FROM THE STREETS TO THE TWEETS: SOCIAL NETWORK ANALYSIS OF CANADIAN STREET GANG MEMBERS AND THEIR USE OF TWITTER, FACEBOOK AND YOUTUBE.

by

Francesco Carlo Campisi

A thesis submitted to the Department of Sociology

In conformity with the requirements for

the degree of Master of Arts

Queen's University

Kingston, Ontario, Canada

(May 2019)

Abstract

In the last two decades, the use of social networking sites (SNS) has increased at an astounding rate. Research regarding street gangs' use of social media generally suggests two assumptions: Firstly, street gang members have infiltrated SNS, and have transferred much of their gang culture from the real world to the virtual one—a process known as *cyber-banging.* Secondly, street gangs have begun using SNS to recruit potential members; a fear propagated by newspapers and police forces. While cyber-banging has be well documented, the same cannot be said about online recruitment. This study achieved two goals: firstly, using a similar keyword search to that which was utilised by Morselli & Décary-Hétu (2013) this study empirically illustrates the prevalence of cyber-banging and recruitment on SNS. To accomplish this goal, this study sampled 23 Twitter users and 36 Facebook users flagged as street gang members across Canada, along with 10 YouTube rap videos created by gang members. Secondly, using a network analysis add-on to Microsoft Excel called NodeXL, this essay employed social network analysis to test whether centrality measures can extrapolate gang roles within a gang member's Twitter network. Using content analysis, the results demonstrated that the most prominent type of cyber-banging is content that promotes gang ideologies. The results also conclude that none of the content on Facebook, Twitter, and YouTube can be considered proactive recruitment techniques. Regarding the second goal, using a combination of degree centrality, betweenness centrality and eigenvector centrality measures, results suggest many of the gang members are central in their network, but probably not gang leaders; while a look at the relationship between activity levels and number of followers on Twitter demonstrate four possible roles a SNS user has within his gang.

Acknowledgements

I want to thank Marc Smith, the creator of *NodeXL*, who decide to call me back one Saturday morning from his car. Since then, he has introduced me to the complex world of network analysis, and he ends every phone call with "I hope I have turned someone else onto the exciting world of network analysis." Thank you, Marc, you have!

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List of Abbreviations

CPTED   Situational Crime Prevention through

           Environmental Design

RAA   Routine Activity Approach

SNS   Social networking sites

Chapter 1

General Introduction

In the last two decades, the use of social media has increased at an astounding rate. Early online social communication sites such as AOL Chat and Yahoo chatrooms have led to the development of some of the first social media platforms and ushered in new ways for blogging and content sharing. By 2006 Facebook and Twitter exploded in popularity (Hansen, Shneiderman & Smith, 2011). Today, 2.62 million people use at least one social media site, with 3.02 million users projected by the year 2021 (eMarketer, 2019). This has created "an environment where users can reach the maximum number of people without sacrificing the intimacy of person-to-person communication" (Hendricks, 2013, n.p.). The prevalence of social networking sites (SNS) has become so widespread in North America that it is now a part of everyday social interactions. With such a prolific presence in society, sociologists and criminologists have begun to question the role of SNS in street gang culture. Past research regarding the relationship between street gangs and social media has been both innovative and, at times, inconclusive. For example, Morselli and Décary-Hétu (2011) empirically established the presence of street gangs online; however, in 2013 they were unable to demonstrate to what extent street gangs were recruiting online (Morselli & Décary-Hétu, 2013). Their work is the inspiration for the present study.

Like that of the Morselli and Décary-Hétu studies from 2011 and 2013, the present study explores and describes the online cyber-banging and recruitment phenomenon in Canada. In 2011, Morselli and Décary-Hétu published a qualitative study regarding the presence of street gangs on Facebook and Twitter. Using a keyword search method on each site, they present two significant results: Firstly, there was an increase in gang presence online from 2010 until 2011. Secondly there has been a shift in the quality and quantity of information available online on

these websites. Morselli and Décary-Hétu noted a greater number of news links about gang violence, profiles displaying rap videos, and other types of "propaganda [..] that praise the gangster way of life" (2011, p. 884). In 2013, Morselli and Décary-Hétu added to their previous results, increasing the number of gang names included in their keyword search from 28 gang names to 55. They also included Myspace, as it was a popular social media site at that time. While their initial study attempted to establish gang presence on social media, their 2013 article aimed to understand the various reasons why street gangs utilize social media. They found in most, if not all cases, gangs use social media for promotional purposes (Morselli and Décary-Hétu, 2013). Regarding recruitment, Morselli and Décary-Hétu found street gangs "are not proactively converting anyone into being gang members" (2013, p. 166). Despite this, the authors do suggest that the expansion of advertising criminal activities and ventures, coupled with the increased number of possible interactions between the gang member and visitors to the sites, could have an impact on recruitment (Ibid). Their results suggest while there may not be any evidence of recruitment, there is a link between cyber-banging and a type of indirect recruitment. Indirect recruitment suggests the notion that gangs actively seek out potential recruits is false; contrarily, cyber-banging techniques serve as a temptation device, luring willing potential member to seek out the gang.

Though no one definition of cyber-banging exists, it is commonly accepted that cyber-banging is the diffusion of gang culture through the internet, usually on social media (Decker, van Gemert & Pyrooz, 2009). This diffusion includes a vast number of activities which have been explored and documented by research over the past ten years. Online recruitment, however, is not so easily documented. Recruitment is the process "whereby youth are brought into a gang or how they gain access to a gang" (Totten, 2012, 33). Morselli and Décary-Hétu have noted several times that there is no empirical proof that street gangs have been using social media to entice young men into joining their gang (Morselli & Décary-Hétu, 2011; Morselli & Décary-Hétu,

2013). They do note the small amount of recruitment that has been identified has been done so by journalists and police departments, which suggest little to no scholarly conclusions regarding the presence of recruitment. Using a combination of both quantitative and qualitative analysis, this study explores and describes both cyber-banging and recruitment in Canada. This work consists of sampling a large number of Canadian street gangs for a more accurate depiction of the phenomenon than has been attempted by past research and it achieves two main goals. Firstly, using content analysis this study illustrates street gangs use of social media. Secondly, using network analysis, theory is developed regarding street gang members and their use of social media through inductive reasoning. With these two goals forming the foundation, there are two research questions answered by the present study: 1) What is the prevalence of cyber-banging and recruitment on social networking sites in Canada? 2) What can network analysis reveal about the roles gang members have within their social media network?

Addressing the first research question has the primary goal of describing the phenomenon in Canada. Cyber-banging and recruitment have never been investigated using a nomothetic approach in determining its prevalence. Much of the past research; such as that of Patton, Lane, Leonard, Macbeth and Lee (2017), preferred a qualitative, ideographic approach vis-à-vis interviewing street gang members about their use of social media. Morselli and Décary-Hétu (2013) were one of the first to uncover the prevalence of this phenomenon. However, with over a six-year difference between the present study and their 2013 study, and with a shift in popularity regarding social media platforms (such as the decrease in Myspace usage and a rise in YouTube and Facebook), current results regarding its prevalence may differ dramatically from that of previous results. The second research question is an innovative look at the phenomenon using a network analysis program called NodeXL—which was not available to Morselli and Décary-Hétu in their 2013 article. NodeXL is an extension of Microsoft Excel created by the Social Media Research Foundation and enables researchers to access the network surrounding a subject's social

media posts. NodeXL provides a plethora of information regarding the subject within his/her network. In addressing the second research question theory is developed regarding the subject's importance in his network, and surveillance implications are established that may aid police gang-taskforces across Canada.

Crime Opportunity Theory and its key concepts (Rational Choice and Routine Activities Approach) provide insight into the phenomenon of gangs utilising social media. While some definitions of cyber-banging include recruitment techniques, this study differentiates cyber-banging techniques and recruitment techniques due, in part to different theoretical approaches explaining the prevalence of one or the other. For example, Routine Activity Approach suggests the presence of cyber-banging on SNS. Further, while the presence of online recruitment is widely debated among researchers, both Rational Choice and Situational Crime Prevention can create a plausible argument as to why there is very little presence of online recruitment. These approaches suggest no recruitment and will be explored in the following chapters. Therefore, it is this study's hypothesis that the results will demonstrate little to no online recruitment.

"Chapter 2: Literature Review" explores the past research on both cyber-banging and recruitment. Its purpose is to provide details and examples as to the types of activities which constitute both cyber-banging and recruitment. The subsequent chapter, "Chapter 3: Theoretical Framework" discusses the approaches surrounding Crime Opportunity Theory. This chapter also relates theory to the research justifies the hypothesis regarding a lack of recruitment. What must be noted is while Crime Opportunity Theory is the foundation of the present research, the theory is not applied to explain crime committed by gang members online. The theory and its approaches are used to explain the presence—or lack thereof—of both cyber-banging and recruitment. For this study, theory will be extrapolated and interpreted slightly so that it may explain social media usage among street gangs, as there are no criminal theories which explicitly discuss such a recent phenomenon to date.

Chapter 2

Literature Review

While the study of street gangs has been around for a little under a century, the street gang phenomenon has been around for hundreds of years. However, each gang—whether 'established' or not—have different roots depending on the time of their existence. Social, political, economic, and environmental factors each influence the formation of gangs in differing ways. For example, many gangs in Brooklyn, New York were created due to drug and crime trends of the early 1990s (Curtis, 1998). Gang formations are a result of people reacting to (1) neighborhood difficulties caused by drug use; (2) a loss/absence of legitimate employment opportunities; and (3) other gangs' display of wealth and success. In those situations, Curtis argues, gangs offer what mainstream society and pro-social neighborhoods cannot:

> "Where many members' households were chaotic [due to drugs and violence], the gang functioned as an alternative family which prescribed rules and justifications for behavior, thereby bringing order and structure into potentially unmanageable social and emotional situations. The gangs imposed organisation, government, and order on marginalized individuals" (Ibid, p.1265).

Though street gangs are not a new phenomenon in Canada, the etiology of gang membership in Canada is much more difficult to concretely pin down. What is known about the etiology of gangs stems from other countries, such as the United States, Britain, and France. This is mainly due to the scant scientific research on the topic (Totten, 2012). In his book titled, "Nasty, Brutish, and Short: The Lives of Gang Members in Canada" Totten—like Morselli and Décary-Hétu (2011;2013)—remarks that journalists and law enforcement reports are the most authoritative sources available at this time (Ibid). Totten's book is one of the few seminal works attempting to address the lack of historical information regarding gangs in Canada and provides a

brief overview of the type of gangs that can be found. The very first named street gang was Winnipeg's 'Dew Drop Gang' in the late 1940s; who were known for robbing banks and jewellery stores. Since that time, youth gangs have emerged in almost every big city and many rural towns across Canada. Totten argues that the emergence of Canadian street gangs can be traced to poverty and racism, "proliferating under conditions of social inequality" (2012, p. 19). It is no shock then that street gangs today are often formed by Aboriginal peoples and those with other non-white ethnic backgrounds such as Asian-Canadian, African-Canadian, and Middle Eastern peoples living in Canada. Aboriginal gangs are some of the more reported street gangs in Canada, with members suffering the most socio-economic alienation in Canadian history. As Totten states, "Aboriginals do experience a disproportionate burden of suffering, and this does help explain their participation in gangs" (Ibid, p. 55). Due to those same socio-economic factors of poverty and social inequality, it is possible to connect these conditions to the economic criminal activities most gangs engage in (e.g.: drug dealing, prostitution, hustling etc.), though the number of criminal activities engaged in and their frequency differs from one gang to another. While Totten's work is an excellent source for some historical information, and its discussion of gang culture, signs, tattoos and graffiti, it does not tackle the transference of gang culture into the virtual world of social media.

2.1 Cyber-banging

Some of the first mentions of the concept "cyber-banging" stems from investigative reporting in the United States. In 2006, reporter Scott Gutierrez published an article in the Seattle PI, suggesting Myspace is being used by "hoodlums" to showcase gang images and videos online (n.p.). In his article he quotes specialists such as Sherriff's investigators and gang task force members in the Seattle and Tacoma areas. All the specialists stated cyber-banging is a recent phenomenon that is being monitored but not yet been acted up by law enforcement (Ibid). In

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2008, a second news report presented an interview with San Mateo Police Chief Susan

Manheimer who states:

"[g]ang leaders are aware that kids like to socialize on sites such as Myspace and

YouTube. […] Kids get into discussions in the comment sections of web sites and engage in

everything from vicious threats to what seems to be innocuous chit chat." (quoted in Vazquez,

2008, n.p.)

Much of the research on cyber-banging does not attempt to provide a concrete uniform

definition but infers it through a categorisation of the gang activities online (Morselli and Décary-

Hétu, 2011; Morselli and Décary-Hétu, 2013; Sela-Shayovitz, 2012; Patton et al. 2017; Elsaesser

et al. 2017; Storrod & Densely, 2017; Way & Muggah, 2016). Research suggests that cyber-

banging is seen as a transformation of street gang culture present in the real world, translated into

online posts, videos, and images of the same nature. As Storrod and Densley (2017) illustrate,

street corners and other physical arenas of gang life are no longer required since technology has

enabled gangs to exist in the virtual world.

In many ways the displacement of gang culture elicits activities promoting gang

ideologies through pictures and videos. Gutierrez (2006) introduced his article by describing a

photo of a gang member flashing gang symbols posted on social media:

"The hoodlum in the photo holds a shotgun. […] He's draped in blue and uses "East Side

Rebels". […] They display photos of young men pointing guns at the camera and flashing

hand gang signs, some hiding their faces behind rags in gang colors or hoods." (n.p.)

Promoting gang affiliation is one of the most common uses for social media. This can

take the structure of images and—most reportedly—videos on YouTube promoting the individual

gang (Womer & Bunker, 2010; Storrod & Densley 2017; Patton et al. 2016). The specific ways in

which the gangs promote themselves online differs from gang to gang and from research to

research, often showcasing colours and symbols as mentioned earlier, displaying drugs, weapons

and money from illegal gains, creating videos boasting facets of gang lifestyle, and other types of propaganda.

