>M (SD)/ n (%)</i>
Dependent Variable	
<i>Criminal Career Length</i>	11.06 (2.94)
Independent Variables	
<i>Network Size</i>	57.12 (44.81)
<i>Constraint</i>	0.06 (0.08)
<i>Density</i>	0.04 (0.11)
<i>Betweenness</i>	5338.41 (11067.80)
<i>Gang Member</i>	41 (59.4%)
Control Variables	
Ethnicity	
<i>White</i>	41 (59.4%)
<i>Indigenous</i>	19 (27.5%)
<i>Other</i>	9 (13.0%)
<i>Age First CJS Contact</i>	15.14 (1.61)
<i>Nb of Youth Convictions</i>	4.51 (3.44)
<i>Proportion of Prison Ties</i>	0.57 (0.32)
<i>Foster Care</i>	38 (55.1%)
<i>Early Physical Fighting</i>	51 (73.9%)
<i>Family Criminal Record</i>	50 (72.5%)
<i>Drug Use</i>	1.83 (1.40)

7.2.3. Analytic strategy

First, gang members and non-gang members are going to be compared descriptively across all variables. This will provide insight into differences between the two groups. Second, I am going to examine what covariates influence criminal career length. Criminal career length is a continuous variable, so an ordinary least squares (OLS) regression will be carried out (skewness = -0.51, kurtosis = 0.26).

7.3. Is it who you know in prison that counts? Exposure to prison gang members and criminal careers

7.3.1. Overview of research objectives

Chapter 10 seeks to examine whether being embedded within a prison gang network is important in the length of residual criminal careers. In Chapter 10, I want to begin to unpack the black box of gang activity and focus on a prison gang and how exposure to a prison gang may have long-term consequences. This analysis is a case study focused on the CS gang described above. The overarching goal of this study is to challenge the idea of the gang label and the assumption that gang membership is associated with an increase in social capital. In addition, by going inside and focusing on a prison gang, I have the chance to examine if the connections made in prison have an impact on the length of residual criminal careers. While no research to date has focused on gang members specifically, the school of crime hypothesis is premised on correctional facilities providing opportunities for individuals to socialize and learn from each other, increasing their criminal capital (Bayer et al., 2009; Clemmer, 1950; Damm & Gronias, 2020; Harris et al., 2017; Nguyen et al., 2017). A few studies that have examined prison experiences have found connections made in prison can increase recidivism (Damm & Gorinas, 2020; Roxell, 2011). In addition, network studies on delinquency have found the structural properties of peer networks to be influential on behaviors (Haynie, 2011; Krohn 1986; Korhn et al., 1988; Krohn & Thornberry, 1997; Weerman, 2011). Therefore, the connections made while in prison may have long-term ramifications on criminal careers.

By focusing on the network of the CS gang, I have the unique opportunity to examine if there are consequences associated with exposure to a prison gang. It has been established that non-gang members are intertwined within the networks of gang members (McCuish et al., 2015; Reid & Maxson, 2016). Yet, little research to date has examined whether these connections are important for the criminal trajectories of non-gang members. Researchers have established that being involved with or associating with gang members' increases susceptibility of criminal involvement. However, research is less developed on whether the proximity of these connections is important. Previous research has shown the risk of gunshot victimization increases with proximity to the gunshot victim (Green et al., 2017; Papachristos et al., 2012; 2015a; 2015b). This

rationale is used as a building block for this chapter. Using the concept of social contagion, I hypothesize the closer individuals are to the eight CS members, the longer their criminal careers. Through the proximity to gang members, non-gang members are exposed to similar resources as the gang members. I recognize connectivity is not solely responsible for criminal career length; social proximity is part of a chain reaction. While I cannot directly test if social proximity is responsible for criminal career length, it does have a role in the outcomes that do (i.e. peer influence). Researchers have argued that social connections are essential for the accumulation of criminal capital (McCarthy & Hagan, 1995; 2001; McCarthy et al., 1998). Through connections, individuals are exposed to new criminal skills, knowledge, and resources which can prolong their criminal career. Being connected to an active prison gang, the CS members and those who are more closely associated to them are potentially exposed to different opportunities and skills that others are not. As a result, these connections may play a key role in expanding criminal networks through the accumulation of social capital. This analysis is unable to study the mechanisms underlying the flow of information and opportunities that that may be a result of the connections, but I am able to take step in assessing whether social proximity could play a role in criminal careers.

7.3.2. Measures

Dependent Variable

Criminal career length is defined as the number of years between a person's first contact with a CS member and their last known date of CJS involvement or date of coding for those still in custody. The purpose of Chapter 10 is to examine if being embedded within a prison network impacts criminal career length, so I used the age of first contact with a CS member as the starting point of the calculation. By doing this, I have excluded any contact with the CJS before exposure to CS to control for temporal ordering ($M = 7.98$; $SD = 2.76$; see Table 2).

Independent Variables

Connecting with a person involved in a prison gang during the gang's operation may be qualitatively different from connecting with a person associated with a defunct prison gang. Splitting the network into two, during-CS and post-CS, I am able to extract when alters were connected to CS members. *Timing of connectivity* is a binary variable

(during-CS/post-CS) capturing when an individual was connected to CS. Twelve (24.5%) individuals were connected to CS members during the time the gang was active and 29 (59.2%) were connected to CS members within five years after the CS gang. Five years was selected as a cut off time because I wanted to ensure I was capturing a prison gang association, or the potential consequences of connecting with a prison gang member, so the time of connectivity could not be too far past the time the gang was active. Additionally, 87.5% of the CS members remained gang members up to five years post-CS. Therefore, I am still capturing connectivity when CS members were gang members, just no longer active prison gang members.

The second analysis examines gang embeddedness based on the hypothesis that the closer individuals are to gang members, the more influential connections are (i.e., in this case, a longer criminal career). *Social distance* is used to measure gang embeddedness and was calculated as the mean geodesic distance (e.g. the shortest distance) between each individual in the sample to the eight CS members. I then added the distance scores and divided by eight.¹⁷ As seen in Table 2, the mean social distance is 2.11 ($SD = 0.46$). That is, individuals in this network are, on average, two handshakes away from all eight CS gang members.

Control Variables

My models control for various characteristics that have been shown to be associated with criminal career length in prior research. *Age of first criminal justice system contact* was coded from CORNET data and was included based on its negative association with criminal career length (Loeber & Le Blanc, 1990). The average age of first CJS contact for this sample is 15.12 years old ($SD = 1.25$) (see Table 2). *Criminal justice contact pre-CS* is the amount of time spent in the criminal justice system prior to any contact with a CS member. Exposure to the criminal justice system prior to CS contact could play a role in determining residual career so I control for it. On average, individuals spend 2.71 ($SD = 2.43$) years in the CJS before contact with a CS member(s). *Number of convictions pre-CS contact* was calculated by summing the total number of convictions participants had received between the age of 12 and the age they

¹⁷ To calculate the mean distance between the eight CS members, the geodesic distances between the CS members were divided by seven not eight to ensure there wasn't any bias to the CS members

first became connected to a CS member(s).¹⁸ Including the number of prior convictions before contact with a CS member(s) controls for each individual's level of criminal involvement and potential selection effects. This helped assess if being in contact with gang members amplifies an individual's criminal trajectory or if this was a path they were already headed down. The average number of convictions pre CS contact as shown in Table 2 is 13.14 ($SD = 11.13$).

Gang member is a binary (yes/no) variable and includes previous and current membership. Gang member is a self-report measure. This information was gained through official records, but the members self-reported to either correctional staff and/or probation officers that they were gang involved. Over half of the individuals (62.7%) in this sample are gang members (see Table 2). *Violent offender* captures anyone who has a conviction for a violent offense. Note violent offenses for the purpose of this study include aggravated assault, assault causing bodily harm, extortion, robbery with a firearm, manslaughter, and/or murder. Due to the sample being comprised of serious and violent offenders, almost everyone had multiple convictions for assault and weapon offenses. As seen in Table 2, 34 (69.4%) had a conviction for a violent offense. Lastly, *race/ethnicity* is White, Indigenous, and Other. Over half of the sample is White (59.2%).

¹⁸ Age 12 was selected as the starting age because that is the first age of criminal responsibility in Canada

Table 2. Descriptive Statistics (n = 49)

	Mean (SD)/ n (%)
Criminal Career Length	7.98 (2.76)
Social Distance	2.11 (0.46)
Age of First CJS Involvement	15.12 (1.25)
Number of Convictions Pre CS Contact	13.14 (11.13)
CJS Contact Pre CS Contact	2.71 (2.43)
Violent Offender	34 (69.4%)
Ethnicity	
<i>White</i>	29 (59.2%)
<i>Indigenous</i>	10 (20.4%)
<i>Other</i>	10 (20.4%)
Gang Member	32 (62.7%)
Gang Member Pre CS ^a	4 (7.8%)
Gang Member Post CS ^b	31 (60.8%)
Current Gang Member ^c	11 (21.6%)

^a Pre-CS GM is anyone who was a gang member prior to the CS gang being active progressive soft tissue rehabilitative program.

^b Post-CS GM is anyone who was a gang member after the CS gang. There was one CS member who was only a gang member for the time the CS gang was active—not before or after

^c Current GM is anyone who was still gang involved within the last year of coding

7.3.3. Analytic strategy

I begin the analysis by first examining if there is a prison gang association. This was done by splitting the sample into three categories: CS members ($n = 8$), alters in the during-CS network ($n = 12$), and alters exclusively in the post-CS network ($n = 29$). Splitting the sample into three groups I was able to examine whether being an active prison gang member has a greater impact on criminal careers compared to the alters, and if the prison gang association was dependent on *when* alters were connected to CS members (i.e. during the time was active vs. after the dissolution of the gang). The three groups were also compared across a variety of variables that could impact criminal career length. The second stage of the analysis examined whether embeddedness within the prison gang network influenced criminal career length. Using the mean social distance to every CS member as the measure of gang embeddedness and examined its relationship with criminal career length. For both stages of the analysis, criminal career length is the dependent variable. As per skewness (-0.98) and kurtosis (0.40) values, it is a normally distributed variable, making ordinary least squares (OLS) regression the best fit.

Chapter 8. The Social Capital of Gang Membership and the Length of Gang Careers

Gang research to date has focused on traditional risk factors, but the networks of gang members have been largely overlooked. The role peers play in the participation of deviant behaviors is a concrete finding in criminology; therefore, ignoring the network dynamics of gang members, we are missing a piece of the puzzle. The objective of this analysis is to examine whether the personal networks of gang members play a role in the length of their gang careers. Examining the social capital embedded within the networks of gang members may help us better understand the heterogeneity between members. The chapter starts by looking at changes across gang membership before I turn my attention to the dependent variables. To keep things in temporal order, time to gang membership is analyzed first followed by length of gang membership.

8.1. Changes across gang membership

First, I want to examine whether gang membership is attributed to an increase in social capital, and if so, does the social capital disappear once individuals leave the gang. I start by examining variables across membership status. Specifically, I compare the two network measures, proportion of prison ties, and the number of convictions. Doing so provides me the ability to determine how each measure changes with gang membership status. As seen in Table 3, during active periods of gang membership, there is a significant increase in network size. Network size increases almost six times during periods of gang membership (see Table 3). Previous research has shown that gang membership increases exposure to criminal opportunities and co-offenders (Bouchard & Spindler, 2010); therefore, having larger networks during periods of gang membership is in line with prior studies. The increase in network size can be visualized in Bruiser's network (Figure 6) presented earlier. Looking at his networks pre-gang membership to during-gang membership, the significant increase in the number of connections can be seen (also see Figure 7). Things reverse after gang membership ends. Network size decreases by almost three times after individuals are no longer gang members. During active periods of gang membership, members add on average seven new individuals to their networks, whereas, after gang membership, individuals on

average add only four new people to their network per year. In terms of size alone, the post-membership network are almost (but not quite) back to pre-membership levels (see Figure 7). This suggests that the size of networks after gang membership may overtime more closely resemble networks pre-gang membership.

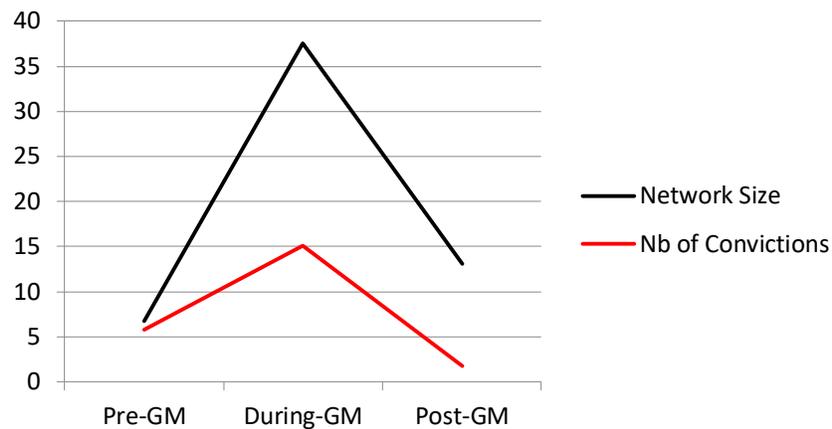


Figure 7. Changes in Network Size and Number of Convictions Across GM Status

Betweenness centrality follows the same pattern as network size. As youth become gang members, they occupy more strategic positions within their networks than pre-gang membership. As networks increase in size, gang members are able to broker more relations between individuals within their network. Looking at Figure 6, Bruiser has very few alters who are connected to one another, showing how he has set himself to broker relations between the majority of alters in his network. While betweenness does decrease after individuals leave the gang, it is still six times higher than pre-gang membership (see Figure 8). This suggests that even after periods of gang membership, individuals still benefit from the social capital acquired during gang membership. Looking at the proportion of prison ties, gang members have a significant increase pre- to during-gang membership indicating gang members may be utilizing their time spent in prison to expand their networks increasing their criminal social capital (see Table 3). Similar to the pattern seen with betweenness, the proportion of prison ties is significantly higher post-gang membership than pre-gang membership. This shows that the network changes that occur during gang membership remain even after individuals leave the gang. Lastly, during active periods of gang membership, gang members have three times the number of convictions. Interestingly, there are no significant differences in the number of convictions pre- and post-gang membership. Taking these findings as whole, they

suggest during periods of active gang membership, gang members in this sample are being exposed to new opportunities and resources.

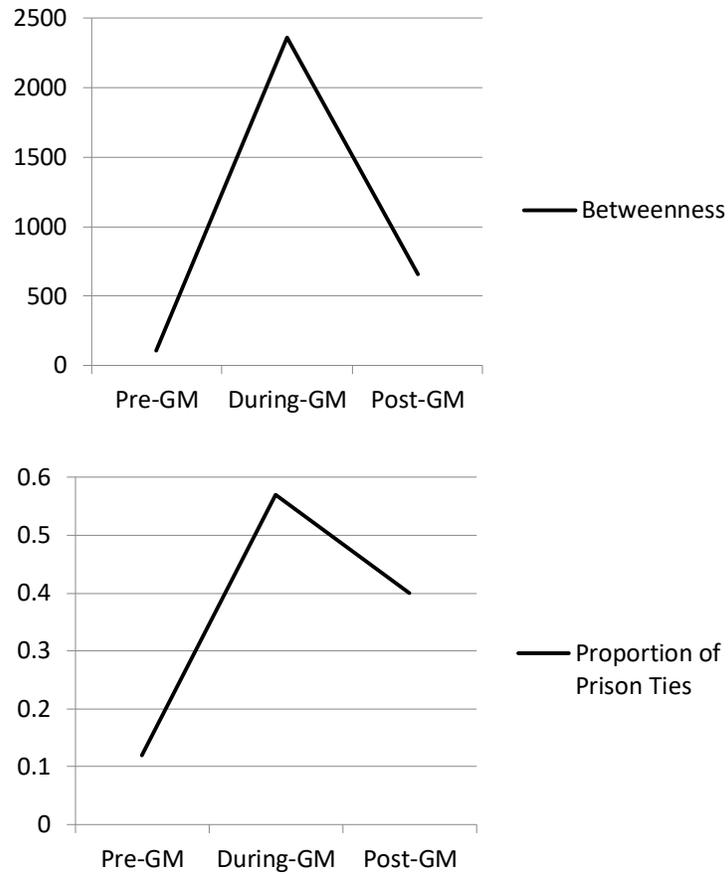


Figure 8. Changes in Betweenness Centrality and Proportion of Prison Ties across GM Status

Table 3. Descriptives Comparing Pre-, During-, and Post-Gang Membership (n = 41)

	Pre-GM (906 Days)	During-GM (2001 Days)	Post-GM (1268 Days)
	M (SD)	M (SD)	M (SD)
Network Measures			
<i>Size^{bc}</i>	6.70 (1.32)	37.51 (4.89)	13.10 (3.49)
<i>Betweenness^{bcd}</i>	106.56 (32.17)	2361.47 (538.04)	656.20 (252.27)
Race/Ethnicity			
<i>White</i>	21 (51.2%)		
<i>Indigenous</i>	13 (31.7%)		
<i>Other</i>	7 (17.1%)		
Risk Factors			
<i>Number of Convictions^{bc}</i>	5.80 (7.20)	15.15 (13.14)	4.90 (8.80)
<i>Proportion of Prison Ties^{bcd}</i>	0.12 (0.04)	0.57 (0.05)	0.40 (0.07)
<i>Age of First CJS Contact</i>	14.08 (1.30)		
<i>Foster Care^a</i>	20 (48.8%)		
<i>Physical Fighting^a</i>	29 (70.7%)		
<i>Family Crim Record^a</i>	30 (73.2%)		

a = yes: percentages are reported for youth who were in foster care, involved in early childhood physical fighting, and had family involved in the CJS

b = Repeated measures ANOVA: significant difference between pre- and during-gang membership

c = Repeated measures ANOVA: significant difference between during- and post-gang membership

d = Repeated measures ANOVA: significant difference between pre- and post-gang membership

8.2. Time to gang membership

One of the main objectives of this chapter is to begin to uncover how a person's network could impact the time it takes to become a gang member. The Kaplan-Meier curve shows the pattern of survival rates for the overall sample. Results show the risk of becoming a gang member is greatest in the first couple years after initial involvement within the criminal justice system. Of note, 19% of the sample did join a gang within the first year involved within the criminal justice system. Using the median as the cut-off point, I split the networks by size. As seen in Figure 9, youth who have smaller networks before gang membership, become gang members faster.