Cyber-banging does serve as a beacon of information as well, providing followers and members updates on all gang matters. Researchers have noted that gangs have used social media to report one's part in a violent act, network with other gang members, and grieve/honour and express trauma over a death or incarceration of a fellow member (Patton et al. 2016; Elsaesser et al. 2017; Gutierrez, 2006). Most notably, the same research found that cyber-banging includes making and responding to threats, using social media to disrespect a recently killed rival gang member, videos depicting violent acts, and co-ordinating criminal activities. Sela-Shayovitz (2012) discovered a relation between the level of technological skill and the level of criminal activities engaged in online by gang members. Those with a low level of technological skills (63.4%) tended to engage in traditional criminal activities in the real world. Gang members with a mid-range level of computer skills (23.3%) perform some forms of online delinquency, such as copying software, movies and games, gambling, and spreading viruses. Those with a high level of technological skill (13.3%) reported frequently engaging in hacking (Sela-Shayovitz, 2012, p. 397-398). What must be noted is while the author suggests cyber-banging in the form of criminal activities online is present, none of the crimes presented were found to be facilitated through social media platforms. Also, spreading viruses and pirating software are not exclusively gang activities. Many non gang-affiliated individuals may also commit these crimes, whereas the cyber-banging activities exposed by Patton et al. (2016), Elsaesser et al. (2017), and Gutierrez (2006) are exclusive to gang members using SNS.

There has been research which has attempted to categorise cyber-banging activities. Storrod and Densley (2017) place gang activity into two categories: expressive activities and instrumental activities. Expressive activities constitute online behavior where gang members are expressing their pride in their gang, honouring the dead or incarcerated gang members, or are

engaging in general boasting. Instrumental actions are "intended to advance the material interests of the gang or its members", such as criminal activities like drug dealing, recruiting, and pimping (Ibid, p. 679). Though the distinction seems obvious, the motivations of certain activities on social media do not lend themselves to this categorisation. For example, Patton et al. (2016) exemplifies a gang member's tweets which are considered status seeking online behavior with spatial referencing: "@tyquanAssassin: If u Ion Want Dat Foreign Cum Ride Dwn St.Lawrence" (Ibid, p.1011). This tweet is considered taunting rival members, and therefore can be interpreted as expressive activities. However, in many cases, this type of taunting and showboating may lead to a rise in drug sales and criminal activities due to these members being considered stronger than their rivals. With such a perspective many online activities can be considered instrumental if they result in a rise in profit. Hoffmeister (2014) also categorized criminal activity involving social media. He divided activities into two categories, each further subdivided again into two. Category 1 involves relaying information *to* victims, co-conspirators or the public. This includes subcategory A: criminal conduct that occurs entirely online, like harassment or bullying; while subcategory B includes those same activities but that occur in the real world as well. Category 2 is activities involving the use of social media to gather information *about* victims. This is further subdivided into A: using that information to commit online crimes, such as internet fraud; and B: using the information to commit traditional crimes, such as burglary. As his categorisations stem from a legal perspective, Hoffmeister's categorisation does not include promotional material posted by gang members as these are not necessarily illegal actions or cause for prosecution. Hoffmeister's categorisation does, however, demonstrate the power gang members have online in their ability to communicate and access information on potential victims.

2.2 Recruitment

Though recruitment is an easily observable phenomenon (like military recruiters at job fairs or Jehovah Witnesses passing pamphlets on street corners), defining recruitment is not a

simple task. Hamill (2010) defines recruitment as "an ongoing communicative exchange between recruiter and volunteer that is best explored through the lens of 'trust'" (as cited in Densely, 2012, p. 302). Simplified, recruitment needs a party looking to add a member to their group and a second party willing to volunteer to join the group. Communication between both parties involves techniques used by the recruiter to entice the volunteer into joining.

Like cyber-banging, online gang recruitment appeared on researchers' radar with the recent rise of social media usage and with warnings sounded by journalists regarding the threat of street gangs online. As Joe Vazquez reports, Police Chief Manheimer stated that "gang members coming back from prison [are] looking more and more to those middle schoolers and the young kids to recruit them" (2008, n.p.). Contrary to cyber-banging, there is little consensus whether the warning by Manheimer is correct. Even Gutierrez's article does not reach a definitive conclusion. While the tone of the article suggests keeping a watchful eye on the dangers of street gangs online, the article cites contrasting opinions. Where some in the article suggest "[police officers] fear gangs are using the internet to recruit new members", Gutierrez immediately contradicts the previous expert by writing: "[the Northwest gang specialist argues] he hasn't heard of many gang members who were recruiting online. That still mostly must happen in face-to-face meetings" (2006, n.p.). Beyond journalism, researchers are also divided on the issue.

As stated in the introduction, Morselli and Décary-Hétu's 2011 study found that gangs most prominently utilise social media for promotional purposes. Again in 2013, they found no evidence of "direct recruitment online" (Morselli and Décary-Hétu, 2013, p. 165). The authors noted that "there is some anecdotal evidence suggesting that gangs are turning to social networking sites to recruit new members, [but] there is little publicly available research" on exactly how they are using social media (Ibid, p. 154). Other research has attempted to address the discrepancy between the presence of cyber-banging and recruitment by suggesting both gang members and potential recruits are weary of using social media because of an inherent distrust of

the internet (Moule Jr.et al. 2014; Kite & Filippelli, 2008). According to some research, only 8% of gang members said they recruit online (Densley, 2012). Pyrooz and colleagues (2015) observed that "trust is a major component of street gang recruitment, [it is] something anonymity of the internet is unlikely to project" (p. 490). For street gangs, the distrust stems from a paranoia that on the other side of the conversation lies rival members or law enforcements scrutinising their posts, which inhibits gang members into using social media for important or illegal purposes (Moule Jr.et al. 2014). Kite and Filippelli (2008) discuss social media usage among non-criminal youth. Their research found that youth do not generally allow themselves to be approached online or divulge personal information online to strangers. Though not specifically addressing the online street gang phenomenon, the authors' conclusions do seem to suggest a difficulty regarding online recruitment practices due to a lack of trust on both ends

Despite some research concluding a lack of online recruitment, there are other articles which suggest the opposite. As demonstrated earlier, Morselli and Décary-Hétu (2011) identified promotional online material as a possible precursor for recruitment. This blurs the line between cyber-banging and recruitment. If cyber-banging can lead to recruitment, does it suggest that all online gang activities are potential recruitment techniques? There is evidence of certain gangs using cyber-banging techniques for coercing potential recruits into joining the gang (Womer & Bunker, 2010). For example, MS-13 have posted promotional material online glorifying the gang lifestyle as a recruitment measure (Ibid, 2010). This suggests online recruitment is reactive rather than proactive. Promotional material online and other cyber-banging techniques are used as a temptation device, used to initiate interest among those potential volunteers to contact the gang. This is mirrored by Storrod and Densely (2017) who argue gang members monitor videos on YouTube for recruitment which is why the inclusion of YouTube is imperative to the present research, comparative to past research.

Contrarily, in the real world, recruitment is a proactive, private affair, in which only a selected few individuals familiar with gang members are selected as potential recruits. In many cases, potential recruits are simply related to gang members (Grekul & LaBoucane-Benson, 2008; Densley, 2012). A familial relationship to gang members either automatically instils confidence in the recruit, or family dysfunction leads the youth to seek a gang for familial fulfillment. One's peers also play a role in gang recruitment, and peers "can actually push some youth into gang associations out of a need for protection" (Grekul & LaBoucane-Benson, 2008, p. 69). Interestingly, gangs recruit those seeking protection and potential recruits join the gangs out of fear of the gang itself. As Racine (2011) illustrates, MS-13 have recruited members using both techniques, offering gifts and enticements to potential recruits and have "relied heavily on forced recruitment to expand and maintain their membership" through harassment and physical abuse. (p.460). For the purpose of this study, these real life recruitment techniques will be added to those of the online recruitment techniques presented, to determine if recruitment techniques have moved from the real world to SNS, as cyber-banging techniques have.

Chapter 3

Theoretical Framework

Crime Opportunity Theory came in existence in the late 1970s. Before that time criminal research emphasized the motivation for criminality through internal factors (Hollis-Peel, Reynald, van Bavel, Elffers & Welsh, 2011). In 1971, C. Ray Jeffrey published "Crime Prevention Through Environmental Design" where he argues that behavior—both regular and criminal—is the consequence of dynamic changes in the immediate environment. Regarding criminal behavior, Jeffrey argues that criminal behavior involves (1) the risk involved in the commission of the crime and (2) the opportunity structure to commit the crime (1971, p. 177). With Cohen and Felson (1979) came an innovative approach towards understanding criminal activities. Building on Jeffrey's work, Cohen and Felson suggest criminal activities are the result of situational circumstance outside the offender psychology or cultural dynamics (1979). Cohen and Felson presented the "Routine Activities Approach" and suggested crime is the product of a convergence of space and time on a multitude of circumstances; more precisely the convergence of a "likely offender, suitable targets and the absence of capable guardians" (1979, p. 588). The seminal works of Jeffrey (1971), and Cohen and Felson (1979) introduce Crime Opportunity Theory, and the key concepts it spawns: (1) Routine Activity Approach (RAA), (2) Rational Choice Theory, and its policy application known as (3) Situational Crime Prevention through Environmental Design (CPTED). Though they differ in many ways, these approaches all suggest environmental circumstances result in criminal behavior due to a choice made by the criminal. While Crime Opportunity Theory does not directly discuss social media and street gangs, it does indirectly demonstrate why street gangs have seized the opportunity to move towards this new medium, through the lens of RAA, and why perhaps recruitment has not made its way online, through the lens of Rational Choice and CPTED. CPTED differs from the other approaches

because it is not a theory but rather the policy implication of Crime Opportunity Theory. Notwithstanding, along side an explanation of Rational Choice Theory, CPTED strategies can provide an indirect justification to this study's hypothesis: that the results will demonstrate little to no recruitment on social media. Given that CPTED has borrowed concepts from both Rational Choice and RAA, CPTED will be couched within Crime Opportunity Theory as real world examples serve to ground and explain particular facets from each of the two theoretical approaches.

3.1 Rational Choice

Rational Choice perspective assumes that offenders engage in specific criminal activities if the crime yields a greater reward than it does risk (Cornish & Clarke, 1999, Tversky & Kahneman, 1986). Keel (as cited in Gül, 2009, p. 37) outlines further assumptions in establishing the key concepts of rational choice. According to Keel, some of the central points of rational choice are as following:

1) The human being is a rational actor;

2) Rationality involves an end/means calculation;

3) People (freely) choose behavior, both conforming and deviant, based on their rational calculations;

4) Choice can be controlled through the perception and understanding of the potential pain or punishment that will follow an act judged to be in violation of the social good, the social contract. (Ibid).

The first and second central points stem from economic theories of crimes and more importantly promote the concept of "decision-making approach" as the fundamental of criminal activities (Clarke, 1995, p. 98). For example, an offender will steal if he believes the payout is large, and the risk of being caught is minimal. In such a case, the temptation to steal becomes too

alluring for the offender, and ultimately, he decides that stealing is more beneficial than it is risky.

According to Cohen, Kluegel and Land (1981, p.510), the four variables which influence choice are (1) exposure, (2) proximity, (3) attractiveness, and (4) guardianship. As each variable fluctuates, the appeal for the activity either increases or decreases (measures of risk). Exposure is defined as "the physical visibility and accessibility of persons or objects to potential offenders at any given time or place" (Cohen et al., 1981, p.507). Proximity is defined as "the physical distance between areas where potential targets of crime reside and areas where relatively larger populations of potential offenders are found" (Ibid). Target attractiveness is defined as "the material or symbolic desirability of persons or property targets to potential offenders [...]" (Ibid). As the level of exposure, proximity and target attractiveness rises, the perceived risk decreases and subsequently leads potential criminals to view the activity as more beneficial than it is risky.

The fourth variable, guardianship, is defined as "the effectiveness of persons (e.g., housewives, neighbors, pedestrians, private security guards, law enforcements officers) or objects (e.g., burglar alarms, locks, barred windows) in preventing violations from occurring—with high effectiveness increasing risk for the potential offender" (Clark, 1995). Contrary to the other measures, a high level of guardianship outweighs the potential benefits of committing the criminal activity. At the policy level, CPTED utilizes guardianship to "systematic[ally] study [...] possible means of blocking opportunities for these particular crimes [to implement] the most promising, feasible, and economic measures [for crime reduction]" (Gladstone as cited in Clarke, 1995, p. 93). For CPTED, the most promising methods for lowering the conditions for criminal activities is controlling the facilitators of crime through surveillance.

The inclusion of the concept of risk was added by Tversky and Kahneman (1986) who suggest the cost/benefit analysis done is based on risk aversion. In analysing cost/benefit of a criminal activity, the choice depends not on the measures discussed, but the rational actor will

choose to commit a crime only if the risk associated is limited or non-existent. While this may seem similar, there is a prioritisation for Tversky and Kahneman, where the benefits are simply a synonym for attractiveness as defined by Cohen, Kluegel and Land (1981). This contrast is to suggest while proponents of rational choice agree that actors weigh their options beforehand, the variables and ways in which they calculate risk and benefit is contentious.

This contentiousness around risk/benefit calculations can be observed within concepts such as "readiness" and "bounded rationality". In theory, Rational Choice advocates seem to suggest all actors can potentially become criminals should the opportunity present itself in a manner that is low risk, highly attractive and highly rewarding. The reality is such that not all people engage in criminal activity, even if the activity has rational benefits. To explain this disparity of criminal engagement, Cornish and Clarke suggest a fundamental factor in criminal engagement and the decision-making process thereafter is "readiness" (1999, p 633). Crime displacement indicates that a criminal must already have a willingness to commit a crime. According to Rational Choice, readiness is a fundamental distinction between criminals and non-criminal actors. Gottfredson and Hirschi argue that criminal involvement is a preamble to continued criminal activity and its decision-making process (as cited in Clarke, 1983). Therefore, a rational actor must be willing to commit a crime first, and only then will they engage in a cost/benefit analysis.

Readiness, the decision-making process that accompanies it, and a cost/benefit analysis does not guarantee the criminal act is indeed the best outcome. In fact, the actor's analysis is not always objectively correct. This is known as "bounded rationality". Clarke (1983) suggests that decision making cannot always be fully rational because humans tend to adopt a "rule of thumb" standard and psychological factors may temper rational decision-making capabilities. According to Clarke, commonly actors do not accurately assess their decisions on analyses and calculations but will repeat a similar decision in similar contexts as part of a "standing decision that eliminates

the need to analyse every situation"—considered to be the 'rule of thumb' (1983, p. 231). Other times, Clarke suggests, a lack of impulse controls and the use of drugs and alcohol influence the decision maker's ability to accurately assess costs and benefits. Building upon Clarke's work, March (1986) suggest "rational choice involves two guesses, a guess about uncertain future consequences and a guess about uncertain future preferences" (142). Similarly, Harsanyi (1986) argues that decision makers cannot always predict the outcomes, even when rationally analysing costs, benefits, risks, and rewards. Both Harsanyi and March present a limited rational choice model. This proposes that though all actors may rationally weigh their decisions, humans are incapable of having and understanding all the variables. Therefore, all choices are subject to inaccurate information, missed variables, misunderstood or biased perspectives and more; all of which play a role in cost/benefit calculations. One form of inaccurate or biased perspective of bounded rationality can be found in perceived guardianship. While some forms of guardianship can be intentional—like security guards or cameras, natural surveillance involves specific environmental conditions which lower the attractiveness of a target (e.g.: improved street lighting, low bushes exposing the house to neighbors). These examples demonstrate a passive surveillance where the primary objective may not be to surveil, but by its presence, leads to the perception of surveillance. The perception that the environment can promote guardianship may result in deterring the offender in committing a crime (Hollis-Peel, Reynald, van Bavel, Elffers & Welsh, 2011). According to CPTED proponents, this bounded rationality will lead to one of two choices: diffusion or displacement.

Clarke defines displacement as a "response to blocked opportunities or increased risks in respect of a particular offense, an offender might attempt to commit it elsewhere" (1983, p. 245). In his later work he cites multiple researchers who have catalogued this displacement following crackdowns on crimes using CPTED: such as a street lighting program in Newark, New Jersey (Lateef as cited in Clarke, 1995). Displacement is seemingly justified by the concept of rational

choice, suggesting certain "professional" criminals will go out of their way to commit a crime, looking for a situation until the cost/benefit calculations fall in their favor. Clarke (1983) suggests that this is the case for crimes such as bank robberies, where the emergence of security technologies such as bank safes displaced robberies into over-the counter armed robberies, which later became the norm (p. 245). However, these examples are strictly in the case of professional criminals. Diffusion of benefits from intervention is separated into two categories: deterrence and discouragement (Ibid, p. 130). Deterrence, such as the use of CCTV surveillance cameras, affects offenders' assessment of risk, while discouragement affects the assessment of effort and reward (Ibid, p.131). With both deterrence and discouragement is the adherence to the notion that offenders will not go out of their way to commit a crime should the assessment be deemed unprofitable.

For this study, Rational Choice provides a foundational understanding of criminal groups as actors who are not compelled/forced to act but choose to act in criminal ways based on a cost/benefit analysis regarding factors such as guardianship, risk, exposure, proximity. While SNS are not inherently criminal, SNS is the medium in which street gang members choose to propagate gang culture and activities due to the same risk/benefit factors above-mentioned. Factors, such as guardianship for example, can demonstrate why street gang members have turned towards social media. SNS are generally unregulated and widespread, which lowers guardianship while increasing exposure to others they may not have been exposed to in real life. Other concepts such as bounded rationality can also increase perceive risk, which heighten fears of online surveillance (or the perception of being watched online) which in turn, may have a negative impact on recruitment. This is further explored in section 3.3.

3.2 Routine Activity Approach (RAA)

Cohen and Felson's 1979 work on RAA is pivotal for Crime Opportunity Theory. It argues that the everyday activities of a person's life present environmental structures which are

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ripe for criminal activities. The three minimal elements for criminal activities are (1) a motivated offender, (2) suitable targets and (3) the absence of capable guardians against a violation. Though these elements share similarities with the four elements presented by Cohen, Kluegel and Land (1981), where they differ is through the convergence of the decision maker, time, and space. Rational Choice argues that an offender will commit a crime once he/she has evaluated the risks, costs, and benefits. However, a motivated offender may avoid taking action in one place and will move to other areas until the cost/benefit analysis is in their favor. Where they move however, is not random. RAA determines that a motivated criminal will move in areas familiar to him in his everyday life. It is for this reason that Cohen and Felson (1979) argue that the three conditions for criminal activities must converge not only in the same space, but at the same time. This puts forth the notion that the opportunity for criminal activities arise from everyday activities of a non-criminal nature.

RAA has, in recent years, been amalgamated with Lifestyle-Routine Activity theory. This is simply an extension to RAA, suggesting the convergence of space and time are present in the lifestyle of the criminal and the victim. Much of the criminal research in this approach has led to the conclusion that lifestyle and everyday activities can explain criminal activities (Wilcox and Cullen, 2018; Maxfield, 1987). However, much of Lifestyle theory has insufficiently conceptualized the victims as responsible—in part—for their proper victimization. Authors such as Finkelhor and Asdigian (1996) have suggested that vulnerability, gratifiability and antagonism are strong indicators for youth victimization, while risk-taking behavior is a strong indictor of most other kinds of victimization. Wilcox and Cullen (2018) also summarize the works of multiple authors exploring RAA and Lifestyle-Routine-Activities Approach and conclude that the suitable target must be in everyday situations which increase his/her exposure to victimization, proximity to a motivated offender, and have little to no forms of guardianship in their everyday lives. Though Finkelhor and Asdigian (1996) briefly touch upon the implications of these results,

there is an underlying tone of victim-blaming when discussing Lifestyle-Routine Activity theory. Though Finkelhor and Asdigian (1996) take care not to promote victim-blaming, they do suggest that there is a symbiotic relationship between the victim and the offender, having met and interacted together in the same time and space.

For the purpose of this study, RAA and Lifestyle-Routine Activities Approach are important as far as they justify the rise in SNS usage in the last decade, and the inevitable displacement of real world gang culture to cyber-banging. Whereas RAA tends to define the criminal activity based on the physical real-world activities of the criminal and potential recruits, displacement instead has pushed daily activities into a virtual world. With the evolution of smartphones, it has become increasingly easy for SNS to be both accessible and omnipresent. The adoption of Facebook, Twitter, and Snapchat among other SNS by many has shifted the convergence of time and space. A criminal and a victim now have constant access to each other (time) on the same platforms (space). Though Lifestyle-Routine Activities Approach has been criticized for victim-blaming, Finkelhor and Asdigian's (1996) interpretation of victims risk-taking and exposure to activities that might put them at risk is significant for the present study when interpreting victims as potential recruits. This will be expanded upon in the following section.

3.3 The Relation Between Theoretical Framework and the Literature Review

Though the individual motivations for using social media is beyond the scope of this study, Crime Opportunity Theory does explain the transition form the streets to the web. Precisely, the key concepts of RAA justify the use of social media by gang members. Cohen and Felson's three concepts (motivated offender, suitable targets, and absent guardians) are found throughout the examples of cyber-banging provided in section 2.1. As for the motivated offender, section 2.1. demonstrates multiple examples of gang members utilizing social media to promote gang culture. If all actions online can be considered instrumental actions— "actions intended to

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advance the material interests of the gang or its members"—then cyber-banging can provide multiple economic gains for gangs to appear stronger and powerful than their competition (Storrod & Densley, 2017, p. 679). Cyber-banging can therefore be considered a criminal activity, while perhaps not necessarily illegal.

There is also an obvious connection between social media usage and suitable targets. With the increasing number of users on platforms such as Facebook, Twitter, and YouTube, online interactions are facilitated, or more precisely, encouraged by social media. In fact, given the rise in the use of social media by non-criminal users, it is statistically likely that street gangs made their way to those same sites since gang members use the internet in the same fashion as their non-gang counterparts (Patton, Eschmann & Butler, 2013). Compared to the real world, social media provides a plethora of potential 'followers' who can 'like' (validate) a gang member's online activity while "the creation and expansion of the internet has given offenders an unlimited range of time to make contact with potential victims" (Newman & Clarke, as cited by Pratt et al. 2010, p 268). This type of behavior is known as risk-taking behavior, as suggested by Finkelhor and Ascidian (1996). As such, the potential follower converges with the criminal, meeting in the same time and space in the virtual world of SNS.

A characteristic of social media is indicative of Cohen and Felson's "absence of a guardian" (1979). By its very nature social media sites provide the user a level of freedom where they can express themselves freely, without repercussions from a direct surveillor (such as a parent, guardian, or some form of web site security guard). However, this point is highly contested. When asked about the online habits of gang members in Chicago, outreach workers noted while gang members do protect the privacy of their posts and profiles from the traditional surveillor—such as teachers, principles, social workers, probation officers and police officers— the gang members are also willing to post images online with little thought of consequences:

"Mario [outreach worker] observes here that youth understand that it is critical to remain anonymous in an interview with traditional media outlets such as television. However, he sees a contradiction in youth's social media behaviors: Here he sees youth willing to post videos of themselves with guns. He observes that youth do not fully understand that this can also result in an arrest" (Patton et al. 2016, p. 595).

This passage demonstrates the conflictual notion of guardianship when discussing cyber-banging and social media. While the nature of SNS does suggest a certain lack of traditional surveillance, there is also the notion of perceived guardianship that may deter gang members from posting sensitive material online.

As stated in the introduction, RAA can adequately justify the displacement of the promotion of gang culture into social media networks (also known as cyber-banging). Though cyber-banging is not illegal, for the present study, the promotion of criminal gains online for further economic gains does fit a definition of criminal activities. If cyber-banging is the criminal activity, then the gang member would promote gang culture online because it offers suitable targets, the offenders is motivated to post online, and there is little to no guardianship. Therefore, theory supports research that cyber-banging is present on social media. While past research may discuss what is happening, it has never addressed how cyber-banging proliferates online. There is no research attempting to understand the dynamics of gang member's social network online. It is in this void where network analysis can create theory to better understand the roles of gang members using SNS. Content analysis also provides a clear picture as to which type of cyber-banging is most prevalent online. Much of the research regarding cyber-banging touches upon some of the main ways in which street gang members post online (showcasing colours and symbols, displaying drugs, weapons and money from illegal gains, creating videos boasting facets of gang lifestyle and other types of propaganda; Womer & Bunker, 2010; Storrod & Densley 2017; Patton et al. 2016). Nevertheless, this study categorizes the types of cyber-banging in

Canada to determine if one cyber-banging activity is more popular than others. This may aid

police officers in knowing which types of cyber-banging activities to look out for, and which are

perhaps rare or possibly non-existent in Canada.

When discussing online recruitment, it is safe to suggest that recruitment has never been

empirically shown to be present online. While Clarke (1995) discusses the principle of

displacement—which justifies the presence of cyber-banging, there is little evidence to support

the displacement of recruitment from face-to-face contact to social media platforms. A reason

why displacement does not occur is because the interactions between gang member and potential

recruit require more than SNS can provide. Densely (2012) documented initiation rituals and tests

of loyalty that require face-to-face interactions in the real world. These steps are crucial in the

recruitment process and do not lend themselves easily to displacement to social media platforms.

These steps also suggest rational behavior among gang members looking to recruit those who fit

into the fold through a list of criteria sought after (ability to fight, loyalty etc.) (Ibid). In doing so

gang members make a conscious decision not to use social media for recruitment purposes

because it does not offer the information needed to make a proper decision regarding potential

recruits. Given that the internet does not bestow street gang members all the information to make

a proper decision, it is logical to suggest that recruitment is limited online—as this study's

hypothesis suggests.

The perception of surveillance seems to carry enough weight that the risk of being

monitored abstains gang members from partaking in important activities such as online

recruitment—a notion proposed by Sela-Shayovitz (2012). Perceived surveillance is a notion that

is ever present in CPTED techniques (March, 1986), which is reported to have the intended

consequence of deterrence: "the idea that someone is watching could detect problematic

behaviors or people that deters the likely offender from committing a criminal act" (Hollis-Peel et

al. 2011, p. 66). Though recruitment itself is not a criminal activity, the logic extrapolated can

justify this study's hypothesis, suggesting a lack of recruitment online. Since the inception of SNS there has always been a level of anonymity provided online by the sheer nature of SNS. This is indicative of environmental guardianship. The risk that the person on the other end is a police officer or a rival gang member increases by the nature of SNS anonymity alone. Tversky and Kahneman (1986) discussed how the rational actor will only choose to commit a crime if the risk associate is limited or non-existent. Given the limited knowledge about other users online, it is possible that the nature of SNS posses too many risks for recruitment online.

It seems when discussing guardianship, the level of risk associated with guardianship differs from recruitment to cyber-banging. Research seems to suggest that when a gang member is willing to post a picture of his criminal exploits online, that user rationalizes it as a safe option due to the lack of guardianship and the nature of anonymity online (Patton et al. 2016). However, when the online activity holds more value, such as recruitment, then the nature of SNS provides others with the same type of anonymity, and the perceived surveillance attached to it increases the risk of being monitored. The nature of SNS also does not provide the decision-makers (street gang members) with enough information regarding the potential to recruit like face-to-face encounters; and thusly, displacement has not occurred with recruitment, as it has with cyber-banging. According to Rational Choice, the actor will choose the options that provide him/her with the most information to make the best possible decision. To date, face-to-face recruitment does seem as the rational option compared to online recruitment due to the lack of information SNS provide, and according to the recruitment rituals provided by Densely (2012). For these reasons, it seems unlikely that any form of recruitment will be empirically found online, as per this study's hypothesis.