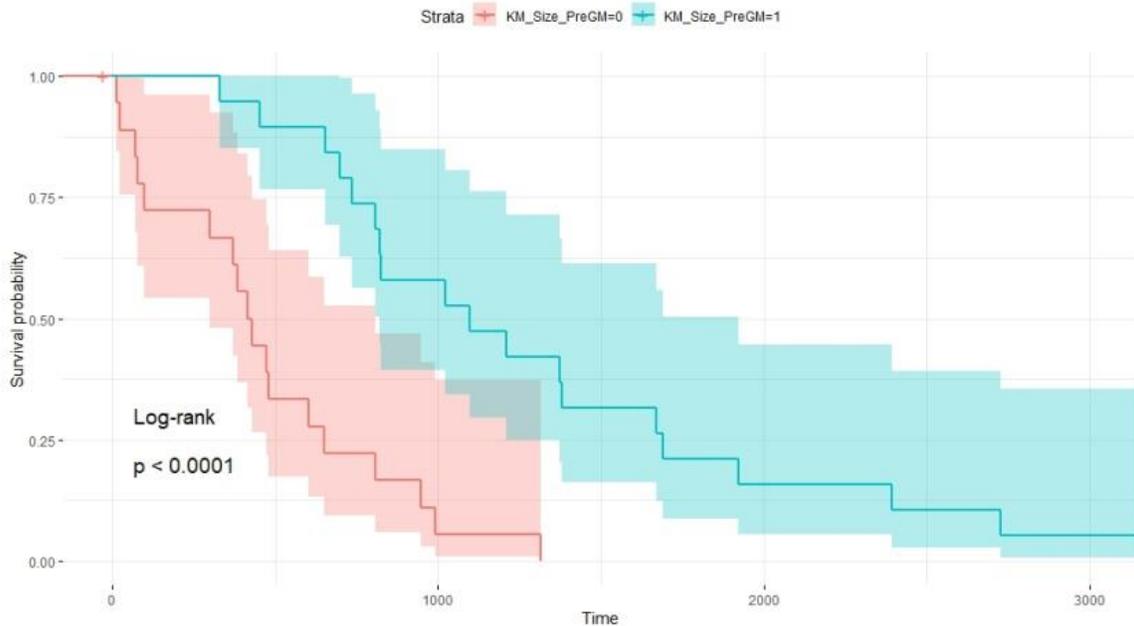


Figure 9. Kaplan-Meier Survival Curve for Time to Gang Membership x Network Size

Note 1. Shaded area is the confidence intervals
 Note 2. Red is small network, green is large network

Table 4 includes the variables that contribute to survival times. First, the static risk factors. Race/ethnicity, foster care, fighting before 12 years old, and family members involved in the criminal justice system are not associated with time to membership at the univariate level. Age of first contact with the CJS is significantly related with the time it takes to become a gang member (see Table 4, Model 1). The older youth are when they first enter CJS, the quicker they become gang members. The average age of first CJS involvement was 14; whereas, the average age of first gang indication was 16. The younger youth in this sample took on average two years to become a gang member. This finding reveals there may be a transition period before becoming a gang member. In contrast, youth who are older when they first enter the criminal justice system do not necessarily require the same transitional period. These youth have an accelerated timeline. The number of convictions and the proportion of prison ties are also significantly associated with the time to gang membership. As shown in Model 1 of Table 4, the more convictions youth have ($b = -0.05, p < 0.05$) and the higher proportion of prison ties ($b = -1.64, p < 0.05$), the longer it takes to become a gang member.

To examine this further, I conducted a multivariate Cox regression. Given the small sample size and some issues of multicollinearity I could only include one network

measure as a covariate. Based on model fit, I selected network size. Starting with the control variables in Model 2, age of first contact in the CJS and proportion of prison ties remain significantly associated with time it takes to become a gang member, while the number of convictions loses its effect. Adding in network size (Model 3), age continues to be significant, but proportion of prison ties is no longer. Network size is significant. The negative co-efficient indicates that youth who have larger networks before gang membership take longer to become a gang member ($b = -0.10, p < 0.01$). This finding supports what was seen in the at the univariate level, visualized in the Kaplan-Meier curve.

The size of an individual's network and the number of convictions are not independent from one another. The more convictions youth receive the more co-offenders youth are possibly exposed to. With more co-offenders come potentially more opportunities to commit crime. In order to examine how these two variables co-vary, I created an interaction term with number of convictions and network size. As seen in Model 4, with the addition of the interaction term, the stand alone effect for network size remains; youth who have larger networks, take longer to become gang members ($b = -0.14, p < 0.001$). Of note, the interaction term is positive and significant ($b = 0.52, p < 0.01$). Neither network size nor the number of convictions, independently, had a positive effect on time to gang membership – both were negative effects. This finding suggests that youth who built their networks through multiple convictions (i.e. more co-offenders) became gang members more quickly.

Table 4. Univariate and Multivariate Analysis Examining Time to Gang Membership (*n* = 41)

	Model 1 Univariate	Model 2 Control Variables	Model 3 Full Model	Model 4 Interaction
Network Measures				
<i>Size</i>	-0.11 (0.03)***	-	-0.10 (0.03)**	-0.14 (0.04)***
<i>Betweenness</i>	-0.01 (0.00)*	-	-	-
Demographics				
<i>Ethnicity</i>	0.26 (0.22)	-	-	-
Risk Factors				
<i>Nb of Convictions</i>	-0.05 (0.03)*	-0.05 (0.03)	-0.02 (0.03)	-0.05 (0.03)
<i>Age First CJS Contact</i>	0.34 (0.16)*	0.32 (0.16)*	0.32 (0.16)*	0.33 (0.16)*
<i>Foster Care</i>	-0.22 (0.34)	-	-	-
<i>Early Physical Fighting</i>	-0.38 (0.36)	-	-	-
<i>Family Crim Record</i>	0.02 (0.37)	-	-	-
<i>Proportion of Prison Ties</i>	-1.64 (0.82)*	-1.98 (0.82)**	-0.90 (0.75)	-0.45 (0.73)
Interaction				
<i>Network Size x Nb of Convictions</i>	-	-	-	0.52 (0.20)**
<i>Log Rank Score</i>	-	12.92**	20.96***	28.18***

+*p*<0.10 **p*<0.05 ***p*<0.01 ****p*<0.001

8.3. Length of gang membership

The second objective of this chapter is to examine how a gang member's network may impact the length of gang membership. I wanted to look at this in two ways: 1) does the structure of one's network pre-gang membership impact the length of gang membership? and 2) does the structure of one's network during gang membership effect the length of gang membership? Analogous to risk factors increasing the length of gang membership, I wanted to examine whether having certain network features before gang membership are advantageous for a longer gang career.

Results from the Kaplan-Meier show the risk for leaving a gang is greatest around five years (approximately 1800 days) after becoming a gang member. After this time period, there is a steady decline in survival rates. Figure 10 visualizes the survival times by network size for pre- and during-gang membership. Again, using the median as a cut-off point, youth who have larger networks before gang membership, are gang members for less time. More specifically, for youth who had large networks, the first gang member to leave occurred less than one year after joining. In contrast, youth who had smaller networks pre-gang membership, it took over two years before the first gang member left. This finding supports what was seen when time to gang membership was examined. Youth who had larger networks pre-gang membership, took longer to become gang members. This suggests that youth who are able to build their networks prior to gang membership have shorter gang careers. In contrast, youth who have larger networks during active periods of gang membership, they are involved in gangs for longer. For these youth, the first gang member didn't leave until three years after joining.

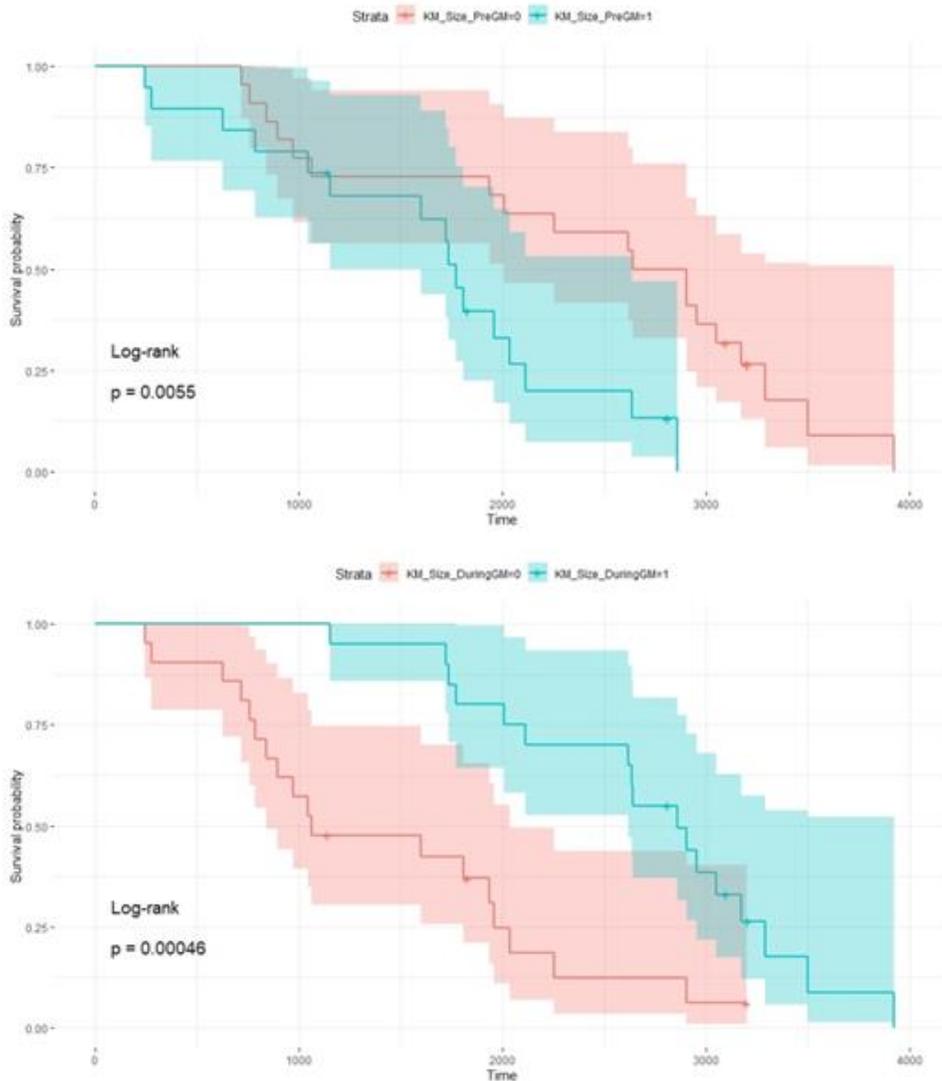


Figure 10. Kaplan-Meier Survival Curve for Length of Gang Membership x Network Size

Note 1. Shaded area is the confidence intervals

Note 2. Figure on top = network size Pre-GM

Note 3. Red = small network, green = large network

Table 5 displays the variables associated with survival rates. As seen in Model 1, youth in foster care ($b = -0.78, p < 0.05$) and youth with more convictions during gang membership ($b = -0.03, p < 0.05$) have significantly longer gang careers. In contrast, youth who have a larger proportion of prison ties pre-gang membership, have shorter gang careers ($b = 2.42, p < 0.001$). Network size is significant for both pre-gang membership and during-gang membership, but the coefficients are in the opposite direction. Youth who have larger networks before gang members ($b = 0.07, p < 0.01$) are

members for less time; whereas, youth who build their networks during gang membership ($b = -0.03, p < 0.01$) are gang members for longer. Of note, betweenness centrality is associated with less time spent in a gang. Youth who are strategically located in their positive network pre- and –during gang membership, are gang members for less time.

Model 2 is the multivariate regression. Beginning with the control variables, youth in foster care and youth who have a higher proportion of prison ties during-gang membership, have longer gang careers. Whereas, youth who have a higher number of convictions ($b = 0.09, p < 0.01$) and proportion of prison ties pre-gang membership ($b = 3.55, p < 0.001$) spend less time as gang members. Model 3 examines the full network. Again, due to issues of multicollinearity, I had to choose one network measure. Results of the nested model comparison revealed network size was the better fitting model; therefore, network size was selected over betweenness. When network size was added into the model, the number of convictions pre-gang membership and the proportion of prison ties during-gang membership lose their effect. The proportion of prison ties pre-gang membership and foster care remain significant. Network size is not significant. Interaction variables with size and convictions were added in Model 4 to determine whether the social context of connections influences the length of time spent in a gang. As it can be seen, social context does seem to matter. In Model 5, the interaction with size during-gang membership and the main effect for size during-gang membership are significant, but the co-efficients are opposite. This suggests that how youth build their networks matter. For youth who build their networks through convictions, they exit the gang sooner ($b = 0.83, p < 0.001$). Yet, for youth who build their networks without convictions, are gang members for longer ($b = -0.04, p < 0.01$). The proportion of prison ties pre-gang membership is still significant-youth who have a higher proportion of prison ties before gang membership, exit the gang sooner ($b = 3.10, p < 0.01$). The combined results from time to membership and length of membership suggest that when connections are created and where they are created are influential on gang membership.

Table 5. Univariate and Multivariate Analysis Examining Length of Gang Membership (n = 41)

	Univariate Regression b (SE)	Model 2 Control Variables b (SE)	Model 3 Full Model b (SE)	Model 4 Interaction b (SE)
Network Measures				
<i>Size Pre-GM</i>	0.07 (0.02)**	-	0.05 (0.03)	0.07 (0.04)
<i>Size During-GM</i>	-0.03 (0.01)**	-	-0.02 (0.02)	-0.04 (0.01)**
<i>Betweenness Pre-GM</i>	0.02 (0.01)*	-	-	-
<i>Betweenness During-GM</i>	0.00 (0.00)*	-	-	-
Demographics				
<i>Ethnicity</i>	-0.04 (0.24)	-	-	-
Risk Factors				
<i>Nb of Convictions Pre-GM</i>	0.03 (0.02)	0.09 (0.03)**	0.05 (0.03)	0.02 (0.04)
<i>Nb of Convictions During-GM</i>	-0.03 (0.02)*	-0.02 (0.02)	-0.01 (0.02)	-0.02 (0.02)
<i>Age First CJS Contact</i>	0.02 (0.14)	-	-	-
<i>Foster Care</i>	-0.78 (0.36)*	- 1.44 (0.43)***	-0.98 (0.49)*	-0.67 (0.48)
<i>Early Physical Fighting</i>	0.23 (0.40)	-	-	-
<i>Family Crim Record</i>	-0.13 (0.38)	-	-	-
<i>Proportion of Prison Ties Pre-GM</i>	2.42 (0.85)**	3.55 (0.96)***	2.68 (1.16)*	3.10 (1.23)**
<i>Proportion of Prison Ties During-GM</i>	-1.12 (0.70)	-1.89 (0.88)*	-1.26 (1.01)	0.06 (1.03)
Interaction				
<i>Size x Nb of Convictions Pre-GM</i>	-	-	-	0.27 (0.24)
<i>Size x Nb of Convictions During-GM</i>	-	-	-	0.83 (0.25)***
<i>Log Rank Score</i>	-	27.95***	29.28***	44.52***

+p<0.10 *p<0.05 **p<0.01 ***p<0.001

8.4. The strength of networks: Does type matter?

The results from the survival analysis show that network size is one of the most important predictors for gang careers. When looking at the results as a whole, they show that size matters, but it is when youth build their networks that have a different effect. Could this be a by-product of how youth are growing their networks? In other words, is the quality of ties the reason for these discrepancies? Additional analyses are necessary to break down this finding further. I split network the network into positive and negative networks. Positive networks are comprised of social and co-offending ties, and negative networks include conflict and victimization ties.¹⁹ In order to determine whether the type of network matters, I focus on network size. I select size because I am able to examine it in both the positive and negative networks, as well as it was a main finding from the analysis above. Due to the small sample size, I keep this analysis at the bivariate level.

First, I look at changes across gang membership status. It is known that gang members are exposed to more co-offenders and opportunities to commit crime, is this represented in their networks? If so, there should be an increase in the size of positive networks during gang membership. However, research has also established that gang membership increases risk of victimization and conflicts. The tit for tat acts of violence that is characteristic of gangs increases the number of negative connections. How does this relate to the personal networks of gang members? As seen in Table 6 and Figure 11, during active periods of gang membership, there is a significant increase in size for both positive and negative networks. In the positive network, the number of connections increases by a factor of 8 during periods of gang membership from pre-gang membership. This finding does support previous research which had found gang membership to increase exposure to criminal opportunities (Bouchard & Spindler, 2010). In comparison, there is an increase by a factor of 5 in size for the negative network. This supports the finding from previous research that there is an increase in violence and victimization that is associated with gang membership (Decker & Pyrooz, 2010; Krohn et al., 2011; Pyrooz et al., 2014a; Taylor et al., 2008). As seen in Table 3, during active periods of gang membership, members add six new ties to their networks. By breaking down the networks into positive and negative, it is revealed that gang members add four

¹⁹ Victimization can be the gang member victimized the alter or the alter victimized the gang member. The other three types of ties were not directional, so I made victimization also non-directional

positive and two negative connections. In contrast, after gang membership, individuals on average add four new people to their network per year - three positive and one negative.