Chapter 4

Methodology

4.1 Study Setting

In the last decade the use of social networking sites (SNS) has increased exponentially. SNS are generally considered to be a "set of online tools that supports social interaction between users" (Hansen, Shneiderman & Smith, 2011, p. 12). While the concept of SNS conjures up a plethora of examples, this study will focus on three of the more popular social media sites: Facebook, Twitter, and YouTube. While the three are large social media sites, their similarities end as their structures and purposes are vastly different. Since its humble beginnings in 2006, Twitter has exploded in popularity. Twitter is an example of a microblog. Microblogging sites such as Twitter allow the user to create bite-sized information that can be shared with their 'followers'. Twitter's social network structure is one created by "follows" and "is followed by" creating directional ties from one user to another, contrary to the mutual friendship networks found on Facebook. In other words, Twitter creates a setting where "a user can follow other users who don't follow back and vice versa" (Ibid, p. 23). Contrarily, Facebook's setting is considered a social and dating social networking service. These sites are primarily characterized by the 'profile' where a user can regularly update many different aspects of their self, such as their present "state of mind, current locations, activities" etc. (Ibid, p. 25). Facebook creates a social networking structure of mutual friendships where interactions can take many different forms such as 'liking' a post, sharing pictures, writing on each other's 'wall', tagging each other in photos, and joining common pages and groups. Lastly, YouTube is structured as a social sharing form of social media where videos are created and disseminated to a wide audience. As Hansen, Shneiderman & Smith (2011) notes, while other sites such as those previously mentioned have the capability for sharing videos and content, YouTube is content-centric where the videos are

stand-alone and not necessarily tied to a shared network. YouTube is designed to allow users to 'friend' one another, or simply follow the content-provider—like Twitter. In either case, the friendship is based on the content of the videos rather than a mutual connection established in the real world.

The purpose of the previous paragraph is to demonstrate the vast differences between SNS. Each with a unique purpose, Facebook, Twitter, and YouTube allow users to create a social network based on mutual friendships and respect (Facebook and Twitter), common interests (YouTube and Facebook), and a willingness to know updates on a person (Facebook and Twitter). The settings for each of these sites, while different, can be prime targets for both proactive recruitment and active participation/interest in street gangs. YouTube can be used to spark interest in a gang through videos which promote gang activities—both criminal and social. Both Twitter and Facebook provide opportunities for individuals to keep track of members and groups and communicate person-to-person. This allows for opportunities for individuals to gather, discuss common interests, and in general interact with individuals they would not normally be capable of interacting with in the real world. This suggests that social media is a perfect platform for gang members and potential recruits to find each other and interact with one another in a safe setting. For these reasons, choosing social media as the setting for potential recruitment is a logical choice in answering the research question.

4.2 Study Design

The aims of this article are both exploratory and descriptive in nature. One of the main characteristics of exploratory research is working on a relatively unstudied topic or area, attempting to develop a plausible explanation or theory about the phenomenon (Adler & Clark, 2003). Similarly, a descriptive study is designed to describe "groups, activities, situations or events [where researchers] typically know something about the topic before they collect their data, so the intended outcome is as accurate and precise as possible" (Ibid, p. 13). As the

introduction suggests, this research is divided by two distinct questions: firstly, what is the prevalence the cyber-banging and recruitment phenomena online? Secondly, what can network analysis reveal about the roles gang members have on social networking sites? The first question has a more descriptive aim, as it attempts to understand the phenomena based off the works of Morselli and Décary-Hétu (2013). The second question is considered exploratory as the analysis attempts to draw conclusions or develop theory.

A cross-sectional study design is the preferred method in gathering online data. A cross-sectional approach is defined as a "study design in which data is collected for all the variables of interest using one sample at one time," even if that *one-time* spans multiple points in time [emphasis added] (Adler and Clark, p. 179). The reason a cross-sectional study design is preferred is due to the sampling methodology and data collection techniques utilised. Like Morselli and Décary-Hétu (2013), a systematic keyword search was devised to find street gang users online. The name of each Canadian street gang was inserted into Twitter and Facebook to extract all tweets and posts where the respected keyword was used. The data collection process happens at one time and not collect data over multiple points however the data itself spans a large timeframe. Due to this sampling method the time frame of the data depends heavily on the keyword's popularity (minimizing the time frame) and the network's use of social media (frequent users versus casual users).

It must be noted that while a cross-sectional design is utilized, the second question regarding the use of network analyses does include elements of a comparison study. While a comparison study focuses on comparing the relationship between two individual cases, the present research compares broad categories (posts related to cyber-banging, recruitment and other) created during the first part of the analysis, rather than specific cases (Bouma, Ling & Wilkinson, 2009). However, the present research shares certain characteristics with a comparison

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study as it attempts to run the same network analyses for the same periods to discern distinctions between the categories.

4.3 Sampling Strategy

A purposive sampling strategy where "the researcher uses their own judgement or intuition to select the best people or groups to be studied" is employed here (Bouma et al., 2009, p. 126). As Bouma, Ling and Wilkinson (2009) illustrate, purposive sampling is an appropriate method when 1) the selected cases can illustrate a typical case of a larger phenomenon; 2) the population is part of a subculture that is not easily accessible, and 3) when the goal is identifying a phenomenon in greater detail. Attempting to study street gang's use of social media is a difficult endeavor that does meet the criteria for purposive sampling. Firstly, as Morselli and Décary-Hétu (2013) report, much of the evidence regarding gangs and their use of social networking sites are anecdotal, with a limited amount of research having been conducted on the subject. Secondly, one of the purposes of the present research is to properly evaluate the phenomenon, attempting to identify a theory/characteristics of gang activity online, with the hopes of identifying a typical case. Lastly, given the clandestine nature of street gangs, it would also be difficult, if not impossible to utilize other sampling methods such as a random sampling or a snowball technique to gather an adequate sample. As well, the low frequency of street gangs in Canada does not lend itself to other sampling methods. According to a report from 2007 conducted by the National Crime Prevention Centre, there are an estimated 434 youth gangs, totaling 7071 members across Canada. Compared to findings from the United States in 2001, Canada has around 100 times fewer gang members (National Crime Prevention Centre, 2007, p. 4). Stratified purposive sampling is therefore the best sampling strategy for the purposes of this research.

4.3.1 Population Characteristics

It can be extremely difficult to provide a singular definition of street gangs. As Sullivan (2005) remarks, the term 'gang' is often used to denote all group violence or criminality.

Sullivan continues by suggesting that "in a more specific sense, [gang] refers to ritual and symbolic aspects of group identification" (2005, p. 186). Though not specifically stated by Sullivan, other researchers have noted that these symbolic aspects are linked to the symbolic meaning of the gang name, which frequently implies a pride for a neighborhood or street corner where the gang members live (Jackson and McBride, 1986). For the present study, the concept of *gangs* includes Sullivan's use of group identification; more precisely, named street gangs. The reason for this distinction is since the keyword search strategy utilized for this research required a gang name to be searched. Aligned with Sullivan's (2005) article and the report produced by the National Crime prevention Centre (2007), street gangs consist of:

1) People who are represented through named group identification;

2) Those who are generally perceived by others as a distinct group ("others" referring to legitimate sources, such as the police and the media);

3) Those who are involved in delinquent/criminal activities at a "street level" (drug dealing, violent disputes, economic-based criminality etc.), distinguishing gangs from organised crime.

Due to the structures of both Twitter and Facebook, the actual demographics of the sample are not knowable for every user. For each site the inclusion of personal information (e.g.: age, gender, race) is added on a voluntary basis and can be private depending on the user's own privacy settings. The only demographic information included in this sampling frame is Canadian residency. For inclusion in this study conclusive evidence must be present to indicate the user lives in Canada. This was confirmed through one of many ways depending on the personal information provided by the user regarding: 1) the area code posted; 2) the inclusion of a place of work or school; 3) the inclusion of a hometown where the user lives. Often, this information is found in the "About" section of each SNS. However, gender can be easily determined. Both Twitter and Facebook allow for a profile picture as well as a section for photos to be posted by

the individual user. The subject of the profile pictures and the photos uploaded by the users was used to determine gender. The profile names were also helpful at times, but as the users can change their user name on each site, certain names were gender neutral, providing little information regarding their gender. Of the 59 subjects sampled, 54 were thought to be male/men, with only 5 female/women gang members sampled on Facebook. This result is consistent with National Crime Prevention Centre data which indicates a larger proportion of male street gang members compared to female gang members in the real world (2007. p. 2). All 23 Twitter users in the present sample were thought to be male.

Table 1

Gender demographics on each social networking site

Gender	Twitter	Facebook
Female	0	5
Male	23	31
Total	23	36

Note: YouTube was excluded due to the nature of the keyword search and the structure of YouTube.
Total number: N = 59

Other characteristics of the sample can be inferred by the typical gang member profile according to a report by the National Crime Prevention Centre. The report suggests that almost half (48%) of all gang members are under the age of 18, mostly between the ages of 16 and 18 years old (Ibid, p. 2). Due to the diverse nature of the country and its provinces and the keyword search technique utilised, the ethnicities of the sample population vary widely, with Asian, African-Canadian, Indian-Canadian, First Nations and Caucasian gangs being the most recognized. Though the exact location is not included in this study, many of the gang members sampled come from the provinces of Ontario Manitoba and Saskatchewan. Precisely, many of the gang members sampled in the prairies were of First-Nation descent who lived in smaller cities, while many of the game members in British Colombia and Ontario were from bigger cities and

reflected much more ethnic diversity. The gang members in the Maritimes were generally of Caucasian descent and no general trend regarding where they live was observed.

4.3.2 Sampling Procedure

The National Crime Prevention Centre's report, though thorough, does not provide a comprehensive list of gang names. In fact, there is no official, uniformed master list of active gangs in Canada. There was an attempt made by this researcher to get gang names from various police services, however certain municipal police services refused to offer information for various reasons, and consequently a different strategy was adopted for the sampling procedure. The sampling procedure is divided into two steps: Firstly, the creation of a key word search of as many named gangs as possible was completed. Secondly, keywords were inputted into both Twitter and Facebook in an effort to retrieve gang member user profiles.

4.3.2.1 Creating a keyword search of gang names

In order to create a list of keywords, several steps were utilized. First, the provinces in which there are reported gang activities had to be identified. Second, a list of gang names in the province had to be created. Thirdly, once a gang name had been uncovered, a continued search of multiple sources and through multiple search engines (Google, Google News, YouTube Search) was done to assess the legitimacy of the gang based on the criteria/definition above. This continued search was to ensure that the gang in question is indeed a gang that fits the three criteria listed previously and is not part of a large international criminal organisation, such as the mafia or drug cartels.

The National Crime Prevention Report (2007) concludes that street gangs can be found in seven provinces: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, and Nova Scotia. The territories were excluded from the present study. While the National Crime prevention report concluded the presence of gangs in Nova Scotia, the present study opened the

search to all the provinces in the Maritimes. Québec was also excluded from the sampling frame due to internet shorthand and vernacular. During the content analysis step, individual posts were read and scrutinized to categorize them into one of three categories of use: cyber-banging techniques, recruitment techniques, or non-criminal content. Given that Quebecers speak primarily French, it can be difficult to understand French shorthand and French vernacular online, without raising the risk of error in the categorisation stage.

Once the provinces with gang activities were listed, a search using both Wikipedia and Totten's 2012 novel "Nasty, Brutish, and Short: The Lives of Gang Members in Canada" was conducted to find gang names and types. Wikipedia was a powerful starting tool because it compiles multiple sources to create an overview of gangs in a province. For example, Wikipedia provides a general description of the types of gangs, writing " Major crime groups in Edmonton have been identified as most being Aboriginal, Black (central African/Jamaican), Middle Eastern (Somali/Persian/Lebanese/Afghan) […] across a similar broad social spectrum" (https://en.wikipedia.org/wiki/Gangs_in_Canada#Burnaby). Though Wikipedia does not provide exact names, it does provide multiple starting points for types of gangs within the province. Next a simple Google search such as "Aboriginal street gangs in Edmonton", "Black street gangs in Edmonton", "Jamaican street gangs in Edmonton" was done to connect a name to the ethnic gang searched. Once a name was identified it was added to a list of gang names along with some names provided by Totten (2012). Totten (2012) is much more specific, providing a list of names and a context for the street gang phenomenon per province. However, Totten does not attempt to list all the gangs in each province, rather he provides the names of a few gangs simply as examples. For instance, Totten (2012) numerated nine gangs that operate in the Manitoba area, but suggests there are perhaps over 25 gangs in total (p. 71). Though his book is considered recent, its publication was over six years ago, which could have prompted new gangs in that time, or gangs could have disappeared. For that reason, Totten's work was not always a primary source

for gang names, but is considered a starting point, much like Wikipedia. Other times Totten provides enough information on certain gangs to confidently include them into the keyword search.

Once a list of names from the previous steps was created, each gang name was entered into the "Google News" search category within the Google search engine in order to better understand the characteristics of the gang. Many times, local and national newspapers, magazines, or news stations will have a report of the gang, enumerating the gang's illegal activities, gang rivalries, and/or gang structure. This provides insight into whether the gang meets the final two criteria (distinct group and involved in street-level criminal activity). If Google News did not provide adequate information then the gang name was added to a YouTube search which often resulted in local news videos posted on YouTube, or video clips that introduce and discuss the gang for the viewer in a documentary-style presentation. In instances where no information was found on a gang the gang was dropped from the sample as its status as a street gang could not be confirmed. The use of news outlets is important as they provide up to date information on a specific gang (something peer-edited journal articles do not), while having a level of legitimacy to their reporting; something regular internet sites or links on Google could not provide. In total, 80 gang names were discovered. The street gangs included in the keyword search are listed here:

Red Scorpions, The Kang group, Independent Soldiers, Game Tight Soldiers, Crazy Dragons, Fresh Off the Boat, Terror Squad, Fresh Off the Boat Killers, The Alberta Warriors, Native Syndicate, 403 Soldiers Gang, The Crazy Dragon Killers, Indian Posse, North End Jamaicans, Hustle Crew, Red Alert, Westend Jamaicans, White Boy Posse's Migration East, Samson True Soldiers, East Sides Players, D-Block, Brown Town, Clippers, Galloway Boys, Pinky Crew, Brown Premise, Westside Outlaws, Crazy Cree Nation, Tribal Brotherz, Scorpion Brothers, Hill Side Warriors, Mad Cowz, Most

Organized Brothers, Westside Bloodz, Junior Warriors, 334 Mob Squad, Renegades, Good Squad, Krazies, Afrikan Mafia, Asian Bomb Squad, Manitoba Warriors, Dixon City Bloods, Tribal Huk, Almighty Vice Lord Nation, Jamaican Posse, Kimera, Latin Kings, Shower Posse, Five Point Generalz, Eglinton West Crips, Sic Thugs, Project Originals, Jamestown Crips, Slingers, Crack Down Posse, Malvern Crew, Ledbury-Banff Crips, Westsides Bloods, Original Blood Brothers, Oriental Blood Brothers, Oriole Crescent Crips, Front Line Bloods, Thrthewey Gangsta Killaz, Cutthroat Bloods, Driftwood Crips, Hamilton Blood Soldiers, Get More Money, Downtown Crips, Assyrian Kings, North Preston's Finest, United Blood Nation, Gaston Road Gang, G-Lock, Murda Squad, North End Dartmouth, Money Over Bitches, Wolf Pack, Woodside Gang, Spry-town Mafia, Street Fame.

Once the gang names had been established, keywords were created using those names in order to generate a list of all the keywords to be used during the keyword search. Given the use of shorthand and online vernacular it would be remiss to only use the gang name during the keyword search. Different variations of each name had to be added to the keyword search list in order to account for gang members that write out their gang name slightly differently online, depending on the context. For example, the gang "Five Points Generalz" had six keywords created for the keyword search list: Five Points Generalz, Five Points Generals, FPG, FPG gang, 5 points Generalz and 5PG. This strategy likely increased the likelihood of finding gang members online because it did not limit the use of only one keyword, but rather multiple synonyms in case the members are writing the name differently online than they would in the real world. In total, 206 keywords were created out of the 80 gang names to create the keyword search list that would be used to find gang members online.

4.3.2.2 Retrieving gang member profiles for the sample population.

Once the keyword search list was completed, each keyword was inputted into the search functions of both Twitter and Facebook. The results of the first 100 tweets (for Twitter) and the first 100 public posts (Facebook) of each keyword search was then read. If the tweet/public post containing the keyword was used within a street gang context, then the author of the tweet/public post was added to a list of potential street gang members. Many times, the keywords were associated with non-gang content, which meant that the results yielded no gang members. For example, the keyword 'FOB', derived from the street gang Fresh Off the Boat, did not present any gang related results as the ABC network's T.V. sitcom 'Fresh off the Boat' dominated both the tweets and Facebook posts that used the keyword FOB. Many times, the keyword yielded no results at all, such is the case for the keyword "Westside Bloodz" which yielded zero results on either Twitter or Facebook.

Once all the Keyword searches had been done, every profile of the potential gang members on both Twitter and Facebook were analysed to ensure the user is indeed a gang member. This was established in several ways, by reading posts and 'About' sections to see if the user proclaimed himself/herself a gang member, and to see if the profile had gang signs or gang colours, or if there was other gang-related material posted on their profile. Once the user was established as a gang member, the 'About' section was analysed to ensure the member lived in Canada. As previously stated, part of the inclusion criteria for sampling is conclusive evidence indicating the user lives in Canada. Indicators of Canadian residency include a Canadian area code posted, the inclusion of a Canadian place of work or school and/or the inclusion of a Canadian hometown where the user lives.

YouTube was excluded from the keyword search portion as the information provided on YouTube is distinct compared to Facebook and Twitter. Gang members typically use YouTube to post original rap songs and videos promoting both their proper gang and gang ideologies. Because of this, the name of the user and the title of the music videos would not necessarily

contain the name of the gang or any variation thereof. Lacking a gang name negates the use of keyword search on YouTube, which could potentially yield no gang users online. Consequently, though YouTube is included in this study, it is not included in the network analysis sampling procedure but is included in the content analysis. During the content analysis stage, if a sampled user posted a YouTube video which was deemed to be an original music video created by himself or a member of his gang, the video was automatically included in the sample. The videos do not need to meet the same rigor as the sampling procedure. This is because the sampled user has already been deemed to be a Canadian street gang member; therefore, his content is also considered to be created in Canada, meeting the sole criteria for this sampling strategy.

4.3.3 Sample Size

Due to the limited number of Canadian street gang members, obtaining a large sample size was not possible. At most the sample can include 434 gang names, as that is the estimated number of total gangs in Canada. However, not all gangs involved in the National Crime Prevention Centre report are *named* gangs. Many, like those numerated by Sullivan (2005), are considered gangs due simply to criminal activities undertaken as a group. Morselli and Décary-Hétu (2013) note that the keyword approach limits the sample to only named gangs as "street gangs and criminal groups [that do not] go by a particular name […] would not be detected by this study's search" (p. 169). Regardless, Morselli and Décary-Hétu were able to create a sample of 61 gangs and criminal groups from the United States and Canada.

The present study differs from Morselli and Décary-Hétu's study as the sample consists not of the gangs themselves, but the individual users. The initial search uncovered 80 gang names; which in turn, resulted in 206 Keywords used. As previously mentioned, 100 posts on Facebook and 100 Tweets were read in order to uncover as many gang members' user profiles as possible: 5,385 Tweets and 9,267 Facebook public posts were read, totaling 14,652 posts. Within

the 14,652 posts, 23 keywords yielded results, with a final sample population of 59 total street gang member's user profiles.

Given that the research question aims to establish the prevalence of cyber-banging and recruitment, attempting to include as many named gangs as possible in the sampling frame may increases the accuracy of the statistical power for each category. The exhaustive procedures undertaken to discover gang members on SNS, and the high number of tweets and posts read by this researcher could suggest an adequate sample size may have been met. Therefore, there is no adequate/standard sample size, nor fears of oversaturation/redundancy in the sample population— put simply, more is better.

4.4 Measurement

The present research is comprised of two unique research questions and answering each question requires its own set of measurements. The first research question asks, *what is the prevalence of cyber-banging and recruitment on social networking sites?* To determine prevalence of each phenomenon, the unit of analysis is the online content created by the gang member in the form of posts and photos on Facebook, tweets and photos on Twitter, and the images and lyrics within videos on YouTube (herein known as *artifacts*). The artifacts were analysed and evaluated to determine whether the content is considered as a cyber-banging technique, a recruitment technique, or non-criminal content. The second research question asks, *what can network analysis reveal about the roles gang members have within their social media network?* For this objective, the posts are not the unit of analysis, but rather the user is the unit of analysis, as this research is attempting to understand the role of the user within his online network. To understand this role, this research uses three network measures which provide a picture of the gang member's centrality within his network. Given these distinctions in

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measurements between the research questions, the conceptualisation of each concept is presented separately.

4.4.1 RQ 1: What is the prevalence of cyber-banging and recruitment on social networking sites?

4.4.1.1 Conceptualisation of Cyber-banging

Cyber-banging has only recently made its debut in research, having been evaluated and studied for under ten years. In that time, it has seen variations in name, being called "internet-banging" (Patton, Eschmann & Butler, 2013), "net-banging" (Moule Jr, Pyrooz & Decker, 2014; Densley, 2013; Gutierrez, 2006), and "cyber-tagging" (Way & Muggah, 2016). Whatever the name, authors conducing research in this area share a very similar understanding of the phenomenon. As stated in chapter 2, cyber-banging is "the presence of street gangs on the internet" (Morselli & Décary-Hétu, 2013). Adding to Morselli and Décary-Hétu definition, cyber-banging includes the publication of gang activities online for the purposes of promoting gang culture. This includes; but is not limited to, publicising criminal activities and profits, publicising gang influence over people and territories, and interacting with other gang members online. Cyber-banging suggests gang members have extended social interactions they would normally have on the "streets" to the internet.

Regardless of a lack of uniform definition of cyber-banging, many of the authors discussed in the previous section agree on the activities which constitute cyber-banging. These activities constitute the dimensions of cyber-banging during the analysis process of this research. They include: 1) showcasing gang colours and gang symbols, 2) displaying drugs and/or displaying weapons, 3) boasting about facets of gang lifestyle, 4) reporting one's part in a violent act, 5) networking with other gang members, 6) grieve/honour and express trauma over the death/incarceration of a fellow member, 7) disrespect a rival gang member, 8) depicting violent acts, and 9) coordinating criminal activities. During the data collection and coding, several other

categories were added, that were not included in the categories describe in past literature. Those categories are: 10) displaying money/illegal gains, 11) other types of gang propaganda (a. mixtapes, b. individual songs, c. clubbing, d. displaying chains/jewelry, e. rap quotes about gang lifestyles), and 12) responding/making general threats. These 12 variables define cyber-banging for the present study.

These variables are both specific enough that they demonstrate a visual representation of gang culture yet remain vague enough so that they are not too restricting when categorising the artifacts to a specific dimension. Understandably, social media gives users free reign to post online in whichever way they want, using pictures, specific vernacular, and different types of keyboard shorthand to express themselves in an infinite number of ways. The variables must remain open to interpretation so that the content can be evaluated accordingly.

To operationalize cyber-banging, this research dichotomises each variable (0 = no presence of the variable; 1 = presence of the variable). Unlike many other conceptualisations in social science, the variables are not scaled, instead, the presence of one of the listed variables is enough to characterise the artifact in one of the three concepts: cyber-banging techniques, recruitment techniques, or non-criminal content.

4.4.1.2 Conceptualisation of recruitment

Comparatively to cyber-banging, online recruitment has rarely been studied in a strictly quantitative manner as there is very little documented proof of online recruitment. Morselli and Décary-Hétu (2013), note that one of the few documented cases on online recruitment reported by the media involved law-enforcement sources that claim the Sicilian Mafia was recruiting potential members online. Densley (2012) suggests that gangs have been known to produce their own recruitment literature, and "employ strategies of obligations and coercion" to potential members (p. 302). For example, MS-13 sometimes offers gifts and other enticements, but mostly recruits are "often subjected to constant harassment and physical abuse and may even be murdered"

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(Racine, 2010, p. 460). Grekul and LaBoucane-Benson (2008) and Densely (2012) have both

provided a step-by-step process of recruitment in the real world from qualitative research of

Canadian First Nations and African-American gangs, respectively. In both studies, they similarly

characterise recruitment as gang members proactively attempting to add members to their gang.

The difference between active and proactive is in the level of recruitment. Proactive recruitment

suggests the gang is going out of their way to recruit a potential member. In many of these cases,

proactive recruitment "uses fear, violence and intimidation to recruit members and exercise

control" (Grekul & LaBoucane-Benson, 2008, p. 74). At the same time, Morselli and Décary-

Hétu (2010) suggest that promotional material be considered a precursor for recruitment, with the

constant diffusion of images regarding money, women and lavish lifestyles can carrying the

ability to entice those looking for a reason to join a gang, such as impressionable teenagers.

Compared to Grekul & LaBoucane-Benson (2008) and Densely (2012), Morselli and Décary-

Hétu are suggesting certain types of cyber-banging techniques are also implicit recruitment

techniques; whereby their very nature promote joining a street gang.

With the limited amount of online recruitment literature, it can be difficult to create

variables for the subject. For the present research recruitment in the real world has been translated

to fit the online world to see if recruitment online can be categorized in the same way. These

characteristics became the indicators of recruitment during the analysis process of this research.

They include: 1) promoting incentives in joining the gang; 2) using fear, threats of violence and

intimidation for recruitment purposes; 3) offering gifts for the purpose of recruitment; 4) asking

personal questions like "where are you from" to illicit a conversation with a potential recruit; 5)

proposing tasks (criminal or violent activities) a recruit can do to gain notoriety with gang

members; 6) vouching or referring a potential recruit to elder gang members for recruitment.

These are all proactive recruitment techniques. In addition, some of the cyber-banging variables

are considered implicit recruitment, as it can be a precursor to recruitment. These include 7)

displaying drugs/weapons, 8) displaying money, 9) boasting facets of gang lifestyle, and 10) other propaganda (a. promoting mixtapes, b. individual songs, c. clubbing, d. displaying chains/jewellery e. rap quotes about gang lifestyle).

As with cyber-banging the dimensions remain vague enough that different posts can be interpreted similarly regardless of vernacular and internet shorthand. While some of the indicators are identical in both cyber-banging and recruitment definitions, what separates the recruitment dimension is its purpose. For example, both cyber-banging and recruitment contain 'making threats'. What distinguishes the dimension is the threats are for the *explicit* objective of recruiting an individual.

Recruitment is operationalized in the same manner as cyber-banging. The dimensions are dichotomized (0 = no presence of the dimension; 1 = presence of the dimension), not to be scaled. The presence of one of the variables is adequate to consider the artifact analysed as either cyber-banging techniques, recruitment techniques, or non-criminal content.

4.4.2 RQ 2: What can network analysis reveal about the roles gang members have on social networking sites?

4.4.2.1 Conceptualisation of Degree Centrality

Simply stated, degree centrality measures visibility. As the name states, degree centrality looks to see how central the user is in his/her network by how many other people are directly connected to the user. This centrality is interpreted using two terms: visibility and popularity. Visibility suggests those who have a high-degree score are highly visible to everyone in the network. Borgatti, Everett and Johnson (2008) suggest that this has implications within an organisation. For instance, gang-affiliated users with higher visibility tend to be important to the organisation. This ties into *popularity* because a characteristic of SNS is the more connections one has, the more popular he/she is considered. The more people are interested in the user, the

more connections that user will have, making him/her more popular, and equally important to the gang, as the user can disseminate information to a greater audience. However, degree centrality has limitations as it describes quantity over quality.

Contrary to cyber-banging and recruitment, network analysis does not require dimensions and indicators to understand the concept. The dimensions in network analysis are connections (edges) between users (vertices) on SNS. In operationalising degree centrality, NodeXL measures a total number of connections a vertex has, and is therefore operationalised as a ratio scale, where the number indicates the number of total connections, with 0 indicating no connections at all. Figure 1 is a visual representation of a Twitter user network in which a user is connected (represented by the grey lines) to other users in his network (represented by the dots). NodeXL calculates the sum of these connections to present a degree centrality score.