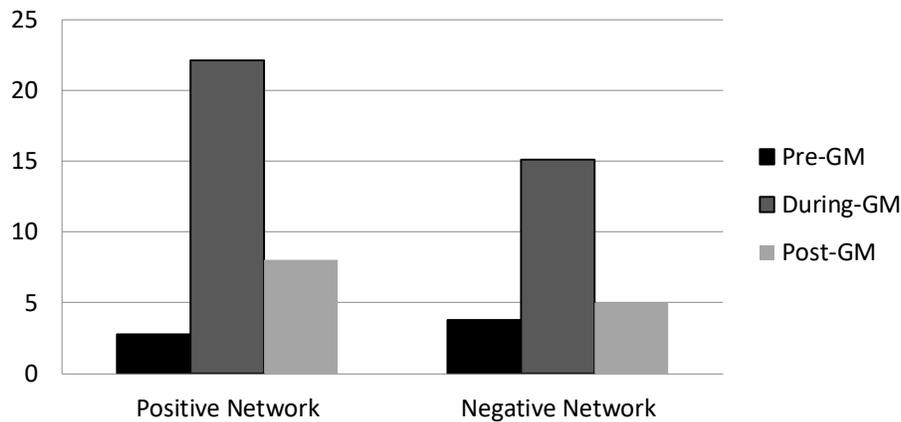


Figure 11. Type of Network x Size Across Gang Membership Status

Table 6. Comparisons by Type of Network Size x Gang Membership Status (n = 41)

	Pre-GM (906 Days)		During-GM (2001 Days)		Post-GM (1268 Days)	
	M (SD)		M (SD)		M (SD)	
	Positive	Negative	Positive	Negative	Positive	Negative
Network Size ^{ab}	2.80 (4.51)	3.80 (4.76)	22.30 (22.14)	15.10 (10.91)	7.98 (15.34)	5.10 (8.62)

a = Repeated measures ANOVA: Significant difference between pre- and during-gang membership

b = Repeated measures ANOVA: Significant difference between during- and post-gang membership

The question still remains - do the types of ties that are associated with gang membership influence their gang careers? Again, due to sample size I keep it simple, looking at bivariate associations. Both positive and negative connections are related to the time it takes to become a gang member. The larger the networks, the longer it takes to become gang members (Table 7). This finding mirrors what was seen in the original analysis. This is visualized using Kaplan-Meier curves. Using the median as a cut-off, in both figures, it can be seen that individuals with smaller networks, no matter the type of network, become gang members faster than individuals with larger networks (see Figure 12). Moving to length of gang membership, the size of the networks again matters. There are no differences in the direction of relationship for positive and negative

networks, the only difference is gang membership status (pre- or during-gang membership). Youth who have larger negative networks before becoming gang members, are members for less time; whereas, youth who build their networks during gang membership have longer gang careers (Table 7). This is also seen using a Kaplan-Meier curve (Figure 13).

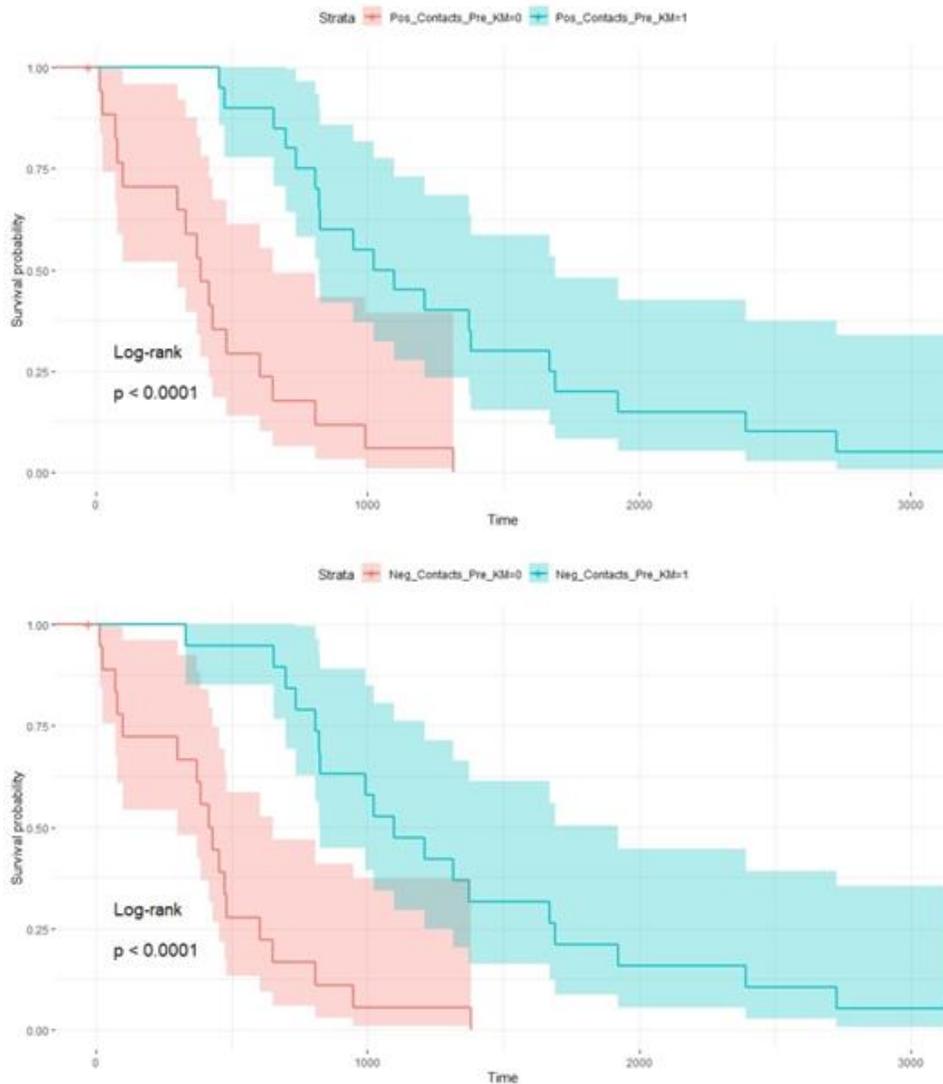


Figure 12. Kaplan-Meier Survival Curve for Time to GM x Network Size

Note 1. KM curve on the top = positive network

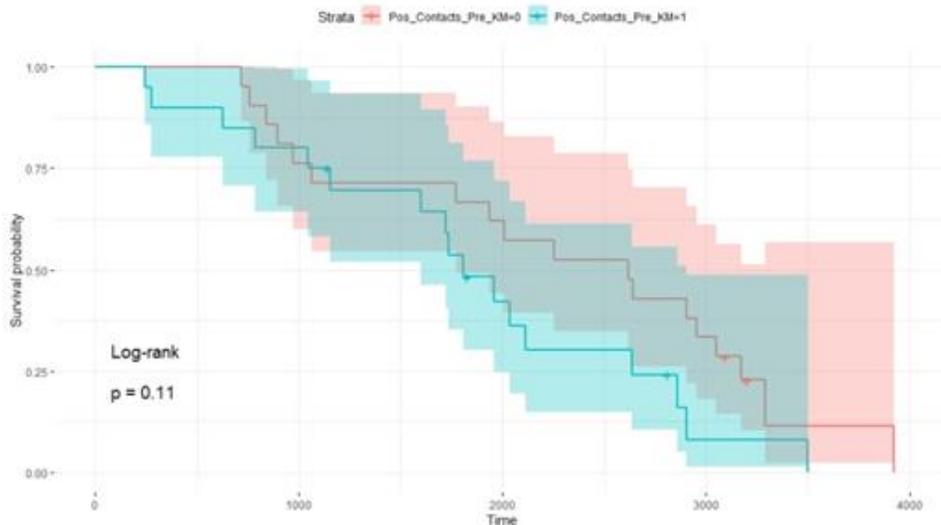
Note 2. Red = small network

Note 3. Shaded area is the confidence intervals

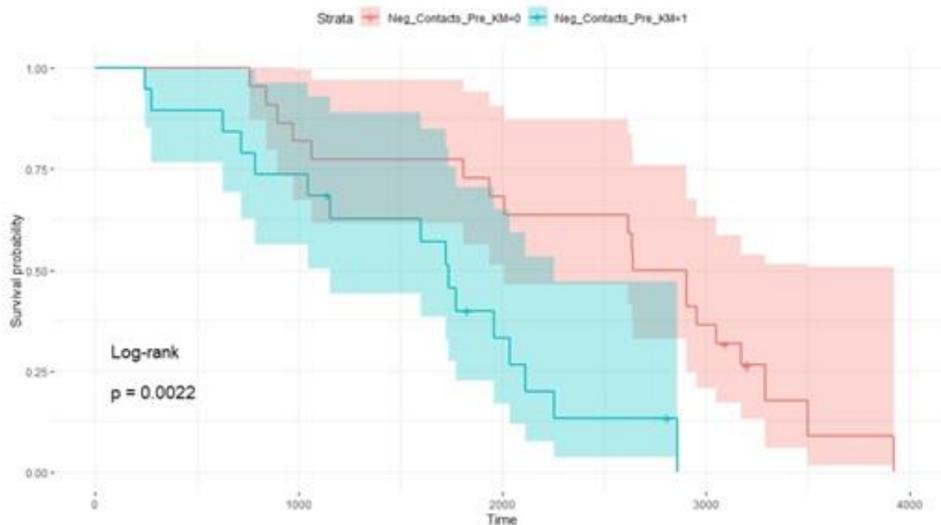
Table 7. Correlations Examining Time to Gang Membership and Length of Gang Membership by Network Size ($n = 41$)

	Time to Gang Membership	Length of Gang Membership
Network Size		
Positive Pre-GM	0.76***	-0.40
Negative Pre-GM	0.74***	-0.42**
Positive During-GM	-	0.64***
Negative During-GM	-	0.63***

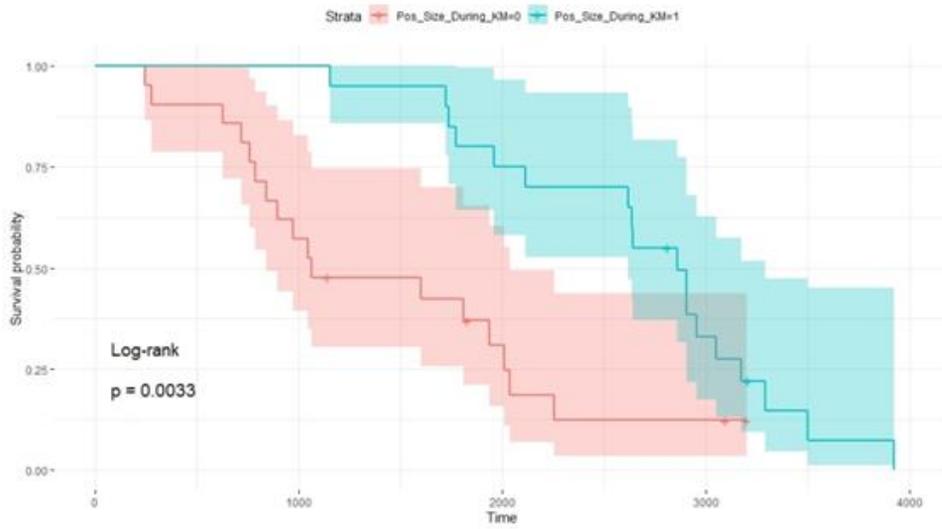
Note. Correlation co-efficient = spearmans rho



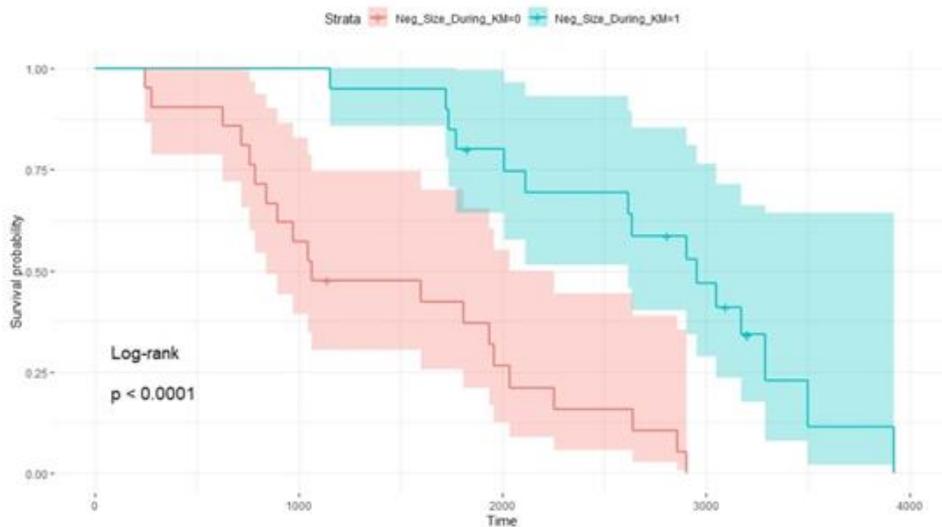
Pre-Gang Membership Positive Network



Pre-Gang Membership Negative Networks



During Gang Membership Positive Network



During Gang Membership Negative Network

Figure 13. Kaplan-Meier Survival Curves for Length of GM x Network Size

Note 1. Red = small network

Note 2. Shaded area is the confidence intervals

The results from this analysis reveal that it is not necessarily the type of network that impact gang careers. Rather, it is *when* youth build their networks. Positive and negative networks had similar associations with the only difference being gang membership status. As such, understanding how youth are able to build their networks and whether they need the assistance from the gang to grow their criminal capital seems

to be what influences gang careers. This is the same finding from the survival analysis; network size matters, but when it matters differs.

Chapter 9. What's in a label? The role of social networks in the criminal careers of gang and non-gang youth

The goal of this chapter is to examine whether the social context and/or label of gang member influence criminal career length. I use a matched control sample that is entrenched within the criminal justice system. Using a criminally embedded control group may isolate the effects of gang membership more so than community based samples. Examining the social worlds of these two groups, I am able to determine whether gang members do have a criminal advantage that provides them with the criminal opportunities to have longer criminal careers. Similar to Chapter 8, I first compare the gang members and non-gang members to see if there are any differences between the two groups beside membership status. I then move onto the multivariate analysis examining criminal career length.

9.1. Comparison of gang and non-gang members

As seen in Table 8, there is only one significant difference between gang members and non-gang members for the characteristics included: gang members are significantly younger than others ($M = 14.8$ years vs $M = 15.6$ years) when they first enter the CJS. Gang members are almost one full year younger when they first enter the CJS than non-gang members. Of the characteristics that were not shown to be significant, a few are relatively unexpected given what we know on gang members. For instance, it is somewhat surprising to see there is no significant difference between gang and non-gang members on criminal career length. Gang membership has been labeled a snare in the life-course increasing length of residual criminal careers, but for this sample, there is no significant difference between gang and non-gang members. Gang membership is known to increase offending opportunities and criminal versatility, yet for this sample, there are no differences between gang and non-gang members on any of the network variables. While these findings are unexpected, remember the control group is a criminally entrenched sample of non-gang members. Therefore, it is not a bad sign per se given the objectives of the chapter. The 28 non-gang members were selected because they resembled the gang members, just without the gang label. I did this to

ensure the control group was as close to the gang members as possible as I wanted to make sure I was able to isolate the effects of gang membership as much as I could.

Table 8. Comparisons between Gang and Non-Gang Members (n = 69)

	Gang Member (n = 41)	Non-Gang Member (n = 28)	
<i>M (SD)/ n (%)</i>			
Dependent Variables			
<i>Criminal Career Length^c</i>	10.80 (2.41)	11.50 (3.56)	NS
Independent Variables^a			
<i>Network Size</i>	57.00 (34.43)	57.29 (57.45)	NS
<i>Constraint</i>	0.06 (0.08)	0.06 (0.07)	NS
<i>Density</i>	0.03 (0.03)	0.06 (0.20)	NS
<i>Betweenness</i>	4531.53 (4573.28)	6519.91 (16585.72)	NS
Control Variables			
Ethnicity^b			
<i>White</i>	21 (51.2%)	20 (71.4%)	
<i>Indigenous</i>	13 (31.7%)	6 (21.4%)	
<i>Other</i>	7 (17.1%)	2 (7.2%)	
<i>Proportion Prison Ties^a</i>	0.58 (0.25)	0.56 (0.40)	NS
<i>Age First CJS Contact^c</i>	14.80 (1.30)	15.64 (1.91)	*
<i>Nb of Youth Convictions^a</i>	4.67 (3.90)	4.30 (2.66)	NS
<i>Foster Care^b</i>	20 (48.7%)	18 (64.2%)	NS
<i>Early Physical Fighting^b</i>	29 (70.7%)	22 (78.6%)	NS
<i>Family Criminal Record^b</i>	30 (73.2%)	20 (71.4%)	NS
<i>Drug Use^a</i>	1.71 (1.49)	2.00 (1.24)	NS

+p<0.10 *p<0.05 **p<0.01 ***p<0.001

a = Mann Whitney U

b = Chi-square

c = t-Test

9.2. Criminal career length

Gang membership has been labeled as a negative turning point in the life-course of members. Gang membership decreases access to prosocial institutions while increasing connections to antisocial peers. As a result, gang members have less education, higher rates of addictions, and increased involvement in the criminal justice system. It would therefore be expected that the criminal careers of gang members will be longer than non-gang members. As seen in Table 9, this may not be the case. The criminal career length of gang members is not significantly different from non-gang members. However, almost every network measure has an effect on criminal career

length. Individuals who have larger networks and occupy strategic positions have longer criminal careers. Recall constraint is an inverse measure of Burt's (1992) structural holes theory; therefore, the negative co-efficient is what is expected theoretically and is a sign of social capital. Of note, the results show that the proportion of prison ties have an effect on criminal career length above network size as a whole. This suggests that the connections made in prison may have an independent impact. Individuals who are able to have a larger proportion of prison connections, have longer criminal careers. Important to keep in mind as a potential explanation to this is that more prison ties may be a by-product of a longer prison sentence which would increase criminal career length. I do not test for this in the current dissertation, but it does show that the connections made in prison could be important for shaping criminal trajectories. This does need to be fleshed out in future research. As expected, individuals who have more convictions, are younger when they first enter the CJS, and have family members in the criminal justice have longer criminal careers.

Table 9. Bivariate Associations between Covariates and Criminal Career Length (*n* = 69)

Independent Variables ^a	
<i>Network Size</i>	0.56***
<i>Constraint</i>	-0.59***
<i>Density</i>	-0.21+
<i>Betweenness</i>	0.57***
<i>Gang Member^b</i>	0.13
Control Variables	
<i>Ethnicity^c</i>	0.10
<i>Age First CJS Contact^d</i>	-0.45**
<i>Nb of Youth Convictions^a</i>	0.49***
<i>Proportion of Prison Ties^a</i>	0.39***
<i>Foster Care^b</i>	0.23+
<i>Early Physical Fighting^b</i>	0.16
<i>Family Criminal Record^b</i>	0.27*
<i>Drug Use^a</i>	0.10

+*p*<0.10 **p*<0.05 ***p*<0.01 ****p*<0.001

a = Spearmans Rho correlation

b = t-Test; Eta

c= Anova; Eta

d = Pearsons correlation

Presented in Table 10 are the results of the OLS regression. Due to issues with multicollinearity, I included one network measure of social capital and one measure of

network structure as covariates. Based on model fit, I selected network size as my social capital measure and constraint as my network structure measure. Model 1 consists of the controls and gang membership. As it can be seen, individuals who have a larger proportion of prison ties have significantly longer careers ($b = 4.17, p < 0.001$). Unexpectedly, gang membership has a negative co-efficient - non-gang members have longer criminal careers than gang members ($b = -1.54, p < 0.01$) when controlling for other factors. In Model 2, I add in the network variables. The results seen in Model 1 remain significant. The proportion of prison ties are influencing criminal career length even after network size is added into the model. This shows that the connections made in prison may be qualitatively different, having a specific impact on criminal trajectories. Looking at the network variables, individuals with larger networks ($b = 0.01, p < 0.05$) and more structural holes in their network²⁰ ($b = -11.38, p < 0.01$), have longer criminal careers. This is a sign that individuals with more social capital remain in the criminal justice for longer.

Recall, the main objective of this analysis is to determine whether it is the social context or the label of gang member that influences criminal career length. As previously stated, there is reason to suspect that it is a combination of the two. Gang members may be provided with more criminal opportunities because of their status of gang members. If so, then the networks of gang members will reflect this as gang members will utilize their position to gain more capital. As a result, gang members will have longer criminal careers. In order to test this, I created two interaction terms with gang membership and the two network variables. In Model 3, I added in the constraint interaction and it is not significant. However, network size and constraint remain significant predictors. The interaction with size (Model 4) is significant but negative. This indicates that gang members with larger networks have shorter criminal careers ($b = -0.45, p < 0.05$). Of note, when the interaction is added into the model, the main standalone effect of network size disappears. Due to proportion of prison ties being a consistent predictor for criminal career length, I created an interaction term with gang membership. I wanted to see if gang members with more prison ties had longer criminal careers. As it can be seen in Model 5, they do not. While the interaction term is significant, the co-efficient is negative.

²⁰ Recall constraint is an inverse measure; therefore, a negative score for constraint is a sign of social capital. A higher constraint score is indicative of fewer structural holes. In contrast, a lower constraint score is indicative of more structural holes. The more structural holes in a network decreases the amount of redundant information

This indicates that there is a subset of gang members who have a greater proportion of prison ties with shorter criminal careers. Overall, the results from the regression suggest that the label of gang member may be too simplistic and there are other factors that are important to consider.

Table 10. OLS Regression Examining Criminal Career Length (*n* = 69)

	Model 1 Gang Member	Model 2 Full Model	Model 3 Constraint Interaction	Model 4 Size Interaction	Model 5 Prison Ties Interaction
	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	24.81 (3.04)***	22.90 (2.73)***	22.64 (2.72)***	23.23 (2.63)***	22.67 (2.69)***
Independent Variables					
<i>Network Size</i>	-	0.01 (0.01)*	0.01 (0.01)*	0.01 (0.01)	0.01 (0.01)*
<i>Constraint</i>	-	-11.74 (3.81)**	-13.34 (3.88)**	-13.71 (3.74)***	-13.13 (3.81)***
<i>Gang Member</i>	-1.54 (0.53)**	-1.36 (0.47)**	-1.35 (0.47)**	-1.35 (0.45)**	-1.35 (0.46)**
Control Variables					
<i>Age First CJS Contact</i>	-0.94 (0.17)***	-0.74 (0.17)***	-0.72 (0.17)***	-0.73 (0.17)***	-0.71 (0.17)***
<i>Nb Youth Convictions</i>	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.01)
<i>Family Crim Record</i>	-1.23 (0.57)*	-1.15 (0.51)*	-1.05 (0.51)*	-1.17 (0.49)*	-0.91 (0.51)+
<i>Proportion Prison Ties</i>	4.17 (0.81)***	1.76 (0.88)*	1.54 (0.88)+	1.90 (0.85)*	0.96 (0.96)
Interactions					
<i>Size x GM</i>	-	-	-	-0.58 (0.23)**	-
<i>Constraint x GM</i>	-	-	0.40 (0.24)	-	-
<i>Prison Ties x GM</i>	-	-	-	-	-0.46 (0.24)*
R ²	0.53	0.65	0.66	0.68	0.67
Adjusted R ²	0.49	0.61	0.62	0.64	0.63

+p<0.10 *p<0.05 **p<0.01 ***p<0.001

Chapter 10. The Role of Proximity on Criminal Career Length

As mentioned earlier, the aim of this chapter is to examine whether being embedded within a prison gang influences the length of residual criminal careers. The group processes of gangs have been argued to be largely responsible for the outcomes associated with gang membership, but research has yet to examine this from a network perspective. To do this, I use a case study of a youth prison gang that formed while eight youth were incarcerated together in one correctional facility. Focusing on the CS gang, I was able to extract alters who were connected to the gang members, but at different time points (during- and post-CS gang). Expanding the analysis to the CS gang, I am able to 1) move past the gang label and focus on the social context surrounding the individuals within the network, and 2) examine how being embedded within a gang network impacts the criminal careers for the gang and non-gang members. As mentioned previously, the resources and opportunities that are believed to be associated with gang membership spill through the network. Non-gang associates who are interconnected with gang members are exposed to similar opportunities through their connections. As such it is hypothesized that it is the proximity of connections that is going to influence criminal career length. Furthermore, knowing when alters were connected to CS members (during or after the gang), I am able to examine if it is the timing of connections that is influential on criminal careers.

10.1. Does timing of connectivity matter?

The alters in the during-CS network are connected to gang members in an active prison gang, while the alters in the post-CS network are connected to gang members, but who are no longer involved in an active prison gang. Thus, the main difference between the two groups of alters is whether their tie was to a “prison gang member” or to a “gang member that happened to be in prison”. Of note, while the majority of CS members remained gang involved after the gang dismantled, they identified as gang members in the community, with many being members to different gangs from one another.

It was hypothesized that the prison gang effect would be greater for CS members than individuals simply exposed to them. It is reasonable to suspect CS members would be more embedded than the contemporaries of the gang which would increase the length of their residual criminal careers. Comparing across the three groups, the results suggest that this was not necessarily the case. Looking at Table 11, the alters in the during-CS network have the longest criminal careers. They are involved in the CJS for 1.5 years longer than CS members and 3.5 years longer than alters in the post-CS network. Post-hoc analysis revealed these differences are significant between the alters in the during- and post-CS networks, but not with the CS members. The alters in the during-CS network are also the youngest when they first enter the criminal justice system. In fact, they are a full year younger. Not surprising, the CS members are the closest in proximity to each other. Yet, there are significant differences between all three groups. While the CS members spend the shortest amount of time in the CJS before CS contact, there is only a significant difference between the CS members and the alters in the post-CS network. Alters in the during-CS network do not significantly differ in the amount of time involved in the CJS prior to CS contact than alters in the post-CS network or the CS members. As would be expected, CS members have the highest proportion of gang membership. Of note, the majority of their gang involvement occurs early in their criminal careers, with no CS member having any gang involvement at the end of the follow-up period. In contrast, 25% of the alters in the during-CS network and post-CS network are current gang members. Importantly, there were no group differences for the number of convictions before contact with CS member(s) or violent offender, indicating that the level of criminality did not differ between the youth.

Table 11. Bivariate Comparisons of CS Members and Alters Connected to CS Members (n = 49)

	CS Members (n = 8)	During CS Alters (n = 12)	Post CS Alters (n = 29)	Eta/ χ^2
	Mean (SD)/ n (%)			
Criminal Career Length	8.88 (2.17)	10.33 (1.23)	6.76 (2.76)	0.56***
Social Distance	1.43 (0.31)	1.91 (0.23)	2.40 (0.30)	0.80***
Age of First CJS Involvement	15.25 (1.30)	14.42 (1.17)	15.38 (1.21)	0.33+
Number of Convictions Pre CS Contact	13.50 (10.76)	8.92 (8.37)	14.80 (12.10)	0.22
CJS Contact Pre CS Contact	1.38 (1.19)	1.75 (1.66)	3.49 (2.68)	0.39*
Violent Offender	3.00 (37.5%)	9.00 (75.0%)	22.00 (75.9%)	0.31
Ethnicity				0.32
<i>White</i>	7.00 (87.5%)	5.00 (41.7%)	17.00 (58.6%)	
<i>Indigenous</i>	1.00 (12.5%)	4.00 (33.3%)	5.00 (17.2%)	
<i>Other</i>	0.00 (0.00%)	3.00 (25.0%)	7.00 (24.1%)	
Gang Member	8.00 (100%)	7.00 (58.3%)	17.00 (58.6%)	0.32+
Gang Member Pre CS	3.00 (37.5%)	1.00 (8.3%)	1.00 (3.6%)	0.40*
Gang Member Post CS	7.00 (87.5%)	7.00 (58.3%)	17.00 (60.7%)	0.22
Current Gang Member	0.00 (0.0%)	3.00 (25.0%)	8.00 (27.5%)	0.24

+p<0.10 *p<0.05 **p<0.01 ***p<0.001

The results of the bivariate analysis revealed the difference in criminal career length was between alters in the during-CS network and alters in the post-CS network. To test this further, I focus solely on comparing the two groups of alters at the multivariate level to find out whether the timing of connectivity matters²¹ (see Table 12). Model 1 contains the control variables, with the amount of time spent in the CJS pre-CS and age of first CJS contact negatively associated with criminal career length; whereas, number of convictions pre-CS is positively associated. The more time individuals spent in the CJS before contact with a CS member(s), the shorter their criminal careers ($b = -0.62, p < 0.01$). For youth who are younger when they first enter the CJS system ($b = -0.88, p < 0.001$) and have more convictions pre-CS ($b = 0.11, p < 0.05$), have longer criminal careers. Model 2 includes timing of connectivity and shows that individuals who were connected to CS members while the CS gang was active (during-CS network) had longer criminal careers ($b = 2.94, p < 0.001$). When timing of connectivity was added into the model, the age of first CJS contact and number of convictions pre-CS lost their

²¹ A regression was run with the full sample (n = 49) using the CS members as a control group, and the results were the same

significant association, while CJS contact pre-CS remained significant ($b = -0.56$, $p < 0.05$).

Table 12. OLS Regression Examining Timing of Connectivity and Social Distance on Criminal Career Length of the CS Gang Alters ($n = 41$)

	Model 1 Controls	Model 2 Timing	Model 3 Social Distance	Model 4 Interaction
	b (SE)	b (SE)	b (SE)	b (SE)
Constant	20.00 (5.65)***	10.01 (5.98)	20.88 (5.31)***	22.32 (5.01)***
Age of First CJS Contact	-0.82 (0.34)*	-0.29 (0.35)	-0.48 (0.35)	-0.47 (0.33)
Nb of Convictions Pre CS	0.11 (0.06)*	0.09 (0.05)	0.11 (0.05)*	0.10 (0.05)*
CJS Contact Pre CS	-0.88 (0.25)***	-0.56 (0.24)*	-0.83 (0.23)***	-0.76 (0.22)**
Gang Member	0.73 (0.95)	1.34 (0.87)	0.58 (0.89)	0.38 (0.84)
Violent Offender	0.22 (0.99)	0.47 (0.89)	0.61 (0.95)	0.35 (0.89)
Ethnicity ^a				
White	0.78 (1.16)	0.89 (1.03)	0.77 (1.08)	0.46 (1.02)
Indigenous	1.23 (1.21)	0.57 (1.10)	1.08 (1.14)	0.83 (1.10)
Met Active CS Member ^b	-	2.94 (0.95)***	-	-
Social Distance	-	-	-2.75 (1.16)**	-3.21 (1.10)***
Social Distance x GM	-	-	-	0.90 (0.38)*
R ²	0.38*	0.52***	0.47**	0.55***
Adjusted R ²	0.24*	0.40***	0.33**	0.42***

+ $p < 0.10$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

a Other is reference category

b Yes is 1 or alter in the during-CS network

10.2. Does social proximity matter?

Why would being connected to CS members during the time the gang was active have a greater effect on criminal careers? As seen in Figure 4, the alters in the during-CS network appear to be more embedded within the networks of the eight CS members. This could increase the effect of connecting with active prison gang member. Additionally, as seen in Table 2, the number of individuals who were gang members post-CS increased, meaning the alters in the post-CS network were more likely to be gang members than alters in the during-CS network at the time of connection, decreasing the potential influence of connecting with gang members. Being a gang member and associating with other gang members may not be as powerful as connecting with gang members would be for non-gang members. To try to answer this question, I used a social distance measure of gang embeddedness which was measured as the mean geodesic distance of each individual to all eight CS members.

When social distance is added to the model, there is a significant change from Model 1 to Model 3, with Model 3 accounting for 47% of the variance in criminal career length as opposed to 38% in Model 1. Seen in Model 3 of Table 12, the amount of time spent in the CJS before CS contact and number of convictions pre-CS are significantly associated with criminal career length. Social distance is a significant negative predictor indicating that individuals who are closer in proximity to CS members have longer criminal careers ($b = -2.75, p < 0.01$). From Table 2, we know the alters in the during-CS network on average were closer to CS members than alters in the post-CS network. I created an interaction effect between gang membership and social distance to examine if there is an effect of social distance for gang members specifically. The interaction of gang membership and social distance added to Model 4 was positive and significant ($b = 0.90, p < 0.05$). Gang members who were furthest away from the CS gang had long criminal careers. This reveals that there may be a subset of gang members who were already headed for a longer criminal career. Importantly, the interaction effect also impacted the stand-alone social distance measure, increasing its effect ($b = -3.21, p < 0.001$).

10.3. The inexorable effect of ageing?

The results show that individuals who were closer in social proximity and were connected to active prison gang members had longer residual criminal careers. One possibility is that these results are simply a matter of age. The individuals who were connected to CS members during the time the gang was active were younger when peer influence is stronger. I test this hypothesis by controlling for the age when individuals were first connected with a CS member. As seen in Model 1 of Table 13, the age when individuals first connect with a CS member(s) is significant ($b = -0.76, p < 0.01$). The younger individuals were when they first connected to CS members, the longer their criminal careers. Similar to what was seen from the results in Table 12, Model 4, individuals who were closer in proximity to CS members had longer criminal careers ($b = -3.21, p < 0.001$). I created an interaction term between age of first CS contact and social distance in order to see if the two co-vary. The main effects for social distance and age remained, while the interaction was not significant (see Table 13, Model 2). Model 3 shows that individuals who were connected to CS members during the time the gang was active had longer criminal careers than those who were connected after the

dissolution of the gang ($b = 3.60, p < 0.001$). Age also had a significant effect; youth who were younger when they first connected with CS members had longer criminal careers ($b = -0.56, p < 0.05$). As I did with social distance, I created an interaction term with age and connectivity. As seen in Model 4, the interaction is not significant and with its addition, the stand alone effect for age was lost while the effect for timing of connectivity remained.

Table 13. OLS Regression Examining the Effect of Age on Criminal Career Length ($n = 41$)²²

	Model 1: Social Distance	Model 2: SD Interaction	Model 3: Timing of Connectivity	Model 4: Timing Interaction
	b (SE)	b (SE)	b (SE)	b (SE)
Constant	23.51 (4.59)***	23.77 (5.56)***	12.24 (5.50)*	10.92 (6.43)
Age of First CJS Contact	0.21 (0.33)	0.21 (0.36)	0.21 (0.32)	0.22 (0.33)
Convictions Pre CS Contact	0.10 (0.05)*	0.11 (0.05)*	0.10 (0.05)*	0.10 (0.05)*
Gang Member	0.28 (0.71)	0.42 (0.78)	1.02 (0.74)	1.10 (0.76)
Age First CS Contact	-0.72 (0.21)***	-0.81 (0.23)***	-0.57 (0.22)*	-0.51 (0.28)
Social Distance	-3.20 (1.05)**	-2.74 (1.17)*	-	-
Social Distance x Gang Member	0.96 (0.36)**	-	-	-
Social Distance x Age First CS Contact	-	-0.20 (0.49)	-	-
Met Active CS Member ^a	-	-	2.82 (0.89)**	3.31 (1.50)*
Met Active CS Member x Age First CS Contact	-	-	-	0.31 (0.76)
R ²	0.54***	0.45**	0.50***	0.50***
Adjusted R ²	0.46***	0.35**	0.43***	0.41***

+ $p < 0.10$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

a 1 is Yes or alter in the during-CS network

²²Due to multicollinearity, length of time spent in the CJS Pre CS was excluded from the analysis. The main idea behind this analysis was to determine if age was the determining factor for the results seen with timing of connectivity; therefore, I focused on that variable for this model

Chapter 11. Discussion

Gangs are social groups comprised of interconnected members. Gang members take on collective identities, and partake in collective behaviors (Papachristos, 2006). When individuals become gang members, their networks grow organically. Even if connected to only one member of a gang, the gang member is indirectly connected to every other gang member in the gang. In addition, they are indirectly connected to all of the gang members' connections. On top of the increase in network size, gang members are exposed to more criminal opportunities and resources. As a result, gang membership should be associated with an increase in social capital. Whether there is an increase in social capital, and how that social capital influences the criminal trajectories was the foundation of the dissertation.