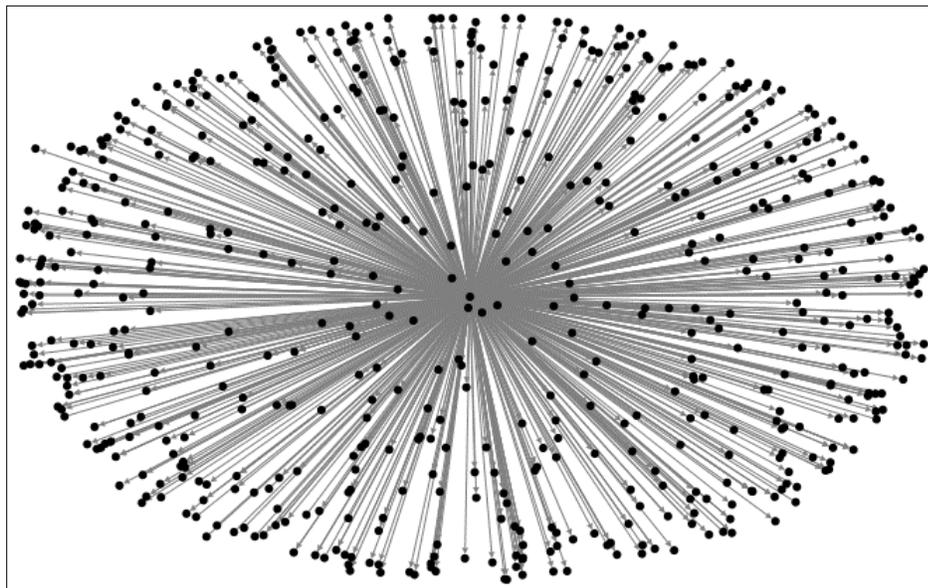*Figure 1:* A visual representation of one of the sampled user's Twitter network extrapolated from NodeXL demonstrates all the user's connections after examining the user's last 1000 tweets.

4.4.2.2 Conceptualisation of Betweenness Centrality

Contrary to degree centrality, betweenness centrality offers a measurement of information dissemination. Betweenness centrality suggests that a user can be the bridge between

other users that would not be connected if not for that specific vertex. This infers that the user is important to the network not due to his popularity, but through his capability of bridging clusters of users together. It also infers that information passed from one cluster to another must pass through that user, making him a key player due to his ability to connect different groups of people online.

Betweenness centrality measures the "distance between the people who are not neighbors by the smallest number of neighbor-to-neighbor hops from one to the other" or simply put "the shortest distance between two people" (Hansen, Schneiderman & Smith, 2011, p. 40). Betweenness centrality is calculated by the number of times a user is the shortest path between two other users. For example, user X has 100 friends, each solely connected to user X. One of his connections, User Y, must go through User X in order to contact the other 99 users in that network as is the case for the other 99 users in that network. Multiplied by the total 100 users (User X is the shortest path 99 times multiplied by the other 99 users) gives User X a betweenness score of 9,801. Those who are more central to the network (in which the user is the bridge between other vertices) will have scored higher than those who are less central.

4.4.2.3 Conceptualisation of Eigenvector Centrality

Eigenvector centrality suggests that "a person can have very few connections but a high eigenvector centrality if those few connections were themselves very well connected" (Hansen et al. 2011, p. 41). Eigenvector centrality, while interpreting popularity differently than degree centrality, offers a possible measurement for risk. For example, a user may only have two connected users in his network, but those two friends may be connected to over a dozen other users. While the user is not the most visible, he can communicate a message quickly to those two people, while being assured that the dozen others will receive the message. That user can be considered a shadow influencer, while minimizing the risk of being too visible within the network.

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Eigenvector centrality is a most sophisticated view of degree centrality. It measures not the number of connections an individual user has, but how connected the user's connections are. Also known as *the eigenvalue,* it is measured as a scale from 0 to 1. The higher the eigenvalue, the more the network is connected through the user's connections, rather than the user himself.

4.4 Assessment of Measurement Quality

Regarding the first research question, there are a few issues concerning both the content validity and reliability. Firstly, due to the lack of information regarding both cyber-banging and recruitment it is impossible to prove the depth and breadth of the dimensions included in each concept. There may be missing dimensions which were not yet recorded by previous research that will remain hidden during the data analysis simply because it will not be searched for. Also, recruitment relies on dimensions translated from real-life recruitment techniques, therefore it can be difficult to accurately suggest that gang members recruit online in the same manner, greatly effecting the accuracy of the recruitment measure. However, given the lack of information on online recruitment there is no other viable starting point for online recruitment than using the information already provided from the real world. Secondly, due to the interpretive nature of posts, and the limited space/word count associated with online posts/tweets, context will be difficult to establish, which can severely impact the reliability of the content analysis. For example, the difference between threats in cyber-banging and threats in recruitment is the explicit use of those threats to intimidate a recruit to join the gang. However, how one interprets *explicit use for recruitment purpose* is not always obvious, and therefore can be interpreted differently.

Regarding the second research question, there are far fewer issues concerning content validity, and almost none when discussing reliability. Firstly, the different measurements of centrality listed previously do not provide a full picture of the individual's full network. NodeXL extrapolates the network around a given number of posts, tweets and videos, excluding many of

the user's connections that have not directly engaged with those posts. Therefore, while it does

provide a better idea how content is disseminated through a network, it excludes others that the

program is not able to capture. Secondly, given that NodeXL runs the three network analyses

itself, it is not subjected to the same interpretative biases (interrater reliability) as the first

research question. In fact, as it is an algorithm that runs the analysis, it can be suggested that there

is a high reliability standard when discussing centrality.

4.5 Analytical Framework

4.5.1 RQ 1: What is the prevalence of cyber-banging and recruitment on social networking sites?

To properly assess the prevalence of cyber-banging and recruitment a quantitative

approach to content analysis was utilized. This required analysis of the profiles of the 59 sampled

users and a cataloging of the content found on their social networking profile as a variable listed

from sections 4.4.1.1. and 4.4.1.2. On Twitter, this means analysing the sampled users' tweets,

and on Facebook the public posts. Both are similar in structure as they are bite-sized information

posted online by the users that have a specific message, goal or thought. As both Twitter and

Facebook allow for photos to be uploaded by the users, it would be remiss to not include photos

in the content analysis. In some cases, users post an original rap video created by themselves, or a

fellow member. In those instances, the video was analysed separate from the content on Twitter

and Facebook. This is because YouTube videos are significantly different than the content posted

on Twitter or Facebook. Firstly, there is much more content compared to a single photo, post or

tweet. The videos, on average, are three minutes in length, suggesting each video has multiple

variables which need to be categorised. Secondly, despite their 'textual' nature, tweet and posts

possess a visual quality to them due to the use of internet shorthand, online vernacular, and the

use of emoji to convey emotions—much like photos. The rap videos being analysed however,

have lyrics being sung, which are not visual but are generally the focus of the rap videos, with the images on screen being complementary to said lyrics. The lyrics do not refer to individual words, but the meaning behind a combination of words and sentences which may describe a subject equivalent to one of the variables presented. For example, in one of the songs, "Every night I gotta pray, that I see a brighter day, *but I keep a soldier rag, so everything is going to be ok*" [emphasis added]. In this example, the rapper sang about 'showcasing gang colours and symbols' as he implies that broadcasting his gang affiliation through his "soldier rag" will protect him. Therefore, while Twitter and Facebook data revolves around tweets, public posts, and photos, the inclusion of YouTube adds the images in the videos and the lyrics found in the songs as a source of data.

For the 23 Twitter users, the most recent 10 photos and the most recent 10 tweets were analysed yielding a pool of 460 possible pieces of artifacts categorised into either cyber-banging techniques, recruitment techniques, or non-criminal content. For the 36 Facebook users, the 10 most recent photos and the 10 most recent posts were analysed yielding a pool of 720 possible pieces of artifacts categorised as either cyber-banging techniques, recruitment techniques, or non-criminal content. Ten videos were found in the sampled users social networking profile. Comparatively to Twitter and Facebook and given the uniqueness of each video, it was impossible to know in advance the number of possible artifacts from YouTube to be categorised.

There are several reasons why 10 photos and 10 tweets/posts were analysed. The most important reason is simply a timeframe issue, as 20 artifacts per users is a manageable number of artifacts to analyse. Secondly, a brief look at the profiles of each user demonstrate a varied number of artifacts, ranging from a couple of posts to a couple of thousand tweets. This study attempted to analyse the same number of artifacts for each user so that no one user will skew the results.

Once each Twitter photo/tweet, Facebook photo/public posts, and YouTube image/lyric was analysed and categorised, a frequency table was created to best visually present the frequency of cyber-banging and recruitment. Since researchers agree that cyber-banging is prevalent on SNS, one major goal is to understand which type of cyber-banging technique is most prevalent among Canadian street gang members. The second major goal is to demonstrate 1) if recruitment is happening online and 2) if so, whether the frequency of recruitment techniques found online constitute proactive recruitment or indirect recruitment. This second goal informed the hypothesis that there is little to no recruitment happening online. A second frequency table depicting non-criminal activity is compared to the first two tables to illustrate whether content is predominately gang or non-criminal related. This offers insight on how users predominately use SNS.

4.5.2 RQ 2: What can network analysis reveal about the roles gang members have on social networking sites?

The NodeXL extension for Microsoft Excel 2007 is imperative to the analytical process. As the creators of NodeXL describe it:

> [NodeXL] is a free open source extension to the widely used spreadsheet application [Microsoft Excel] that provides a range of basic network analysis and visualisation features. NodeXL uses a highly structures workbook template that includes multiple worksheets to store all the information needed to represent a network graph" (Hansen et al. 2011, p. 54).

One of the main features of NodeXL is its capabilities to import entire networks into the spreadsheet. Given that each tweet has been viewed by a different number of people, including retweets and likes, each tweet can provide different information. The program allows the researcher to import the network of a user through information from the last 1000 tweets. It then

allows the researcher to obtain a total score regarding the user's degree centrality, betweenness centrality and eigenvector centrality. Unfortunately, due to Facebook's United States Congressional problems last year regarding its involvement during the 2016 US elections, NodeXL creators have disabled Facebook network analysis until further notice. This means only the 23 Twitter users were run through NodeXL, instead of all 59 users. Once the 23 users were run through NodeXL, a table with the top ten highest scores was created, but a comparison of all the users is presented as well to identify general trends. For example, Table 2 illustrates the results of the three centrality measures of one of the sampled users in the network. Alone the numbers tell the score of one user; however, when compared to the other sampled Twitter users, the scores can provide information on whether they all have similar scores (suggesting a general trend), or if users vary widely.

Table 2			
Network analysis scores of a street gang member's twitter network			
	In-Degree	Betweenness centrality	Eigenvector centrality
Score:	1974	104471955.639085	0.001
Note: All results are based on the user's last 1000 tweets			

Once a general trend emerged within categories, the results were used to develop a theory regarding the roles of the users in their specific network. Twitter has the capability to demonstrate directional relationships where a user can 'follow' and/or be 'followed' back. This directionality offers insight regarding who is contacting the user. NodeXL also provides other relevant information such as number of total tweets, and number of total followers. The centrality measure, as the name suggests, attempts to discern if the user is a central player in his online network in different ways. Study results contribute to the development of a novel theory on this recent phenomenon. Due to the limited literature on the subject, the inductive nature of this study makes an innovative contribution to the existing literature.

4.6 Ethics

Obtaining and transforming publicly accessible information is generally considered to have less ethical considerations than other forms of primary data. However, the use of data deriving from social media does have certain ethical implications that must be taken under consideration. Social media websites blur the line between private and public information. While Facebook has an ever-evolving privacy policy, many of the groups, pages, and post can be viewed by anyone. However, the sampling method does not give participants the opportunity to provide informed consent or to reject participation in the study. Even though this article is targeting three very public social media sites, those who post, tweet or upload videos do assume a certain degree of privacy. No social media user posts information online with the thought that it could become research data for a third unknown party. In contrast, there is an implicit acceptance that third party users (like advertisers) regularly farm user information without their consent.

Given the objectives of this study, there are no other practicable methods for acquiring informed consent of participants within an appropriate time frame. It must also be noted that while participants are not consenting to the study, it can be assumed that they are unaware of the present study, which in turn lowers significantly any unintentional psychological outcomes or adverse interventions caused by the present article. Similarly, the data collected potentially offers a plethora of information on the participants, which can include their names, the names of their family members, birth dates, locations, and much more. Due to the concerns already mentioned this information must be handled with the utmost care because of the lack of voluntary participation. To properly ensure confidentiality all names, locations, date of birth, and other identifiable information is not needed to properly answer the research question and therefore has not been included in the present research. The General Research Ethics Board, part of the Queen's University Research Services cleared the project for ethical compliance with the Tri-Council Guidelines and Queen's University's ethics policies.

Chapter 5

Results

5.1 Content Analysis

Though, as indicated in Chapter 4, the SNS content from the 23 sampled Twitter users yielded a pool of 460 artifacts and Facebook yielded a pool of 720 artifacts, the sample was dramatically reduced due to a number of factors. These factors include privacy settings, and because some users simply did not have 10 photos posted. These exclusionary criteria resulted in a total number of 1,278 artifacts analysed and categorized. As Table 3 demonstrates, a total of 217 Twitter photos and 230 tweets were analyzed, and 345 photos and 300 Facebook posts were categorized for a total of 1,092 pieces of content. As discussed in Chapter 4, each YouTube video contains multiple artifact types nested within videos; for example, music videos show an ever-changing number of images, scenes, background information, people and objects. 78 images and 108 lyrics which were categorized, totaling 186 observed units nested within 10 YouTube videos. Following the content analysis, a total n of 1,278 artifacts from Twitter, Facebook, and YouTube were categorized as either *cyber-banging* techniques, *recruitment* techniques, or *non-criminal* content.