Gang research to date has focused largely on risk factors for joining gangs and the consequences of gang membership. It is well-known that gang members have more complex risk profiles than non-gang members (Gilman et al., 2014; Hill et al., 1999; Krohn et al., 2011; Thornberry et al., 1993; 2003) and the consequences of gang membership extend beyond the gang (Dong & Krohn, 2016; Gilman et al., 2014; Levitt & Venkatesh, 2001; Melde & Esbensen, 2011; 2013 Moore, 1991; Thornberry et al., 2003). In other words, being a gang member prolongs involvement within the criminal justice system even after individuals leave the gang. Yet, the role personal networks play remains to be unknown. Criminology has long been interested in the social aspect of deviant and criminal behaviors. Key criminological theories assert criminal behaviors are learned through social interactions (Akers, 1985; Bandura, 1969; Osgood et al., 1996; Sampson & Groves, 1988; Sutherland, 1947). In fact, one of the most robust findings in criminology is the role of peers in deviant behaviors (Hayne, 2001; Warr, 1996; 2002; Weerman, 2011). The social and criminogenic nature of gangs provides opportunities and resources to gang members that can change the size and structure of their networks. As such, there are reasons to suspect the personal networks of gang members will impact their criminal trajectories. A hypothesis of this dissertation is that the personal networks of gang members will be important for their criminal trajectories. How youth build their networks will impact their social capital (i.e. the type of connections, the number of new connections added) which will influence the length of

their gang and criminal career. Chapter 8 examined the influence of personal networks on gang careers, which are discussed later in this chapter.

Another hypothesis of this dissertation is that it would be the combination of gang membership and the social context that influenced criminal career length. The increase in criminal opportunities and co-offenders that is associated with gang membership should provide gang members more chances to grow their networks compared to non-gang members. The mere “brotherhood” of the gang expands gang members’ networks in a way non-gang members do not have access to. As a result, the personal networks of gang members should be different than non-gang members. Put another way, gang members should have larger networks than non-gang members. Additionally, the ways in which they position themselves may be more strategic (i.e. brokers) than non-gang members because of their status of gang member. Gang members have an elevated status in the criminal world (Augustyn et al., 2019) which can provide them with opportunities to broker criminal activities (i.e. drug deals) or between individuals. The increase in social capital should result in gang members having longer criminal careers than non-gang members. Previous research have used community based samples when comparing gang and non-gang members, the sample used in this dissertation a prison based sample. By using a more criminogenic control group, the effects of gang membership are more isolated. The current chapter discusses the results from Chapter 9 on the role of networks and criminal careers for gang and non-gang members.

Additionally, I challenged the main proposition of the dissertation by opening the analysis beyond gang membership and examined a prison gang network. I was able to move beyond the gang label and examine whether being embedded within a gang network influences the criminal careers of non-gang members. The personal networks of gang members are comprised of gang and non-gang members (McCuish et al., 2015; Reid & Maxson, 2016; Papachristos et al., 2015a). Being associated with gang members can be a turning point for non-gang members. This could be especially true for non-gang associates who are embedded within the network of a gang. In other words, non-gang members who are close with gang members may be at a greater risk of experiencing the effects of gang membership. The social capital that may be related to gang membership spills through the network via social interactions. Therefore, non-gang members who are entrenched within the network of a prison gang are exposed to the same opportunities and resources. As a result, their involvement with criminal activities increases which may

prolong their involvement in the criminal justice system. No research to date has examined this. Based off of previous research (i.e. Green et al., 2017; Papachristos et al. 2012; 2015a; 2015b; Pyrooz et al., 2013) it is hypothesized that being closely connected to gang members will increase the length of non-gang associates criminal careers. The current chapter discusses the impact of social proximity on residual criminal careers for non-gang members that was examined in Chapter 10.

11.1. How and when gang members build their networks impacts the length of their gang careers

The aim of Chapter 8 was to examine whether the personal networks of gang members influence their gang career. Gang research has focused a lot of attention on risk factors associated with gang membership (i.e. risk factors to become gang members) and factors associated with gang desistance (i.e. gang embeddedness), but rarely has gang research examined if networks play a role in gang membership. As discussed throughout this dissertation is the importance of social capital. It is well established that individuals learn through social relations and actions often mirror the larger social structure individuals are embedded in; therefore, looking at the personal networks of gang members can provide additional information on heterogeneity across gang careers. I looked at this in two ways: 1) if the personal networks pre-gang membership influenced the time it takes youth to become a gang member, and 2) if the personal networks pre-gang membership and during-gang membership impacted the length of time spent in the gang.

There are three main takeaways from this analysis. First, examining changes in variables across gang membership status, I found there to be an increase in social capital that is associated with gang membership. This is supported by a significant increase in both network size and betweenness centrality from pre- to during-gang membership. During active periods of gang membership, gang members significantly increase the size of their networks as well as occupy more strategic positions. This can be seen in the changes in Bruisers networks (see Figure 6). Not only does his network grow in size, there are fewer cliques or subgroups with alters. Previous research has alluded to gang membership increasing co-offending opportunities and access to more antisocial peers (Bouchard & Spindler, 2010; Decker et al., 2013). The changes in network size associated with gang membership show that gang members in this sample

were able to expand their networks. As a result, they had access to more social capital through more opportunities for involvement in criminal activities and brokering relations between their connections (Burt, 1992). This may be an indication that gang members are able to leverage their status as a gang member brokering opportunities for others in their network. This could result in more “weak ties” (Granovetter, 1973), suggesting gang members may be able to diversify their personal networks.

There are reasons to believe the social capital gained during gang membership does not completely disappear once individuals leave gang life. Even though there is a significant decrease in betweenness centrality during- to post-gang membership, betweenness centrality is six times higher post-gang membership than pre-gang membership. This indicates that the strategic positioning between connections remains after gang membership suggesting some of the capital gained during-gang membership remains post-gang membership. Although not significant, network size post-gang membership is on average twice the size as pre-gang membership revealing not all connections gained as an active gang member are completely lost with the gang label. These changes in network size and structure may influence the length of residual careers. Hypothetically speaking, after individuals leave the gang, they are able to maintain their network position. Through their position and social relations, they continue to have access to criminal opportunities which may prolong their involvement within the criminal justice system. Drawing from Rowan et al. (2018), they found historical co-offending experiences resulted in a greater likelihood of offenders reporting illegal earnings. The authors concluded this suggests the capital gained from co-offending “endure beyond the event” (p.302). The social capital gained from gang membership “endures beyond the label”.

The second main takeaway from this analysis is how and when youth build their networks influences their gang careers. There are two parts to this finding. How youth build their network pre-gang membership impacts the time it takes to become a gang member. On the one hand, youth who have larger networks before gang membership, take longer to become involved in a gang. On the other hand, youth who build their networks through convictions prior to membership, become gang members more quickly. These results indicate for youth who are able to grow their networks on their own before gang membership may not benefit from getting into a gang. The access to resources and opportunities to expand criminal networks that is associated with gang

membership, these youth are able to access on their own. They do not require the label of “gang member” to grow their networks. Being in a gang increases the risk of victimization and conflict, so the positive benefits of gang membership are not gained for these youth, but the negative ones might be. This can make gang membership less appealing which may be why they take longer to become involved in a gang. On a whole, these youth are able to establish relationships and set up co-offending opportunities without being involved in a gang.

In contrast, there is a subset of youth who built their networks through convictions. For these youth, they became gang members more quickly. Youth who built their networks through having more convictions by participating in larger crime events that are eventually detected, are quick to get into gangs. This reveals that the social context of connections may influence gang careers. It is not the size of their network per se, but it is potentially *how* they build their network that is important. It may be that youth who generated their networks through convictions have greater exposure to criminal opportunities which could be a signal for impeding gang membership. The social capital gained through increased exposure to co-offenders and the criminal justice system may show a willingness to commit crime. It could be that this subset of youth have a distinct criminal trajectory. They are embedded within the criminal justice system before gang membership because they have built their networks through participating in criminal events and being detected does not stop them. Rather, it pushes them into gang life faster. These youth are not deterred by incarceration; instead they seek out membership in a criminogenic group. This could be a group of youth who were headed for a “life of crime” and gang membership was part of that path. This subset of youth would support the premise of the enhancement model (Thornberry et al., 1993). I say premise because I am not looking at convictions and gang membership. Rather, it is the idea that there is a subset of youth who are naturally predisposed to criminal activity and they “seek out” gang membership more quickly. Gang membership may provide this subset of youth with increased access to criminal opportunities and status within the criminal world that they value. This is an area for future research.

Once in a gang, things reverse. The size of networks pre-gang membership does not seem to influence the length of time spent as a gang member. What does seem to be important is the way youth construct their networks during active membership. Youth who have larger networks, are gang members for longer periods of time; whereas, youth

who require convictions to increase to build their networks, are gang members for less time. The reason for these differences could be a matter of detection. For youth who are able to build their networks and go undetected, they remain a gang member for longer. These youth are able to grow their social capital through expanding their networks without getting caught. The increase to criminal opportunities and resources that are associated with gang membership appear to be serving this subset of youth. As a result, they see gang membership as beneficial which influences the length of time they spend in a gang.

However, for youth who grow their networks through convictions, get out quicker. I propose this may be a deterrent effect. These youth may be exposed to too much crime and by having the label of gang member they are getting caught too frequently. With the label of gang member comes an increased presence and “hassle” by the police, so the chances of getting caught, even with something small like drug possession results in an arrest²³. As a result, they are getting out of gangs quicker. In addition, gang members have an expectation to commit violent crimes and are at an increased risk of violent victimization. So while gang members are growing their networks through co-offending and criminal opportunities, they may also be experiencing the negative side of gang membership. As such, the benefits of gang membership do not outweigh the costs of gang membership, so these youth leave sooner. Gang members have expressed a push out of gang life is because of the increased violence that comes with the territory (Decker et al., 2014b). The increase in violence can cause disillusionment for gang members (Densley & Pyrooz, 2019), leading to them to exit the gang. As seen at with the bivariate results, the capital gained during gang membership does not disappear as soon as individuals leave the gang. Some gang members may realize they do not need the gang to continue to build their social capital. They may have some strong connections built, so they can leave the gang sooner and become independent. By losing the gang label, the excess attention from law enforcement may also go away which makes it easier to conduct business. Drawing from previous research, the size and composition of networks individuals are embedded, does impact their risk of arrest (Bouchard & Nguyen, 2010; Bouchard & Ouellet, 2011). Therefore, leaving the gang may help reduce negative police attention and build stronger co-offending relations.

²³ I am referring to a quantity that would be for personal use or consumption, not enough to warrant a possession of the purposes of trafficking charge

Future research should look into individuals who leave gang life but remain involved in the criminal justice system. Examining how their networks change could be informative as to whether leaving the gang benefitted them or didn't. Taken as a whole, this finding reveals the personal networks of gang members matter. How and when youth build their personal networks influences their gang careers.

The third main takeaway from this analysis is the importance of prison ties. Recall, I did not include the amount of time spent in prison when calculating the proportion of prison ties. This is something that should be done in future research. Nonetheless, it appears prison ties have an independent effect on gang membership, above and beyond network size. This supports previous research which has shown inmates are able to form connections in prison (Clarke-Mclean, 1996; Reid & Maxson, 2016; Reid, 2017; Schaefer et al., 2017). Gang members in this sample are utilizing their time in prison by making new connections and continuing to expand their criminal networks. As a result, prison appears to be a place for gang members to grow their criminal social capital, supporting the school of crime hypothesis (Bentham, 1830; Clemmer, 1950; Nguyen et al., 2017). Specifically, the proportion of prison ties significantly increases pre-to during-gang membership. Being a gang member in prison (while not necessarily an active member) offers an elevated status that non-gang member criminals may not receive. For example, gang members in prison have control over the flow of contraband (Johnson & Densley, 2018; Lessing, 2010; Skarbek, 2014). In addition, their elevated position in the prison may provide them opportunities to manipulate or "heavy" other inmates who want to associate with them. This provides access to more resources. As a result, gang members in prison have more social capital. Looking at females in prison, Owen et al. (2017) noted female inmates who were connected to "big baller or shot caller" had higher levels of prison capital (p.86). The same rationale could be applied to gang members in prison. They could be seen as the "shot callers"; therefore, inmates want to associate with them. These relationships may be mutually beneficial. The proportion of prison ties change again, after gang membership ends. There is a significant decrease in the proportion prison ties. That being said, the proportion of prison ties is significantly greater post-gang membership than pre-gang membership. This is the similar pattern seen with betweenness centrality. Taken together, the capital gained during gang membership does not dissipate once individuals leave the gang.

The relationship between the proportion of prison ties pre-gang membership and the length of gang membership was a robust finding. The greater the proportion of prison ties pre-gang membership, the less time spent in a gang. I propose this finding may be linked to what was seen with network size. Youth who have a greater proportion of prison ties are able to build their networks on their own. During their time in prison, they form new connections and expand their criminal networks. By associating with other inmates, these youth may have learned new criminal skills and gained access to more criminal opportunities. As a result, being a gang member or having the gang label did not benefit them. They were able to grow their criminal social capital on their own, without the gang. As stated, gang membership increases risk of victimization and “beefs”, and in some cases the “beefs” may not have anything to do with specific gang members. But due to the collective identity of the gang, a beef against one is a beef against all. This increase in violence may cause youth who can build their criminal networks on their own, to exit the gang faster. Future research should break down the prison ties and gain information on the alters. It would be interesting to know who youth are connecting with and when these connections were formed. This could be informative as to why prison ties pre-gang membership impacted length of time in a gang. For example, if youth were able to gain a mentor while in prison and expand their criminal skillset, they may not need the gang. In comparison, youth who do not have the ability broker or form beneficial relations, may need the gang. Prisons seem to be a place for youth to grow their networks and these connections have an impact on their gang careers.

Three other findings from this analysis I want to draw attention to. First, the average length of gang membership for this sample was 5.5 years. This is substantially longer compared to other studies who have found gang membership to be relatively short lived, with two years being the modal length of membership (Esbensen & Huizinga, 1993; Hill et al., 1999; Thornberry et al., 2003). This could be a by-product of the sample used. I used a prison based sample meaning the majority of youth involved are entrenched within the criminal justice system. The level of criminality of this sample is naturally higher than samples that have used community based samples. While there have been studies in the United States that have used adjudicated samples, the restrictions of the *YCJA* make custody the last option for young offenders. A custodial sentence is reserved for youth who commit serious and violent offenders or are chronic offenders (Roberts, 2003). If this is why, it further supports the importance for research

to continue the movement into prison as offenders in prison may be qualitatively different than offenders in the community. This could be especially true for young offenders.

Second, there seems to be a relatively fixed age for gang membership. If youth are going to become a gang member, it is going to happen around 16 or 17 years old. As such, youth who enter the criminal justice system later are on an accelerated timeline to become a gang member. The survival analysis examining time to gang membership supports this - youth who are older when they enter the criminal justice system, are gang members more quickly. Do youth who enter the CJS later seek out gangs faster, or do gangs seek out older youth to recruit? Maybe it is both. This is an area of future research. I would like to compare youth who enter the criminal justice younger and take longer to become a gang member to youth who enter the criminal justice system for the first time when they are a few years old and become gang involved more quickly. I would want to examine their networks as well as their traditional risk profiles to determine if there are differences between the two groups that can help explain this finding. Even without this information, this finding is important for correctional staff and prevention and intervention workers as older youth may be more at risk to become gang involved.

Third, in the additional analysis I separated the network into positive and negative networks. The positive network was comprised of co-offending and social ties, and the negative network included victimization and conflict connections. Focusing specifically on network size, I wanted to determine if the quality of relationships was important for gang careers. The original analysis revealed network size impacts the length of gang careers, but I wanted to take this one step further to see if it was more than size alone. In other words, was it the type of relations that youth were building what was important? The results are descriptive, but they suggest the quality of relations do not have an independent effect. In other words, it is the size of the network that is important. Gang membership was associated with a significant increase in both positive and negative ties. This supports previous research that has shown gang membership to increase the number of co-offenders (Bouchard & Spindler, 2010), but also an increase in violence victimization (Decker & Pyrooz, 2010; Krohn et al., 2011; Pyrooz et al., 2014a). While the negative connections may not provide new opportunities to grow networks the same way positive connections can, gang members who are willing to be involved in conflicts and commit acts of violence against others can increase their status

within the gang. This may play a role in their commitment to the gang, increasing their capital. After youth leave the gang, there is a significant decrease in both types of ties.

Examining whether the types of ties influenced the length of gang careers, the size of the network impacted the time to become a gang member. For both positive and negative networks - the larger the size, the longer it took youth to become gang members. Again, this is what was seen looking at network size as a whole. Looking at length of gang membership, size of the positive network pre-gang membership did not matter, but the size of the negative network did. The larger the negative network pre-gang membership, the less time spent in a gang. A larger negative network is indicative of more conflicts. Remember, when an individual becomes a gang member, they bring their personal networks with them. As such, their conflicts are brought into the gang. This could result in the gang getting involved in more conflicts and having more "beefs". Consequently, the gang member may be kicked out of the gang because they are not an attractive member. They are not benefitting the gang by being a member. Again, this was done at the bivariate level and needs fleshing out with a larger sample. For youth who built their networks, positive and negative, during gang membership, were involved in gangs for longer. Overall, these results reveal that is not necessarily the quality of relations that impact gang careers, but when. I was unable to determine how connections were made (i.e. via convictions, in prison) as the sample was too small. This is an area for future research.

The results from this chapter reveal that gang membership is associated with an increase in social capital. Networks do impact gang careers. Future research should expand on this finding and examine the personal networks of members of the same gang. Mapping the networks of members who are part of the same gang provides the opportunity to examine whether networks can determine who will remain involved longer than others. Additionally, mapping a whole gang, the role non-gang members play within the network of the gang can be assessed. Do non-gang members over time become gang members? Do their associations stop? Do these decisions depend on which member(s) they are connected with? This will also provide the opportunity to use a network measure of gang embeddedness and how embeddedness impacts gang careers.

11.2. Social context for the win

In Chapter 9 I examined whether the social context that surrounds gang members was related to criminal career length. In addition, I wanted to examine the role the label of gang member had on prolonged involvement in the criminal justice system. I hypothesized that it would be a combination of social context and the label of gang member that influenced longer criminal careers. By adopting the label of gang member, the increased access to criminal opportunities and co-offenders can change the social structure gang members are embedded in. As a result, their involvement in the criminal justice system may be longer. Research has established the group processes of gang membership facilitate the increased involvement in the criminal justice system (Thornberry et al., 1993; 2003). Additionally, research has shown the social structure surrounding gang members to be influential on offending behaviors (Bouchard & Spindler, 2010; Papachristos et al., 2012). Taken together, this research suggests that it is not necessarily the label of gang member. Rather, it is the increase in social capital (i.e. access to more criminal activities and co-offenders) associated with gang membership that drives the spike in criminal behaviors.

In addition, there is research which has shown gang members to be qualitatively different than non-gang criminals (Klein, 1995; Moore, 1991; Warr, 1996). The group organization and structure of gangs, along with the collective identities separates gang members from non-gang criminals. While co-offending is common among non-gang criminals, they lack the commitment, label, group organization, and identity that gang members have. Yet, we know very little on how the networks of gang and non-gang members may or may not differ. It would be expected that gang members' networks would be larger and structurally different than non-gang members. As a result, their involvement in the criminal justice system may be longer because of how they have established themselves in their networks and the connections they made from gang membership. On the flip side, some studies have found few differences between non-gang criminals and gang members (Battin et al., 1998; Thornberry et al., 2003). In other words, for some offenses, non-gang criminals were not significantly different than gang members. These results could be a function of the personal networks of non-gang criminals. Non-gang criminals who are able to build their networks with co-offenders and other criminal associates may be as entrenched within the criminal justice system as

gang members. As such, the gang label itself may not be important. Instead, the social context of connections may be important because through the connections, individuals have access to social capital. Using a matched control group of non-gang members, I was able to examine if the personal networks of gang members are quantitatively different than non-gang members, and if so, does this influence the criminal career length for gang members.

The results from this analysis revealed interesting insights. Recall, the control group used is as criminally involved as the gang members. Even though the control group was derived from a convenient sample, the 28 non-gang members selected were similar to the gang members on every aspect (i.e. cohort, risk factors, length of time spent in CJS, types of convictions) other than gang membership. Comparing the gang members to the non-gang members across multiple factors including all four network measures (betweenness centrality, size, constraint, and density) and criminal career length, there was only one significant difference. Gang members were significantly younger when they first entered the criminal justice system. This is consistent with previous research (Kreinert & Fleisher, 2001; Ralph et al., 1996; Ruddell & Gottschall, 2011; Sheldon, 1991). However, there were no differences on the network measures or the length of criminal careers between the two groups.

At the multivariate level, non-gang members had significantly longer criminal careers than gang members. This was a robust finding. Across all models, non-gang members were consistently shown to have longer criminal careers than gang members. Why might this be the case? First, I go back to the sample. Previous research looking at long-term consequences of gang membership have use community based samples (Dong & Krohn, 2016; Gilman et al., 2014; Levitt & Venkatesh, 2001; Melde & Esbensen, 2011; 2013; Thornberry et al., 2003). While the samples used in these studies have been comprised of delinquent youth, I would suspect their level of delinquency compared to the control group used in this dissertation would be lower. By isolating a subpopulation like gang members who are already on the most extreme end of the continuum in terms of criminal involvement, researchers may artificially increase the differences between the two subpopulations. Doing so also runs the risk of 1) trivializing important differences among the subpopulations of gang members. That is, not all members are involved in serious violent crime; 2) ignoring an important subcomponent of the non-gang member population who is heavily involved in violent crime and yet,

“lost” in overly broad categories of “non-gang members”. Recall, the *YCJA* sets out custodial sentences as the last resort. Youth who receive custodial sentences need to have committed a serious and violent offense and/or be a chronic offender (Roberts, 2003). This automatically increases the level of criminality in the control group. By using a control group of serious and violent youth they can match gang members on the severity of offending and the complexity of risk factors, research will be able to get a better understanding on the relationship between gang membership and prolonged involvement in the criminal justice system. Second, by focusing so much on the label of gang members, non-gang criminals who are at risk of becoming career criminals may be ignored and slip through the cracks of the justice system.

Similar to Chapter 8, the proportion of prison ties was significantly associated with criminal career length. Specifically, individuals with a larger proportion of prison ties had longer criminal careers. This supports research which has shown inmates can and do form peer networks while in prison (Clarke-McLean, 1996; Reid & Maxson, 2016; Reid, 2017; Schaefer et al., 2017). Prisons provide a place for inmates, who may not have connected in the community, to form relations and learn from one another. As a result, prisons can expand inmates’ criminal networks, increasing their criminal social capital (Clemmer, 1950; Nguyen et al., 2017). Inmates, who use their criminal social capital especially once released, may have longer criminal careers. Using the skills, knowledge, and contacts gained while in prison can further expand criminal networks. Recall from Chapter 2, indirect connections are just as influential as direct connections (Lin, 2001). If a friend of a friend is in a prestigious position, being two handshakes away has its advantages. For example, inmate A connects with inmate B. Inmate B provides inmate A with names of criminal associates. Once inmate A is released, through inmate B he can connect with inmate B’s criminal associates. Inmate A’s network grew from connections he made while in prison, then by acting on those relations, he grew his criminal network even more. The results highlight the importance for research to continue the movement into prison as prisons can be a turning point in criminal trajectories. Put another way, prisons can be a deterrent. Inmates may be able to get treatment and have access to prosocial resources and skills, but also, as seen with this study, can be a place for individuals to become further entrenched in the criminal justice system.

Because a goal of Chapter 9 was to determine if gang members have different networks than non-gang members, I created an interaction term with gang membership and the proportion of prison ties. This provided me the opportunity to determine if gang members with a larger proportion of prison ties have longer criminal careers. The results from the regression revealed gang members had shorter criminal careers, but individuals with a greater proportion of prison ties had longer criminal careers. Could there be a subset of gang members with a larger proportion of prison ties who had longer criminal careers? As results show, there is not. In fact, there is a subset of gang members with more prison ties that had shorter criminal careers. This hints that non-gang members may have more prison connections than gang members. In other words, the proportion of prison ties compared to overall network size is larger for non-gang members. Again, I did not control for exposure time in calculating the proportion of prison ties. With the findings from this analysis, it is something I intend to do in the future. I want to rule out alternative explanations for this finding. Nonetheless, this raises questions as to how non-gang members and gang members build their networks in prison. It is believed that gang members in prison would be at the top of the hierarchy. As a result, the positions of gang member are more prestigious within the prison which provides them with power over other inmates. Therefore, gang members should have more capital, and more opportunities to build their networks.

Research examining the mechanisms of informal social control in prisons has found gang members to be largely responsible for the social order of prisons (Johnson & Densley, 2018; Lessing, 2010; Skarbek, 2014). For example, Johnson and Densley (2018) found prisons in Brazil to be controlled by gang members. The authors noted that gang members controlled all aspects of prison life. The spectrum included sleeping arrangements to the orchestration of riots. Many studies have shown gang members to be in control the flow of contraband²⁴ (Gundur, 2018; Johnson & Densely, 2018; Skarbek, 2014). In prison, contraband is power. Controlling the flow of contraband provides gang members a source of capital that other inmates cannot achieve. Consequently, this elevates their status even more. However, findings by Pyrooz and Decker (2019) noted that gang members were not as highly regarded or recognized in creating rules, controlling the flow of contraband, and/or maintaining social order by non-gang members. The authors even noted that gang members themselves described the

²⁴ Contraband can include phone calls, drugs, canteen supplies, cigarettes

significance of gangs in prison to be “somewhat weak” (p. 137). These results suggest the role gang members play in prison may not be as prominent as believed especially from media representations. This supports what was found in this analysis. Non-gang members seem to be at an advantage in prison compared to gang members. If they do have larger proportion of prison ties, then non-gang members may be utilizing their time in prison to their benefit. This increases their criminal social capital which can increase their involvement in the criminal justice system. One thing to remember is the gang members used in this analysis are not necessarily prison gang members. This could also be an explanation for the unexpected findings. However, the results support the recent research by Pyrooz and Decker (2019) that gang membership in prison may not be as prestigious a status as initially believed.

The main objective of this analysis was to examine whether the personal networks gang members are quantitatively different from the personal networks of non-gang members with criminal career length as the outcome of interest. Looking first at only the network measures, I found size and structure to be important predictors for criminal career length. This suggests that social capital may be associated with longer criminal careers. Specifically, larger networks with more structural holes are associated with longer criminal careers.

In order to answer the main research question regarding the personal networks of gang members, I created two interaction terms with gang membership and the network variables. Doing this, I could examine if there was a subset of gang members whose networks were structurally different, and if so, did that relate to criminal careers. First, the interaction with constraint was not significant; gang members and non-gang members do not seem to differ on the structure of their networks. Second, the interaction with size was significant. However, the direction was negative. This suggests there is a subset of gang members with larger networks that have shorter criminal careers. This is interesting because larger networks are indicative of more social capital. Higher levels of social capital typically increases the length of time spent in the criminal justice system. Yet, for this subset of gang members, the opposite was found. This could be a function of the type of ties in the networks. One thing I would like to do is break down the networks by positive and negative, as I did in Chapter 8, and examine if the type of connections differ between gang and non-gang members. As stated, gang membership increases the risk of violence and victimization, maybe the types of ties when compared

to non-gang members do matter. In other words, it may be gang members have more negative than positive ties which causes them to get out of the game quicker. Non-gang members may be able to build their positive networks while keeping their negative networks relatively small. By not having the gang label, their exposure to conflicts and victimization may be lower. Not having the label of gang member may be advantageous for longer criminal careers. This needs to be unpacked in future research.

There are three main takeaways from this chapter. One, networks are important for criminal career length. Both constraint and size were significantly related to longer criminal careers. This suggests that social capital does influence the length of time individuals spend in the criminal justice system. Two, as seen in Chapter 8, prison ties have a unique impact on criminal careers. Three, gang members when compared to a highly criminogenic sample, have shorter criminal careers. This finding was unexpected, yet important. It suggests it may not be the gang label that drives behavior. It is the social context individuals are embedded in. The access to social capital and how individuals utilize their position with their networks to grow their capital is what seems to be important for prolonged involvement within the criminal justice system. Using networks provides us the ability to go beyond the gang label. That being said, the samples used for this study are unique and the size of the sample was smaller. Future research should expand on these findings.

11.3. The closer the proximity to prison gang members, the longer the residual criminal career

The focus of Chapter 10 was to examine whether prison networks impact criminal career lengths. Chapter 10 was intended to push the boundaries and move beyond gang member vs. non-gang member comparisons. As seen in Chapter 9, gang members had shorter criminal careers than non-gang members. Additionally, the networks of gang members were not advantageous for longer criminal careers. In fact, the opposite was found. It could be argued that this finding was a by-product of looking at personal networks rather than a gang. Gang research has largely concluded that it is the group processes of gangs that are responsible for the outcomes associated with membership. So what if I did look at a gang network? For Chapter 10, I changed the unit of analysis from personal networks of gang members to a prison gang network. Not only did I switch the type of network but I also switched to prison only and what happens in

prison. Using social distance as my measure of embeddedness (i.e. social capital), I could examine whether the gang label is important for criminal careers. Further, expanding research to prison networks, I was able to examine whether the connections made in prison play a role on residual criminal careers. Research has shown that peer networks are influential on behaviors (Haynie, 2001; Krohn et al., 1988; Krohn & Thornberry, 1997; McGloin & Piquero, 2015; Weerman, 2011), and research has shown prison to be a place to gain criminal capital (Bayer et al., 2009; Clemmer, 1950; Damms & Gorinas, 2020; Nguyen et al., 2017). Therefore, I hypothesized that connections made in prison would impact criminal trajectories. The criminogenic nature of gangs and the long-term consequences on members is well known (Gilman et al., 2014; Melde & Esbensen, 2013; Pyrooz et al., 2013; 2014a; Thornberry et al., 1993; 2003). By using a prison gang network, I had the opportunity to examine whether connections in prison had a unique impact on members and non-gang associates.

I did this in two ways: 1) by measuring the social proximity to every CS member for everyone in the network, and 2) through examining the timing of connections. By separating the alters of the CS gang into when they were connected to CS members (during-CS vs post-CS), I examined whether being embedded within an active prison gang network had a greater influence on criminal trajectories than being in a network of gang members in prison. Recall, the alters in the post-CS network were still connected to gang members, but they were not active prison gang members. Eighty-seven percent of CS members remained gang involved five years post-CS, but they did not join a prison gang, they were members of gangs in the community. This is an important distinction between the two groups of alters. This gave me the ability to examine whether connecting with active gang members is different than connecting with gang members who are not active. Using social proximity as a measure of gang embeddedness, I was able to determine if individuals who were closest or more embedded with CS members had longer criminal careers.

Importantly, and somewhat of a surprise, it was alters who were embedded within the during-CS network that had longer criminal careers. The only significant difference in criminal career length was between alters in the during-CS network and alters in the post-CS network. This raises the question, is the label of gang member important? The alters in the during-CS network, from a network perspective, were no different from the CS members. They occupied similar positions within the network

giving them the same access to the same amount of social capital (see Figure 4). The only difference between the 12 alters and the eight CS members was the label of gang member. Although speculative, it could be the label of gang member was a disadvantage for the CS members. The 12 alters were able to slide under the radar of the correctional staff as well as the police once they were released. The names of the eight CS members were released to the police for awareness. Therefore, the CS members had heavier law enforcement presence than the 12 alters. Because the 12 alters were structurally equivalent to the CS members, they had the same access to social capital as the CS members but without the heat from law enforcement. As such, not having the CS label worked to their advantage. They were able to use their network positions, gain criminal social capital, and then use the criminal social capital to prolong their involvement within the criminal justice system.

An argument could be made that it was because the 12 alters were embedded within an active prison gang that they were able to access resources other inmates may not have been exposed to. In other words, the social capital was because of their connections with active gang members. But for those connections, the 12 alters may not have had the same opportunities. Due to the 12 alters not being identified as gang members they were able to learn from the CS members but without the added attention. It was a combination of being closely connected to prison gang members and not having the label of gang member. Therefore, the gang label to some degree may be important. As seen in Chapter 8, there was an increase in social capital during active periods of gang membership. Also, studies have found support for the facilitation hypothesis and the enhancement hypothesis (see Pyrooz et al., 2016 for an overview) suggesting that the group process of the gang does result in more opportunities and resources. However, the important point with these findings is the conclusion that is the group processes of gangs. It is the social context surrounding gang members and the interconnectivity among gang and non-gang members that may be the mechanism behind these findings, not the label of gang member. It is the social world that individuals embed themselves in that is important for prolonged involvement in the criminal justice system. This is supported by the results in Chapter 9.

Additionally, the results from Chapter 10 potentially reveal a mislabeling by law enforcement. Put another way, there were possibly 12 other alters who could have been CS members but were not labeled as such, why? What made the eight CS members

gang members and the 12 alters not? Was there a bias by correctional staff to label the eight and not the 12? This has important implications for the future of these youth. As noted, the eight CS members had their names released to the police which can have negative repercussions. This also raises the question – how are law enforcement labeling gang members? What is the criteria being used to distinguish a gang member from a non-gang member especially when they are structurally equivalent. The subjective labeling by law enforcement can result in youth being mislabeled. Networks could be used as a complementary tool to help law enforcement identify youth who are at risk for gang membership, but more importantly, youth who are at risk for entrenchment within the criminal justice system. As seen in this dissertation, the gang label does not seem to be the main influence for entrenchment within the criminal justice system. Therefore, using networks and understanding the position of individuals within networks and the interconnections among individuals can provide valuable information. This has important policy implications. Prevention and intervention programs can adopt a network approach and use it along with other sources of information to prioritize clients and conduct targeted interventions.

Without using SNA and mapping the network of the CS gang, the findings from Chapter 10 may not have been possible. As seen in Figure 4, there is not a single CS member connected to every other CS member. Therefore, using survey methods and asking CS members to name their associates inside, I may not have been able to identify every CS member or all of the alters. As a result, I would have lost important insights. Decker et al. (2013) noted the importance for gang researchers to unpack the black box of group processes that are associated with gangs. Using a network approach, research is able to do this.

Findings from the current analysis resemble the research on social contagion from Papachristos and colleagues. The closer one is to a gunshot victim, the greater the odds of being shot. Similarly, Pyrooz et al. (2013) found the more embedded gang members were within their gang, the longer the length of gang membership. The same logic appears to be applicable here. The more embedded an individual is within a prison gang network, the longer their criminal career. The group processes underlying behavior are a by-product of the associations between individuals within a network. Peer networks facilitate the transmission of attitudes and beliefs, ultimately constraining the behaviors of individuals to mimic those of the larger network. Prior literature has established the

importance of gang embeddedness (Pyrooz et al., 2013; Sweeten et al., 2013) and the timing of turning points (Uggen, 2000). The current analysis adds to this literature by showing that *the timing of embeddedness* has important implications for criminal career duration. The alters who were connected to active prison gang members were part of a peer network with CS members when they were on average 16 years old. Associating with active prison gang members not only impacted the length of criminal careers for these alters, but 50% became gang members after their associations with CS members. It seems that being embedded within a youth prison gang and having exposure to prison gang members at a specific juncture in youths' life had a lasting impact on their criminal trajectories.