Table 3

Summary of the frequency table of Cyber-banging techniques, Recruitment Techniques and Non-Criminal Content

	Twitter		Facebook		YouTube		**Total**
	Tweets	Photos	Posts	Photos	Lyrics	Images	
Cyber-banging Techniques	62	61	79	172	87	67	**528**
Recruitment Techniques	0	0	0	0	0	0	**0**
Non-criminal Content	168	156	221	173	21	11	**750**
Total:	**230**	**217**	**300**	**345**	**108**	**78**	**1,278**

To demonstrate the frequency of each variable in more detail, Table 4 divides the frequency of the variables by SNS and subdivides the variables into tweets and photos (for Twitter), public posts and photos (for Facebook) and lastly, lyrics and images (for YouTube). The variables themselves have been grouped by the concept they represent (cyber-banging techniques, recruitment techniques, or non-criminal content). Four variables within the cyber-banging concept (displaying drugs/weapons, displaying money/illegal gains, boasting facets of gang lifestyles, and other forms of propaganda) are considered to be both cyber-banging techniques and indirect recruitment.

Table 4

*Frequency table of the variables of cyber-banging, recruitment and non-criminal conte*nt

	Twitter		Facebook		YouTube	
Cyber-banging Variables:	Posts	Photos	Posts	Photos	Images	Lyrics
Showcasing gang colours and symbols	1	4	2	136	14	2
	(0.43%)	(1.84%)	(0.66%)	(39.42%)	(17.94%)	(1.85%)
Displaying drugs/weapons*	2	7	7	16	34	25
	(0.86%)	(3.22%)	(2.33%)	(4.63%)	(43.58%)	(23.14%)
Displaying money/illegal gains*	0	6	0	2	15	10
	-	(2.76%)	-	(0.57%)	(19.23%)	(9.25%)
Boasting facets of gang lifestyle*	20	8	24	11	1	34
	(8.69%)	(3.68%)	(8%)	(3.18%)	(1.28%)	(31.48%)
Other Propaganda*						
Promoting mixtapes or songs	13	21	5	1	0	3
	(5.65%)	(9.67%)	(1.66%)	(0.28%)	-	(2.77%)
Clubbing	0	1	0	0	0	0
	-	(0.46%)	-	-	-	-
Chains/jewelry	0	3	0	1	3	4
	-	(1.38%)	-	(0.28%)	(3.84%)	(3.70%)
Rap Quotes about gangster lifestyle	8	2	5	1	0	0
	(3.47%)	(0.92%)	(1.66%)	(0.28%)	-	-

Table 4 Continued

*Frequency table of the variables of cyber-banging, recruitment and non-criminal conte*nt

	Twitter		Facebook		YouTube	
Cyber-banging Variables:	Posts	Photos	Posts	Photos	Images	Lyrics
Report one's part in a violent act	1	0	2	0	0	0
	(1.43%)	-	(0.66%)	-	-	-
Network with other gang members	0	0	13	0	0	0
	-	-	(4.33%)	-	-	-
Grieve/honour/express trauma	6	6	5	1	0	1
	(2.6%)	(2.76%)	(1.66%)	(0.28%)	-	(0.92%)
Respond/make threats	11	3	6	3	0	8
	(4.78%)	(1.38%)	(2%)	(0.86%)	-	-
Disrespect a recently killed gang member	0	0	2	0	0	0
	-	-	(0.66%)	-	-	-
Depicting violent acts	0	0	1	0	0	0
	-	-	(0.33%)	-	-	-
Co-ordinating criminal activities	0	0	7	0	0	0
	-	-	(2.33%)	-	-	-
Recruitment Variables:						
Promoting incentives in joining	0	0	0	0	0	0
Using fear/intimidation	0	0	0	0	0	0
Offering Gifts	0	0	0	0	0	0
Asking personal questions	0	0	0	0	0	0
Proposing tasks	0	0	0	0	0	0
Vouching/referring a potential recruit	0	0	0	0	0	0
Non-criminal content	168	156	221	173	11	21
	(73.04%)	(71.88%)	(73.66%)	(50.14%)	(14.10%)	(19.44%)

Note:
The numbers shown here are based on the number of times a variable was observed. Its percentage are part of the same posts/photos/images/lyrics categories in the SNS.
*: Are variables which are categorized under cyber-banging and implicit recruitment techniques.
Total number of observed variables: n = 1, 278.

On Twitter, the variable most observed in tweets was 'boasting facets of gang lifestyle', which is observed 20 times out of 230 tweets, followed by 'promoting mixtapes or song', which is observed 13 times. Both variables account for 8.69% and 5.65% of all tweets, respectively. The variable 'responding to or making threats' was 11 times, accounting for 4.78% of the total tweets. 'Showcasing gang colours and symbols' (0.43%), 'displaying drugs/weapons' (0.86%), 'rap quotes about the gangster lifestyle' (3.47%), 'reporting one's part in a violent act' (1.43%) and 'grieve/honour/express trauma over the death/incarceration of a fellow gang member' was also observed (2.6%), however they individually account for less than 5% of all total tweets. 'Displaying money/illegal gains', 'clubbing', 'chains/jewellery', 'networking with other gang members', 'disrespecting a recently killed gang member', 'depicting violent acts', and 'co-ordinating criminal activities' is not present in the 230 tweets analysed. Further, none of the tweets analysed illustrate any of the recruitment variables listed.

Regarding the 217 Twitter photos analysed, the most prominent variable observed was that of 'promoting mixtapes or songs', which was observed 21 times, or 9.67% of all Twitter photos. 'Showcasing gang colours and symbols' (1.84%), 'displaying drugs/weapons' (3.22%), 'displaying money/illegal gains' (2.76%), 'boasting facets of gang lifestyle' (3.68%), 'clubbing' (0.46%), 'chains/jewellery' (1.38%), 'rap quotes about gangster lifestyle' (0.92%), 'grieve/honour/express trauma over the death/incarceration of a fellow gang member' (2.76%), and 'respond/make threat's (1.38) were also observed—however they individually account for less than 5% of total twitter photos. As with tweets, none of the Twitter photos illustrate any of the recruitment variables listed. 'Reporting one's part in a violent act', 'networking with other gang members', 'disrespecting a recently killed gang member', 'depicting violent acts', and 'co-ordinating criminal activities' were also not present in any of the Twitter photos analysed.

On Facebook, the variable most observed in the posts was 'boasting facets of gang lifestyle', which is observed 24 times out of the 300, accounting for 8% of the total Facebook

posts analysed. The second most observed variable was 'networking with other gang members', which emerged in 13 out of the 300 posts observed but accounted for less than 5% of total Facebook posts at 4.33%. Several other variables individually account for less than 5% of total Facebook posts: 'Showcasing gang colours and symbols' (0.66%), 'displaying drugs/weapons' (2.33%), 'promoting mixtapes or songs' (1.66%), 'rap quotes about gangster lifestyle' (1.66%), 'reporting one's parts in a violent act' (0.66%), 'grieve/honour/express trauma over the death/incarceration of a fellow gang member' (1.66%), 'respond/making threats' (2%), 'disrespect a recently killed gang member' (0.66%), 'depicting violent acts' (0.33%), and 'co-ordinating criminal activities' (2.33%). None of the Facebook posts analysed illustrated any of the recruitment variables listed.

Regarding Facebook photos,' showcasing gang colours and symbols' was the most commonly observed variable, accounting for 39.42% or 136 of the total 345 Facebook photos analysed. The second most observed variable was 'displaying drugs/weapons', which emerged 16 times, but accounted for less than 5% of total Facebook photos. Several other variables individually account for less than 5% of total Facebook photos: 'displaying money/illegal gains' (0.57%), 'boasting facets of gang lifestyle' (3.18%), 'promoting mixtapes or songs' (0.28%), 'displaying chains/jewellery' (0.28%), 'grieve/honour/express trauma over the death/incarceration of a fellow gang member' (0.28%), and 'respond/make threats' (0.86%). As with the Facebook posts, none of the recruitment variables are present in these data.

Of all the images shown throughout the 10 YouTube rap videos, the variable most observable is 'displaying drugs/weapons' which was observed 34 times out of the 78 images categorised (43.58%). 'Displaying money/illegal gains' is the second most observable variable, which was observed 15 times out of the 78 images categorised (19.23%), followed closely by the variable 'showcasing gang colours and symbols' which was observed 14 times (17.94%).

'Boasting facets of gang lifestyle' (1.28%) and displaying 'chains/jewellery' (3.84%) also emerged. All other variables, including the recruitment variables are not observable.

The variable most observed within the song lyric groupings was 'boasting facets of gang lifestyle', which emerged for 34 out of 108 song lyric groupings (31.48%). The second most observed variable was 'displaying drugs/weapons', which accounts for 23.14% of all observable lyrics. Displaying 'money/illegal gains' was observed 10 times out of 108 times (9.25%). 'Showcasing gang colours or symbols' (1.85%), 'promoting mixtapes or songs' (2.77%), 'chains/jewellery' (3.70%), and 'grieve/honour/express trauma over the death/incarceration of a fellow gang member' (0.92%) are also all observable; however they individually account for less than 5% of all variables found in the lyrics. All other variables, including the recruitment variables are not observable.

Across Twitter and Facebook, non-criminal content emerged most frequently. On Twitter, non-criminal content was observed in 168 out of the 230 tweets, which accounts for 73.04% of all total tweets analysed. Non-criminal Twitter photos account for 71.88%, or 156 out of the 217 photos analysed. On Facebook, non-criminal content is observable in 221 out the 300 Facebook posts, which accounts for 73.66% of all total Facebook posts. Non-criminal Facebook photos account for 50.14%, or 173 out of the 345 photos analysed. Regarding YouTube however, non-criminal content is not the most observable variable. The YouTube images observed only 11 non-criminal variables out of 78, which accounts for 14.10% of all the variables observed in the images on the YouTube videos analysed. Similarly, Non-criminal lyrics are observable 21 times out of the 108, which accounts for 19.44% of all the lyrics analysed.

5.2 NodeXL

NodeXL extrapolated the complete network of the 23 sampled Twitter users. The following results demonstrate two ways in which online roles can be revealed: 1) through the relationship between tweets and followers and 2) through the centrality measures. First, Figure 2

demonstrates the relationship between the total number of tweets and the total number of followers. This is to reveal different roles based on the level of online activity by the sampled users: the peripheral, the influencer, the central individual, and the highly visible actor as conceptualised by Gunnell, Hillier and Blakeborough (2016). Second, measures of degree centrality, betweenness centrality, and eigenvector centrality were evaluated to delineate leadership based on position within a network. The results on Table 5 demonstrate the 10 sampled users with the highest scores on the three centrality measures and their impact in understanding leadership roles.

5.2.1 Roles Based on Activity Levels on Twitter

As Figure 2 shows, a cross section on the graph separates the 23 users into the four aforementioned roles. On the X-axis a dotted line splits the Twitter users with a higher number of tweets and Twitter users with an average/low number of overall tweets. The dotted line on the Y-axis separates the users with a higher number of overall followers. Most of the users have a low to average amount of tweets and followers. Three users are considered to have a high number of tweets and a high number of followers: User #6, User #4 and User #1. Through the typography of Gunnell, Hiller and Blakeborough (2016) those users may be considered 'central individuals', who are well connected to many people and who are proactive online, and who share a lot of information. Three other users have a lower number of tweets but have a high number of followers: User #5, User #3, and User #2. Those users are considered 'influencers.' They may not be as proactive as the central users, but their tweets garner much attention. Three other users had a high number of tweets but had a lower number of followers: User #13 User #9 and User #8. Those users produce as many tweets as the central individuals; however, their information does not move to many people. They are 'highly visible' as they are constantly attempting to establish their presence on Twitter through their tweets. The other 14 sampled Twitter users have an average to low number of followers and have an average to low number of total tweets.

According Gunnell, Hillier and Blakeborough (2016) this could indicate users at the 'peripheral' of their respected network, as they do not have very many followers and are not highly active or visible in their network.
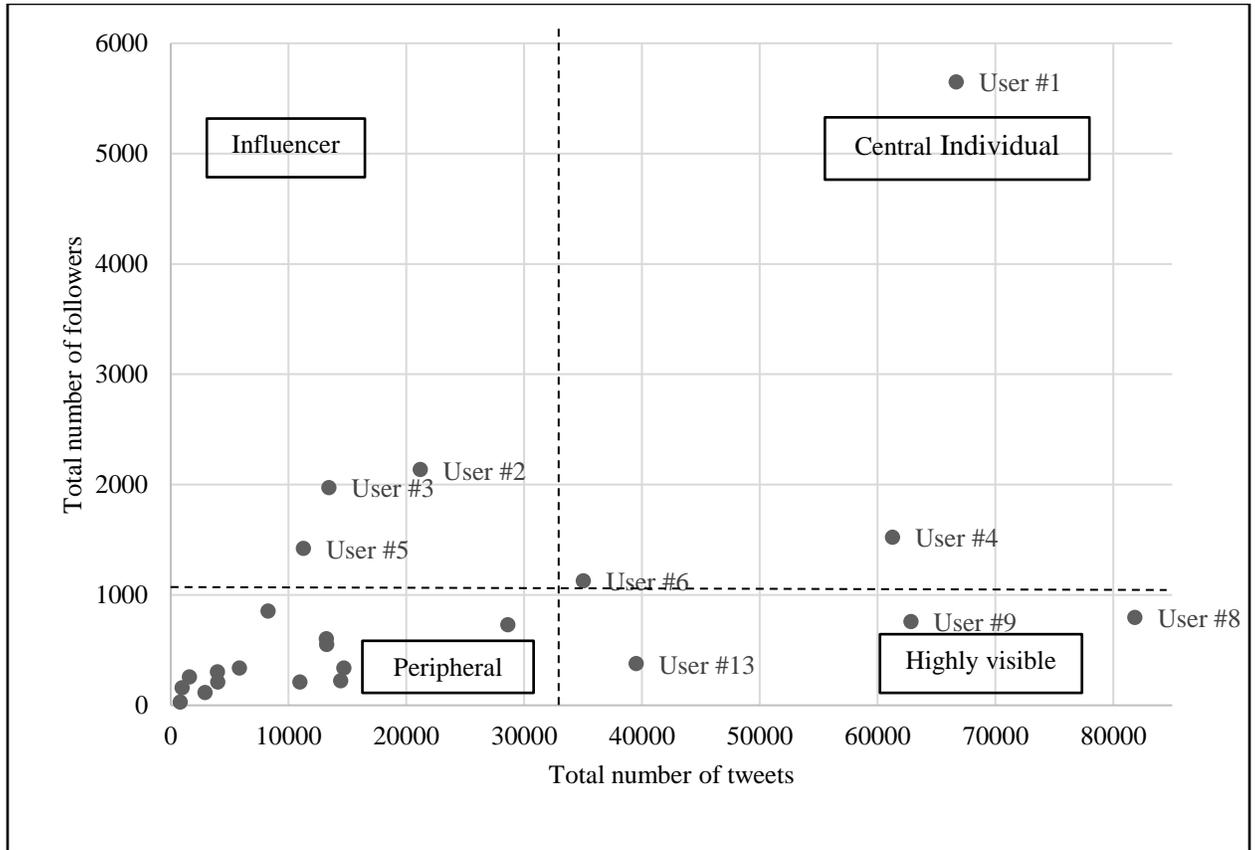
Figure 2: Figure 2 illustrates the relationship between the number of tweets and the number of followers for the set of 23 sampled Twitter users. The positions are interpreted from Gunnell, Hiller & Blakeborough (2016) Social Network Analysis of an Urban Street

5.2.2 Roles Based on Centrality Measures

One's role in their network is not solely determined through the relationship between the level of activity online and the number of followers. Consequently, network measures of degree centrality, betweenness centrality and eigenvector centrality were used to understand the sampled users' level of leadership in their network. These measures provide greater detail and offer different perspectives towards notions of power, influence and importance, which suggest

leadership roles in a network. Table 5 demonstrates the top ten users who scores the highest in each of the three individual measures.