While the results focus on the alters in the during-CS network, the CS members should not be ignored. Though the long-term consequences of being in a prison gang were not as pronounced for the eight CS members, they did have longer criminal careers than the alters in the post-CS network. Furthermore, prior to incarceration, there were only three CS members who were gang members. Thus, for the remaining five, the prison context was an important gateway to gang involvement. As such, the formation of the gang itself may have been the result of selection effects. That is, for the CS members, their involvement in the gang was not as impactful on their criminal career, but the CS members had the largest proportion of convictions pre-CS formation. Although not significant, it could be an indication of the selection hypothesis (Thornberry, 2003). These eight were entrenched within the criminal justice system by the age of 15, as a result, they were well-known within the correctional facility. Their status within the prison and the level of interconnectivity with one another may have facilitated the creation of a youth prison gang. This highlights the importance of being incarcerated together as who one is incarcerated with, and the power of peer association, especially during a vulnerable period in development, is critical on decisions and behavior. The interplay between individuals and the larger social context in which they are embedded is important for fully understanding risk of gang membership and variations in criminal career length. These propositions highlight why looking beyond the boundaries of gang membership is important. The impact of the gang may be more pronounced on others than on specific members.

The results from Chapter 10 highlight the importance of expanding gang research to include gang networks. Using networks, the black box of gang-related group

processes can be unpacked. Specifically, the results showed it is more than the label of gang member. There were 12 contemporaries of the CS gang who were no different from the CS members themselves. They just did not have the label of gang member. Additionally, these alters were closer in proximity to the CS members, making them more embedded within the CS network than the alters in the post-CS network (see Figure 4). Ultimately, it was these 12 youth who benefited the most from being entrenched within the CS network. The results from this chapter complement results from Chapter 9. Even though the research designs were different, in both chapters, the importance of networks was highlighted above and beyond gang status. The social structure surrounding individuals play a crucial role on behaviors. Recently, Pyrooz et al. (2021) noted "...the power of the group appears to trump individual differences" (p. 37). How individuals build their networks and mobilize their connections are the main drivers of behaviors, not necessarily individual characteristics such as gang member. The application of Chapter 10 is important as it highlights how the group process of gangs may be transmitted through networks and can be utilized to help develop criminal careers.

11.4. Limitations

As with all research, there are limitations that need to be addressed. First, I used a Canadian sample of incarcerated serious and violent youth, which limits generalizability of the results. However, this is also the type of sample needed when seeking to understand whether prisons are a place for offenders to grow their networks. Prisons have been labelled the "final frontier" (see Fleisher & Decker, 2001) for research on gangs and gang members (also see Pyrooz & Decker, 2019). Therefore, using a prison based sample, I was able to examine if the connections made in prison did have an influence on criminal careers. Further, this type of sample is important to use when examining whether gang membership increases the length of residual criminal careers. Comparing gang members to an equally criminogenic control groups better isolates the effect of gang membership.

Second, the sample size used for the dissertation was small, also limiting the generalizability of the results. The results should be expanded upon using larger samples. With having a small sample, I was limited in the design of the study as well as the number of control variables used. For example, it may be interesting to do a group-

based trajectory model of gang members to see if there are different trajectories and how the trajectories are influenced by network measures. Or, using a GEE model for Chapters 8 and 9 with network size having a random effect could reveal more nuanced insights. Using a larger sample these limitations can be addressed.

Third, criminal career information was based on official records, which can be conservative given individuals' abilities to avoid detection. The data are based from a correctional database, so in a sense, part of the equation to calculate criminal career length was because individuals were getting caught. I tried to decrease the impact of this limitation by focusing my interest being on length of time spent in the criminal justice system, not criminal achievement.

Fourth, I was unable to directly test or capture concepts in the analyses. This is a by-product of the data as well as study design. As noted through the dissertation, I would like to extend the personal networks by two or three handshakes. Doing this, I would be able to get a better understanding of the social structure in which gang members and their associates are embedded. Also, by gathering more information on the alters, the social capital entrenched within the network can be better captured.

Fifth, due to ethical stipulations, I was only able to include the alters who were part of the ISVYOS. For example, in Chapter 10, I had to exclude 16 alters because I was unable to access their criminal histories. This could have brought the sample from 41 to 57. While that may not seem like a huge difference, having the criminal trajectories of 16 more people could have had an impact on the results. Of the 16, ten were connected to CS members during the time the gang was active and six were connected post-CS. The results showed the alters connected to CS members during the time the gang was active had longer criminal careers, but what about those 10? They could have been part of the subsample of gang members who were further away from the CS members who had longer careers. Or, they could have been the non-gang contemporaries who were in close proximity and benefitted the most of being connected to CS members. We will never know which is why expanding on these findings is important.

Sixth, the networks are based off of official records. The networks were created from community and prison logs meaning that the connections captured are only those

that the probation officer and/or correctional staff witnessed. As a result, there are missing connections. By not knowing all of the connections or the information on the relations, I do not have complete networks. Future research should look to combine the use of survey data and official records. Asking gang members and/or inmates about their associates may fill gaps not captured with official records. In addition, using official records, connections the gang members forget to mention or neglect to mention can be captured. No matter the study design, there will always be missing data, but combining the two types of data could help overcome the limitations of using one or the other.

Seventh, there were 17 gang members excluded because there was not reliable information on their length of gang membership. While all were noted to be gang members by the gang interview, their official records had little to no information on their gang involvement. Even though the gang members self-reported to probation and/or correctional staff they were gang involved, this may not have been accurately captured in their records. Again, 17 may not seem like a large number, but when the sample size is small, having 17 gang members could have had an impact on the results.

Despite these limitations, I do believe I was able to merge disparate areas of gang research by showing the significance of including networks and prison based data. There were important insights gained that provide opportunities for future research to expand upon.

Chapter 12. Conclusion

Being embedded within criminal social relations is essential for longer criminal careers. It provides opportunities to expand one's network, gain more knowledge and skills, all of which leads to an increase in social capital (Lin, 2001; McCarthy & Hagan, 2001; Warr, 2002). Gang members are a particular subset of offender who seem to have plenty of opportunities to build their social capital. The group nature of the gang, the collective identity, the criminal opportunities etc. provide gang members with more chances to grow their networks and gain more social capital. However, gang research has yet to include the personal networks of gang members and whether they play a role on criminal career length. Research has shown gang membership does increase the length of residual criminal careers (Dong & Krohn, 2016; Levitt & Venkatesh, 2001; Melde & Esbensen 2011; 2013; Moore, 1991; Pyrooz et al., 2017; Thornberry et al., 2003), but the role networks play in this is not well understood. The goal of this dissertation was to showcase the importance of including networks into research on gang members in order to get a better understanding of whether and how having the label of gang member prolongs involvement in the criminal justice system. The results from the dissertation reveal three main takeaways that I would like to highlight. I also propose a theoretical concept and areas for future research.

12.1. The importance of personal networks on gang members criminal careers

The three results chapters of the dissertation suggest networks are important for criminal trajectories. Albeit in different ways, in each of the results chapters, the network variables influenced the length of criminal or gang careers. This should not be surprising. One of the most robust findings in criminology is the relationship between peer influence and antisocial behaviors (Agnew, 1991; Haynie, 2001; Weerman, 2011). Additionally, key criminological theories assert the importance of social relations as behaviors are learned through peers (Bandura, 1969; Shaw & McKay, 1931; Sutherland, 1947). This is especially relevant for gangs. Gangs are first and foremost social groups. Gangs are comprised of interconnected members who share a collective identity and participate in collective behaviors. The group process of gangs has been found to facilitate the

behaviors that are associated with gang membership. Yet, gang research has largely ignored social networks when studying gangs. Understanding the social structure gang members are embedded in can provide insights into the heterogeneity of gang members. As noted by Pyrooz et al. (2013), gang membership is a different experience for every member, with members having varying levels of commitment to the gang. As such, the consequences of gang membership will impact members differently. By including networks, researchers are able to quantify changes in gang members' personal networks. Knowing how gang membership changes the social structure around members can provide information on why some members remain in the gang longer than others, and why some members suffer from more negative consequences. For example, Bruiser gained a substantial amount of social capital when he became a gang member, but Ice Pick did not. In fact, becoming a gang member had an opposite effect on Ice Pick. Looking at the length of their gang careers, Ice Pick was a gang member for less than a year, whereas Bruiser was a gang member for five years. Ice Pick did better without the label of gang member, Bruiser did not. Understanding how networks change with gang membership, we can add another depth of knowledge on the heterogeneity between gang members.

A known fact, but one that is often overlooked, is when individuals become gang members, their personal networks are now connected to the gang. Put another way, when individuals join a gang, they bring their connections into the gang with them. As a result, their non-gang friends and family are now indirectly or two handshakes away from other gang members. As noted by Lin (2001), indirect connections are just as important as direct connections. Everyone has access to the resources embedded within the network. How individuals utilize their social relations, they can take on different roles and hold more prestigious positions. Morselli (2001; 2003) demonstrated the importance of positioning within networks and using social relations to advance criminal careers. This information can provide insight into who is more at risk to become further embedded within the gang, but perhaps more important, is how the effect of gang membership can spillover to non-gang associates. Analogous to the negative effects of gang membership reaching to those who are connected to gang members, the opportunities and resources that are associated with gang membership also extend to those who gang members are connected to. This may influence non-gang members to become gang members. Knowing the social structure of gang members, who is at risk for entrenchment and who

is at risk for becoming a gang member can be quantified. This has important implications for prevention and intervention programs.

Similarly, using a network approach, we are able to examine desistance from a different angle. In the dissertation, I examined criminal career length, but the results can be informative for desistance. Research on gang desistance has noted that for some gang members, leaving the gang is more of a process than a “knifing off” (Pyrooz et al., 2014b). The relational ties do not simply disappear for many members. In fact, for many gang members who leave gang life, especially in the United States, still have family members and close friends who remain gang members. As a result, their connections to the gang persist. This can prolong the time it takes to desist fully from gangs and for some they never do. Individuals may not identify as a gang member, but their connections to gang members remain. Applying a network approach can enhance our understanding of why some gang members may always have “one foot in the door”, compared to others who are able to completely leave the lifestyle. Additionally, results in the dissertation suggest for some gang members, membership was not a positive experience. Densley and Pyrooz (2019) found a reason gang members left their gang was because of disillusionment. In Chapter 8, results showed there was a subset of gang members who built their networks through convictions. On the one hand becoming a gang member increased the size of their network. On the other hand, they kept getting caught. When individuals become gang members, their access to criminal opportunities increases but so does their risk of being caught. The “heat” from law enforcement is higher for gang members which can result in more convictions. In addition, when individuals become gang members their participation in violence increases as does their risk of victimization. Taken together, these “side effects” may cause gang members to want to get out.

One of the reasons often cited by gang members when asked about why they entered a gang or their motivations to join a gang is because of a friend (Esbensen et al., 1999; Klein & Maxson, 2006; Thornberry et al., 2003). Peers are incredibly important in shaping criminal careers but also gang careers. The social structures individuals are embedded in have a direct impact on their behaviors. I believe incorporating a network approach to gang research will only enhance our understanding of gangs, gang members, and the long-term consequences of membership.

12.2. The influence of prison ties

Previous research has found inmates can and do form connections while in prison (Clarke-McLean, 1996; Reid & Maxson, 2016; Reid, 2017; Schaefer et al., 2017). The results from the dissertation support previous research by showing prisons are a place to grow networks, but also the ties made in prison influence criminal trajectories. In all three studies, the connections made in prison increased the length of criminal and gang careers. This supports the school of crime hypothesis which asserts prisons are a place for inmates to learn from one another, increasing criminal knowledge and skills (Clemmer, 1950). Prison networks matter, the connections made in prison do extend beyond the boundary of the prison walls providing individuals with larger criminal networks and access to more criminal opportunities. Future research should include networks within prisons to understand how individuals interact in prison (i.e. quality of relations), who they are building relationships with, and how these relationships may influence criminal trajectories. Morselli et al. (2006) highlighted the importance of mentors. Individuals who had mentors had longer and more successful criminal careers. Prisons can be a perfect place for young, less experienced offenders to meet and connect with older, more experienced offenders. Connecting with and learning from more experienced offenders, younger inmates not only gain resources while serving their time, but they can take the social capital gained from prison and use it in the community (Nguyen et al., 2017). Using networks provides researchers the opportunity to examine the types of connections being made in prison and how those connections relate back to criminal career length.

In addition, networks can be an informative tool for correctional staff. Knowing who individuals are connecting with could be a place for intervention or moving susceptible inmates to different units. Also, mapping the network of a prison, brokers between units can be unveiled which may reveal how contraband is spread throughout the prison. Network information may also provide insights into connections between inmates in different prisons, or with certain people in the community. Through inmates, individuals may be connecting with one another unbeknownst to correctional staff and/or police. As a result, alliances and/or conflicts may be revealed. Again, this has important implications for unit placement and level of access for certain inmates.

There has been a recent movement to bring research back into prison (i.e. the LoneStar Project, Prison Inmate Network Study) which has renewed the significance of prisons and the role of prisons. Prisons are a unique environment that bring together an array of criminals—prison gang members, gang members in prisons, former gang members, and non-gang members. Research has shown the networks formed in prison are not strictly homogeneous (Reid & Maxson, 2016; Reid, 2017; Schaefer et al., 2017). Inmates interact across racial, religious, and gang membership status. Yet, we do not know much at all on whether or how these relations impact inmates once they are released. As shown in this dissertation, non-gang associates benefited the most from being connected to active prison gang members. Also, larger proportion of prison ties was related to an increase in the length of gang and criminal careers. The exposure and proximity inmates have to each other while in prison is unlike any other place. This provides inmates the ability to interact and build relations with a variety of offenders ultimately changing the size and structure of their personal networks. In addition, the fluidity of the prison environment brings with it a constant flow of new inmates providing continuous opportunities for inmates to expand and diversify their networks. As a result, their criminal social capital is increased. How that criminal social capital is utilized by inmates is important avenue for future research. Future research needs to include prison networks and the role prison networks play within prison. This can provide important insights into prison hierarchy, the role inmates have within their unit, and potential places for intervention for correctional staff. But research also needs to extend out of prison back into the community to examine how being in prison changed the networks of inmates. Doing so, researchers are able to examine whether some inmates (i.e. gang members) benefitted more from their time prison than other inmates (i.e. non-gang members).

Prior to the work by Pyrooz and Decker (2019), gang members were believed to have an elevated status within prison, sitting at the top of the hierarchy. In conjunction with the results from this dissertation, prison may not benefit gang members more than non-gang members. In fact, non-gang members may use prison to their advantage because they do not have the status on the outside to help grow their criminal networks. Being in prison could be a perfect opportunity for non-gang members to expand their networks increasing their criminal social capital. Then once released, non-gang members leverage their criminal social capital prolonging their involvement within the

criminal justice system. I hope the results from this dissertation continue to show the role of prisons and how prisons are an important environment for the criminal trajectories of gang and non-gang members.

12.3. The gang label: How important is it?

Gangs are known to be one of the most criminogenic peer groups (Melde & Krohn, 2011). Gang members have consistently been shown to have higher levels of criminality, especially violence, than non-gang members (Krohn et al., 2011; Thornberry et al., 1993; 2003; Thornberry, 1998). Additionally, researchers have shown gang members have longer residual criminal careers (Dong & Krohn, 2016; Levitt & Venkatesh, 2001; Melde & Esbensen 2011; 2013; Moore, 1991; Pyrooz et al., 2017; Thornberry et al., 2003). As a result, the label of gang member has been associated with these consequences. Yet, there has been research which has shown that it may not be the label of gang member per se, but the social context in which gang members are embedded that is the reason for the myriad of consequences (Bouchard & Spindler, 2010; Papachristos et al., 2012). In Chapter 9, I examined the importance of the gang label for the length of residual criminal careers. Results showed gang members had shorter criminal careers than non-gang members, but the size and structure of networks (i.e. more social capital) resulted in longer criminal careers. Similarly, in Chapter 10, I went beyond the personal networks of gang members and examined a prison gang. It was found youth who benefited the most (i.e. longer criminal careers) from being embedded within a prison gang were the non-gang members. These findings suggest networks not so much “gang member” to be influential on criminal trajectories. It seems to be how individuals build their networks, who individuals connect with, and when the connections are made that provides them more social capital. Not the label of gang member. As stated by Pyrooz et al. (2021) “...there is nothing inherently criminal about identifying as a gang member” (p. 14). The authors noted that it was the group processes of gang membership and the group context that is important for the outcomes associated with gang membership (Pyrooz et al., 2021). This raises the question - how important is the label of gang member? I do not answer this question here, but I would like to raise it as a discussion point and for future research to examine. Also, I am not suggesting we throw out the label of gang member, but I am suggesting that we take it further than the label alone.

Pyrooz et al. (2013) started this movement with gang embeddedness, but I want to take it one step further by adding in networks. Again, youth do not know who they do not know. Therefore, using networks provides researchers the ability to understand the direct and indirect connections which make up the social structure. As seen with the CS network (Figure 4), many individuals within the network were not directly connected, yet they were still part of the same network. Also, for many gangs, not all members know each other. Being able to construct the social context surrounding individuals more nuanced information about the individuals within the network and their positions can be revealed. Stated throughout the dissertation is the importance of indirect connections. Survey data largely ignores these connections because most youth do not know anything about them. As such, a piece of the puzzle in our understanding of gang embeddedness has been missing. The findings from the dissertation also raise questions or concerns about the age old debate about who is a gang member? What is a gang? Do gang members label themselves the same way police and/or correctional staff do? This raises another question - which is better, survey or official records? Gang members may not self-identify as gang members, yet they are labeled as being members in official records and vice versa. This can cause a discrepancy in how individuals are labeled and treated within the criminal justice system. It is known that gang membership is often used as an aggravating factor in sentencing and gang members have a heavier police presence, as they should. But if we are labeling incorrectly and/or ignoring the non-gang criminals who are as criminally entrenched, there is a gap in the justice system. This also supports using prison based samples or equally criminogenic control groups as the effect of gang membership may not be as pronounced. Future research needs to continue to build on the work of Pyrooz et al. (2013) and the findings from this dissertation to unpack these questions further.

12.4. Theoretical implications: Gang capital

Social networks provide a holistic understanding of risk of entrenchment in gangs but also the criminal justice system. Individuals who are closely associated to gang members have an increased risk of prolonging their embeddedness. As stated by Papachristos et al (2015b) "...the hallmark of SNA is the study of peer influence...influence is captured through contagion" (p.144). Who individuals surround themselves with will impact their overall behavior. It is a network process of becoming

“one” with your social environment. The results from Chapters 8 and 10 suggest that there is an increase in social capital that is associated with gang membership.

Recall, in Chapters 8 and 10, I used social contagion theory in combination with social capital theory. Specifically, in Chapter 8, I compared changes in the personal networks of gang members that occurred with changes in gang membership status. There were significant increases in network size and betweenness centrality during active periods of gang membership. More importantly, may be the fact that not all of the social capital gained during gang membership disappeared post-gang membership. In Chapter 10, the concept of gang embeddedness was measured using a network approach. Social distance quantified the social proximity of the gang members and non-gang associates in order to determine if being more closely embedded within an active prison gang network influenced the length of criminal careers for the prison gang members, but the non-gang associates as well. I found the non-gang associates who were more embedded within the networks of active prison gang members had longer criminal careers. These results suggest there may be opportunities and access to resources that are associated specifically with gang membership. It is only gang members and those closely associated to them that have the ability to access this capital. This is what I am labeling gang capital.

Gang capital is an extension of social capital which is an individual's ability to use their personal connections and networks to advance their goals or interests (Lin, 2001), and human capital, which is the capital that is embedded within individuals, and is the skills, knowledge, and experience an individual gains to make their abilities more specialized (Coleman, 1988). More specifically, gang capital is the knowledge, skills, and resources about gangs and being in a gang one receives by being connected to gang members. As pointed out by Augustyn et al. (2019), gang membership provides members and associates access to opportunities and resources which expand their networks increasing their criminal competencies. Associating with gang members exposes individuals to other gang members, situations, and behaviors as the transmission of information occurs naturally through the network. Additionally, individuals who are more proximal to gang members receive higher amounts of gang capital as being more embedded increases individuals' exposure. Social capital theory stresses the importance of indirect connections. The position individuals occupy within a network is directly connected with the resources they can access. Individuals who are more

embedded are more efficiently located, meaning they are able to mobilize their connections to access more capital. Consequently, individuals who accumulate higher amounts of gang capital are at a higher risk of using the capital through increasing their co-offending pools, becoming gang members, or both. This in turn, can further entrench individuals within the criminal justice system.

Gang capital as a concept aims to make explicit the transmission of gang specific knowledge and skills via social networks. Gang capital is specialized as it is specific to gangs and what is learned through connectivity with gang members. Other research has used concepts like “criminal capital” to refer to more general types of criminal knowledge acquired by people who commit crime (McCarthy & Hagan, 1995; 2001; Nguyen & Bouchard, 2013). The relationships individuals have within criminal networks facilitate the transmission of criminal skills and resources. Through the exposure to a variety of offenders, an individual’s involvement and success within the criminal sphere increases (McCarthy & Hagan, 1995; 2001). Criminal capital is a broader construct, capturing the skills and resources gained through the connections with other criminals (Nguyen et al., 2017).

Similarly, Owen et al. (2017) coined prison capital which is the prison-specific type of knowledge acquired by individuals who are incarcerated. The authors looked at sources of violence and conflict in female prisons and noted that female inmates who connected with powerful and well-positioned inmates survive their prison time more easily as they have higher levels of prison capital or “juice”. The authors noted the female inmates who are connected to staff, decision makers, and “big baller or shot caller” (p.86), have higher levels of prison capital. Having higher levels of “juice” facilitates certain opportunities for female inmates. Overall, the authors noted the females who had higher prison capital were more easily able to navigate through prison as they were “in the know” on informal and formal social control mechanisms, they were able to access to more information, forge alliances, and gain status within the prison (Owen et al., 2017).

While gang capital is similar to gang embeddedness, they measure different components. Gang embeddedness captures the location of individuals within the gang, whereas gang capital captures the skills, knowledge, and opportunities that are a result of being connected to gang members. As such, the two complement one another.

Understanding the location of an individual within a network, their level of capital can be better understood. Gang embeddedness has expanded gang research by capturing the heterogeneity of gang members, but it has not explained why embeddedness leads to prolonged gang involvement. Being a gang member or being embedded with gang members, offers the possibility of learning new criminal skills, increase criminal knowledge, access to more co-offenders that can increase an individual's capital. It is known that gang members are not seen or portrayed as average criminals. Being a gang member or gang associate provides individuals with an amplified status within the criminal world. Even within pop culture, gangs and gang members are often glorified. Gang membership is "a type of social currency or credibility" that can be leveraged to gain access to new opportunities (i.e. co-offending), skills, and knowledge (Augustyn et al., 2019, p. 456). As a result of their status, gang members can arguably expand their criminal networks more quickly and with greater diversity of connections. In addition, becoming involved with a gang (member or associate), there is a formation of a new identity. This new identity is the process of social contagion that occurs with gang membership and is another form of capitalization. The change in status to gang member is another layer of capital that distinguishes gang members from non-gang criminals. This can lead to new opportunities and skills that are not necessarily available to all criminals. It is believed that individuals who are more embedded with gang members can use their position within the network to accumulate higher levels of gang capital.

I hope that future studies further develop the concept of gang capital and its operationalization. I was unable to measure several important components of gang capital. Doing so requires longitudinal data that includes interviews with gang members and their associates in order to capture the spillover of specific knowledge and resources that are known to accompany gang membership. Questions should address changes in gang membership status (e.g. do associates become gang members?), changes in the number of criminal opportunities (e.g. have there been more opportunities to commit crimes?), changes in the type of criminal opportunities (e.g. are there differences in the types of crimes one is exposed to?), and changes in the number of potential co-offenders (e.g. has the number of co-offenders increased?). Questions regarding changes in beliefs and perceptions about crime and the criminal justice system could also be addressed. Beliefs and attitudes are transmitted through networks the same way behaviors are; therefore, knowing whether associating with gang

members and/or becoming a gang member changes individuals perceptions could be a form of gang capital. Interviews with gang members and their associates are required to calculate network measures such as social distance to get an understanding of where individuals are located in the larger social network. Doing this, research will be able to determine if gang capital is a tangible concept and how embeddedness is related to its accumulation.

While I propose a social capital theory of gang membership, the results from Chapter 9 can raise questions or critiques as to whether this is needed. The networks of non-gang members are valuable and play a role in their criminal careers suggesting that social capital as a general theory may be enough. Arguments could be made that instead of looking at the transmission of gang capital, research needs to examine the transmission of social capital. In other words, it may not be the “type” of capital per se. Rather it is the mechanism in which the capital is transmitted that is important. Gang members may not be exposed to a specific type of capital. It could be that any entrenched criminal is exposed to more social capital because of their networks. Anyone who is embedded within a criminal network, especially a larger more diverse network, has access to opportunities and resources to expand their networks. It is the position within networks that holds the capital (Lin, 2001); therefore, how individuals mobilize their connections to gain more prestigious positions may be more important. A non-gang criminal who has built their network and positioned themselves strategically will most likely have access to more capital than a non-established gang member. As a result, their criminal career will be longer. I think this is an area for future research. Through examining the networks of non-gang criminals the flow of capital can be captured. Knowing who their non-criminal associates are, the type of connections they have with them, and if the non-criminal associates eventually become criminally involved can help establish if the same “gang effect” is apparent with non-gang criminals. This will help determine whether gang capital as a construct is needed.

12.5. Future research

Throughout the dissertation I have alluded to areas for future research. There are two I would like elaborate on. The first one I would like to highlight is testing the idea of a “contagion of gang membership”. I would like to test a contagion model using the networks of gang members to understand if there is a contagion of gang membership.

Similar to the work of Papachristos and colleagues on gunshot victimization, I would like to examine if embeddedness (i.e. social proximity) in the networks of gang members increases the odds for non-gang associates to become gang members. In addition, for the non-gang associates who do become gang members, is embeddedness linked with the length of time to become a gang member? As seen in Chapter 10, the majority of non-gang associates who associated with CS members during the time the gang was active, did eventually become gang members. I cannot make conclusions that it was due to their connections with CS members that influenced them to become gang members, but the results do show that this may be possibility. Again, I do not want to infer or over interrupt the results from Chapter 10, but I would like to examine this question further. In addition, researchers who have examined the motivations for entering gangs have shown “my friend was in the gang” to be one of the consistent reasons individuals join gangs (Esbensen et al., 1999; Klein & Maxson, 2006; Thornberry et al., 2003). Networks are a process of becoming one with your environment; therefore, if non-gang youth are embedded with gang members, their chances of becoming gang involved increases. This has important implications for prevention and intervention programs. By associating with gang members, non-gang members are not only at risk of becoming victims of gang violence, they may also be at risk of becoming members. Being able to identify non-gang youth within the networks of gang members, targeted intervention strategies can be organized to target at-risk youth.

A second avenue for future research is to breakdown the sample into former and current members. Some research has found differences between former and current members in terms of risk of recidivism (Pyrooz et al., 2020). Specifically, in this study, authors noted current gang members were at a greater risk of being convicted and re-incarcerated post-release from prison than former members. I think it is important to incorporate networks into this line of research. The results of the dissertation do show that not all of the capital gained during gang membership disappears once individuals leave the gang. Being able to capture how long after membership this increase in social capital remains is important to understand. Additionally, by using networks, the types of networks can be separated into positive and negative in order to determine if there are differences between former and current gang members, and if the make-up of these networks influences further involvement in the criminal justice system. I think it is important to understand the changes in networks between former and current members

and whether these differences can help explain differences in criminal career length. I also think it is important for future research to conduct a study similar to the analysis in Chapter 9, but include current, former, and non-gang members. As seen in Chapter 9, it was the non-gang members that had the longest criminal careers. Therefore, breaking the networks down into current, former, and non-gang more nuanced information may be available to help explain this finding. I unfortunately did not have a large enough sample to do this.

12.6. Final thoughts

A common criticism of network research is the claim that networks ignore the role of motivation and/or personal characteristics in the decisions on who to connect with and why. An argument could be made that I am also ignoring the role of motivations to join gangs or personal characteristics that may contribute to longer criminal careers. I look to Granovetter (1985) and his concept of embeddedness to try and address this. Granovetter noted that actors have agency, but the decisions actors make are refracted by the social relations around them. He further notes the actor is not an “atomized agent”; rather they are a participant in the continuous flow of interactions surrounding them. The actor responds, decides, and acts but this is shaped by the relations around them. It is the interaction or combination of individual characteristics and social relations that influence behaviors. While networks are focused on the social relations and is premised in social relations being the main drivers of behaviors, there is an interaction with the personal characteristics that ultimately forms the decisions and behaviors.

In the dissertation, I called out researchers to get more serious about incorporating networks into gang research. The results show that the personal networks of gang members are influential on criminal trajectories. The size and structure of networks impact the length of gang and criminal careers. In addition, this dissertation went beyond the gang label showing the label itself is not necessarily important for longer criminal careers. While there are limitations with the sample size and study design, I do think the results make a strong argument for the addition of networks in gang research. I am not suggesting or claiming in any way research to date is inadequate, in fact just the opposite. But I do think networks are complementary with the current direction of gang research, and the combination could enhance our understanding of gangs and the long-term consequences of gang membership.

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Young Offenders Act, R.S.C. 1985

Youth Criminal Justice Act, R.S.C. 2002

Appendix A. Example of a Two-Day Prison Log

SMITH, John C	CS# 0000362
Nov 10 th -16:32	SMITH (362) was admitted into Surrey Pre-Trial. No noted gang affiliations or no contact concerns currently
Nov 10 th -17:35	Inmates first evening on the unit, he was welcomed onto the unit by LITTLEFOOT (251), and he seems to be doing well with his cellmate JONES (854)
Nov 11 th -08:25	SMITH (362) had breakfast with JONES (854) and LITTLEFOOT (251)
Nov 11 th -09:16	SMITH (362) talked to CO SANDHU about how to get money into his account so he could buy food from the canteen. CO SANDHU informed him of the process
Nov 11 th -12:25	During lunch, SMITH (362) was overheard making derogatory comments to another inmate, DAWSON (745). DAWSON ignored SMITH. It seems as though these two inmates know each other and may have a negative history. They should be watched
Nov 11 th -14:30	Inmate went outside during yard time. He joined in a game of tetherball with JONES (854), LITTLEFOOT (251), GRISHAM (561), and HAWKINS (314)
Nov 11 th -17:05	SMITH (362), JONES (854), and GRISHAM (561) were seen having dinner together
Nov 11 th -19:14	SMITH (362) was playing cards with HAWKINS (314) and ROBERTS (145). DAWSON (745) walked past with CULLEN (621) when SMITH (362) started yelling homophobic slurs at DAWSON (745). DAWSON (745) turned to SMITH and told him to shut the F up, SMITH then stood up and got in DAWSON'S face. COs intervened and told both males to cool off and de-escalated the situation before anything else happened. These two need to be watched
Nov 12 th 08:30	Inmate did not want to come out of his cell for breakfast. He said he wasn't feeling well and just wanted to sleep
Nov 12 th 12:30	Inmate had lunch with his cellmate JONES (854)
Nov 12 th 15:15	SMITH was seen walking the yard with GENOVA (495)

Nov 12th 17:45

SMITH ate dinner with LITTLEFOOT and GRISHAM. When DAWSON walked past their table, SMITH stuck out his foot in an attempt to trip DAWSON. As DAWSON re-gained his footing, he leapt at SMITH and started punching him. LITTLEFOOT stepped in to help SMITH, running from the other side of the room was DASH (324) who pulled LITTLEFOOT off and the two started fighting. The fight was broken up the COs and DAWSON and SMITH were sent to their cells

Appendix B. An Edgelist Example

	A	B	C	D	E	F	G	H	I	J
1	Ego	Alter	Type of Tie	Offence	Location	Date of connection	Source of Info	Confirmed	Date Coded	Notes
2	SMITH (362)	LITTLEFOOT (251)	Social	Null	SPSC	11/10/2019	Prison Logs	Yes	11/9/2020	LITTLEFOOT welcomed SMITH onto the unit
3	SMITH (362)	JONES (854)	Social	Null	SPSC	11/10/2019	Prison Logs	Yes	11/9/2020	Cellmates
4	SMITH (362)	LITTLEFOOT (251)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen having breakfast
5	SMITH (362)	JONES (854)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen having breakfast
6	LITTLEFOOT (251)	JONES (854)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen having breakfast
7	SMITH (362)	DAWSON (745)	Victimization	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	SMITH was overheard making derogatory comments to DAWSON...these two need to be monitored for potential
8	SMITH (362)	LITTLEFOOT (251)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
9	SMITH (362)	JONES (854)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
10	SMITH (362)	GRISHAM (561)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
11	SMITH (362)	HAWKINS (314)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
12	LITTLEFOOT (251)	JONES (854)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
13	LITTLEFOOT (251)	GRISHAM (561)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
14	LITTLEFOOT (251)	HAWKINS (314)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
15	JONES (854)	GRISHAM (561)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
16	JONES (854)	HAWKINS (314)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
17	GRISHAM (561)	HAWKINS (314)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	Yard time the five were seen playing tetherball together
18	SMITH (362)	JONES (854)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen eating dinner together
19	SMITH (362)	GRISHAM (561)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen eating dinner together
20	JONES (854)	GRISHAM (561)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	The three were seen eating dinner together
21	SMITH (362)	HAWKINS (314)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	SMITH, ROBERTS, and HAWKINS were playing cards when DAWSON walked past with CULLEN (621). As the two wa
22	SMITH (362)	ROBERTS (145)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	SMITH, ROBERTS, and HAWKINS were playing cards when DAWSON walked past with CULLEN (621). As the two wa
23	HAWKINS (314)	ROBERTS (145)	Social	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	SMITH, ROBERTS, and HAWKINS were playing cards when DAWSON walked past with CULLEN (621). As the two wa
24	SMITH (362)	DAWSON (745)	Victimization	Null	SPSC	11/11/2019	Prison Logs	Yes	11/9/2020	SMITH, ROBERTS, and HAWKINS were playing cards when DAWSON walked past with CULLEN (621). As the two wa
25	SMITH (362)	JONES (854)	Social	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	Cellmates and were seen having lunch together
26	SMITH (362)	GENOVA (495)	Social	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	The two were seen walking together during yard time
27	SMITH (362)	LITTLEFOOT (251)	Social	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	The three were eating dinner together when DAWSON walked past, SMITH attempted to trip him. As DAWSON reg
28	SMITH (362)	GRISHAM (561)	Social	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	The three were eating dinner together when DAWSON walked past, SMITH attempted to trip him. As DAWSON reg
29	LITTLEFOOT (251)	GRISHAM (561)	Social	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	The three were eating dinner together when DAWSON walked past, SMITH attempted to trip him. As DAWSON reg
30	SMITH (362)	DAWSON (745)	Conflict	Null	SPSC	11/12/2019	Prison Logs	Yes	11/9/2020	The three were eating dinner together when DAWSON walked past, SMITH attempted to trip him. As DAWSON reg
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