As stated in the previous chapter, degree centrality is defined as a simple count of the total number of connections linked to a vertex (Hansen, Shneiderman, Smith, 2011). Twitter, compared to other SNS, has the capability to view the directions of those connections. 'In-degree centrality' represents the number of followers that a particular user has. Table 5 demonstrates the top 10 users with the highest in-degree scores out of the 23 sampled Twitter users. Using descriptive analysis, User #2, User #1, User #3, User #4, User #5, User #6 have the highest scores, fitting in the 75th percentile. It is these six users that are considered to have a high in-degree compared to the other sampled users in the distribution. In-degree is a measure of popularity and suggests these six users are the most popular compared to the other users sampled. Their importance stems from the large audience they have.

Betweenness centrality is defined as a "bridge score". The between centrality scores measures how many times a given user (vertex) lies on the shortest path between two other users. Networks are not straightforward, especially on social media. There are very few situations where everyone on Twitter is connected to only one user as the example in section 4.4.2.2. suggest. Many, if not all of the users on Twitter have multiple connections, are connected to third party users, are friends with each other etc. Additionally, NodeXL evaluates not simply the friends of the given user (1 degree of separation), but the whole network; including friends-of-friends (2 degrees of separation), which can significantly augment betweenness scores. Table 5 demonstrates the 10 highest betweenness scores from the sampled population. Using descriptive analysis, User #1, User #3, and User #5 have the highest scores, fitting in the 75th percentile. It is these three users that are considered to have a high betweenness scores compared to the others in the distribution. While all the users have a relatively high betweenness score, User #1, User #3,

and User #5 bridge the most people, as their importance is due to their ability to be connected to different segments of social groups.

Eigenvector centrality is a more sophisticated measure of centrality compared to degree centrality. Like degree centrality, eigenvector centrality measures the number of in-degree connections it has within a network. However, eigenvector goes further by also accounting for how well connected a user is by the number of links their connections have. The present study finds a common trend regarding eigenvector centrality. In 21 out of the 23 sampled Twitter users, the eigenvector centrality score was 0.00. User #1 had a score of 0.001 and User #3 had an eigenvector score of 0.010. This suggests that in 21 cases, the users were not connected to people who themselves were highly connected to other users. In one case, the results demonstrate that 1% of the total network can be explained by the user's connections having a high number of connections themselves. Lastly, in one case, the results demonstrate that 10% of the total network can be explained by the user's connections having a high number of connections themselves. This suggests the user does not have many connections who themselves, are highly connected.

Table 5

The 10 users that scored the highest in in-degree centrality, betweenness centrality and eigenvector centrality.

In-degree centrality scores		Betweenness centrality scores		*Eigenvector centrality scores	
User ID	Score	User ID	Score	User ID	Scores
User #2	2001	User #1	170114858.584	User #1	0.010
User #1	2001	User #3	104471955.639	User #3	0.001
User #3	1974	User #5	104130684.459		
User #4	1524	User #2	90166761.802		
User #5	1421	User #4	79760066.209		
User #6	1129	User #9	61213301.065		
User #7	854	User #6	48288722.760		
User #8	797	User #7	42426375.346		
User #9	758	User #17	42168078.714		
User #10	729	User #8	40366711.065		

Note:
*: Eigenvalue can only be recorded for User #1 and User # 3 as the eigenvector value for the other 22 sampled was 0.00.
Eigenvalue ranges from 0 to 1.

Chapter 6

Discussion and Implication

The following chapter will be divided into two. The first section will discuss the content analysis section with the goal of answering the first research question: What is the prevalence of cyber-banging and recruitment on social networking sites? The discussion will utilise the results found in section 5.1 into order to empirically demonstrate the prevalence of cyber-banging and recruitment, as well as describe the most commonly observed cyber-banging activities and recruitment techniques. Cyber-banging and recruitment prevalence and archetypes will be used to develop a more specific and parsimonious definition of cyber-banging than what has traditionally been seen in the literature. Additionally, the discussion will apply results to determine which cyber-banging/recruitment techniques are more prominent for each SNS. Finally, within this section the hypothesis will be revisited, which suggested recruitment techniques will not be prominent on SNS. The second section will discuss the results found in section 5.2 with the goal of answering the second research question: What can network analysis reveal about the roles of gang members on social networking sites? This study answers this question in two ways. First, the relationship between total number of tweets and the total number of followers will be discussed, with four roles being extracted: the stable gang members, the human resource officers, the wannabes, and the marketing strategists. Second, the results of degree centrality, the betweenness centrality, and eigenvector centrality will be connected in order to determine key leadership roles. While each degree alone can provide information regarding central roles, studies attempting to discern roles online are limited. In reviewing literature regarding different types of gang leadership roles, this section combines the centrality measures to understand different leadership roles that may exist online.

Engaging the literature regarding gang roles online and centrality measures is difficult for two reasons: Firstly, much of the literature on street gang roles centre around the roles as defined through their actions in the real world. Much like the literature on recruitment, this suggests interpreting real life roles and responsibilities based on activities engaged in on SNS. Secondly, literature that is designed to address online presence and gang roles focuses primarily on betweenness scores, as betweenness centrality is considered one of the more helpful measures in defining leadership roles online (Calderoni, Brunetto, Piccardi, 2017). As Table 5 demonstrates, the use of centrality measures can illustrate who are the more central characters in a given online network. The notion of centrality is key for law enforcement as they regularly use online surveillance to delineate the posers from the OG members (*original gangsters*—elder members). Each centrality measure—degree centrality, betweenness centrality and eigenvector centrality—demonstrates a different level of importance: popularity and prestige, bridging different groups, and potential influence, respectively. Each measurement alone provides some intelligence regarding importance; however, as Table 5 suggests almost more than half have some level of importance, as 14 out of the 23 sampled Twitter users were listed as scoring high in at least 1 of the measures. Therefore, this study suggests coupling the scores to reveal potential leadership roles. When coupling a high between score with a low in-degree score, the literature suggests a "gatekeeper" type of leadership. When coupling high eigenvector scores with low in-degree scores, it suggests a "managerial" leadership role, and finally, when coupling a high in-degree score with a low betweenness score, it suggests a "charismatic" leadership role.

6.1 Content Analysis and Research Question #1

The literature suggests that cyber-banging, though identifiable though multiple techniques, suffers from lack of a uniform definition. As stated in Chapter 1, many of the authors list many techniques; most of which were included as variables during the content analysis, as the basis for the definition. As the content analysis progressed, a typology regarding the

activities/techniques (or variables) became apparent. Three distinct categories emerged from the data: 1) promotion of gang ideologies, 2) updates on gang information, and 3) diffusion of conventional gang activities online. Content analysis suggests while the 12 various techniques may serve a purpose, all cyber-banging remains distinct in its motivation.

Techniques that have the purpose of promoting gang culture fit within the category labelled, 'promotion of gang ideologies.' This includes 1) showcasing colours and symbols, 2) displaying drugs/weapons, 3) displaying money/illegal gains, 4) boasting facets of gang lifestyle, 5) other types of propaganda (such as promoting mixtapes or songs, clubbing, displaying chains/jewellery, rap quotes about gang lifestyle). These techniques serve to display a certain lifestyle associated with being a street gang member.

Those techniques which serve to update the public on different aspects of the members within the gang fit into the 'updates on gang information' category. This includes 1) reporting one's part in a violent act, 2) networking with other gang members, and 3) grieve/honour and express trauma over the death/incarceration of a fellow member. Compared to the first category, these techniques serve a much more specific purpose. The techniques that fit in this category seem to share characteristics regarding concrete information which help keep people up-to-date with new information regarding the members in the gang, rather than the general promotion of gang values or norms as suggested by the first category.

The category 'diffusion of conventional gang activities online' is similar to the terms used to define cyber-banging in general. For instance, Decker & Pyrooz define all cyber-banging as the "transmission of gang culture via internet" (2009, p. 403), and Storrod and Densley (2017) define cyber-banging as activities normally done on a street corner finding their way online. It includes techniques such as 1) responding/making threats online, 2) disrespecting a recently killed rival gang member, 3) depicting violent acts, and 4) coordinating criminal activities. The techniques in this category are general street gang activities that normally take place on the

streets, which have now found their way online. Comparatively to the other two categories, the techniques in this category do not necessarily promote ideologies nor update people regarding status on the gang but are physical activities that require interactions with other people to complete.

This new typology redefines cyber-banging, suggesting that a proper definition of cyber-banging should not be vague as to suggest gang-culture-now-online, but not too specific that the definitions are simply lists regarding the techniques of cyber-banging—as many of the previous authors definitions suffer from. Therefore, it can be suggested that cyber-banging can be defined as the promotion of gang ideologies, updates on gang information, and the diffusion of conventional gang activities online. This definition benefits from being specific in the types of material posted, but parsimonious enough that as new techniques emerge, they can be integrated into these categories, without changing the definition. This is different from the cyber-banging duality proposed by Storrod and Densley (2017), which suggests that cyber-banging techniques are either instrumental or expressive. As suggested in Chapter 2, many of the techniques blur the line between instrumental or expressive. This new definition removes the need to interpret the primary motivation of each technique. Instead, the techniques are separated into one of the three categories based on the outcomes: promotion, updates, interactions.

With these three new categories established, which category of cyber-banging is most prominent on the SNS evaluated? According to the results on Table 4 the variable most present is 'showcasing gang colours and symbols', which surfaced a total of 159 times; 'boasting facets of gang lifestyles', which surface 98 times; 'displaying drugs/weapons' (91 times); and lastly 'other propaganda', which surfaced 71 times—promoting mixtapes and songs is the most common 'other propaganda' (43 out of the 71 times). All these variables fall under the category 'the promotion of gang ideologies'—the most prominent type of cyber-banging observed. This is consistent with Morselli and Décary-Hétu (2013) who suggest gangs are using social media for

promotional use. However, depending on the type of SNS, different promotional techniques are observed. Promoting mixtapes and songs are most observed on Twitter; on Facebook, showcasing gang colours and symbols is most prominent; and on YouTube, displaying drugs/weapons is the most prominent form of cyber-banging. This can be due to the nature of each of those sites.

The purpose of Twitter is for microblogging, allowing its users to feed up-to-date information regarding their daily lives to all those willing to consume it (followers). However, Twitter also functions as a tool for self-promotion. "Micro-celebrity"—a term coined by Theresa Senft—implies that many Twitter users strategically use the SNS to "amp up their popularity over the Web" (as cited in Marwick & Boyd, 2010, p. 121). To "amp up" their popularity, they must turn to promotional self-branding in order to achieve visibility and influence. Comparatively to other SNS, Twitter is not used as a one-to-one communication, but a platform for broadcasting information to the totality of an audience (Murthy, 2013; Page, 2012). In the context of street gangs, the question becomes: *Why aren't street gang users promoting their gang, instead of promoting music?* The answer lies in the symbiosis between hip-hop and the street gang lifestyle. Becoming a hip-hop or rap artist is, in many ways, synonymous with being a good street gang member. As Patton, Eschmann and Butler (2013) suggests, hip-hop serves as a medium for street credibility, since many of the most popular hip-hop and rap artists are self-declared gang members (E.g.: Tupac Shakur, Biggie Smalls, The Game, Waka Flaka, Rick Ross, and Chief Keef). Twitter's ability to promote music to a large audience, and the connection between hip-hop and street gangs explains why promoting mixtapes and songs is the cyber-banging technique most observed on Twitter.

Comparatively, Facebook is categorized as a social sharing and dating SNS. A study regarding the psychological intentions of SNS users argues Facebook users generally use the site to garner attention and positive feedback (Panek, Nardis & Konrath, 2013). Posts serve to fuel a sense of exhibitionism and general vanity, suggesting that Facebook is a much more superficial

SNS. Daniel Miller (2011) argues that Facebook envelops the concept of the self, making the construction of the self dependant on appearances and perceptions largely formed by other people. According to Miller, this leads to a "general compulsion to post things about the self in this public domain" (2011, p. 179). These authors provide ample explanation as to the reason why showcasing gang colours and symbols were found to be the most predominant cyber-banging technique on Facebook. This technique serves to promote gang affiliation, as discussed by Jackson & McBride (1986). The presentation of this type of affiliation has much to do with appearances of the self. The self, as suggested by previous authors, is defined by the development of a "social identity" or a socially constructed version of the self (Anderson, 2003). The social identity is often based on a daily-affiliation to a certain group. For example, a social self can be constructed around the identity as a football player, aunt, student, as well as gang member. Once on Facebook, the promotion of that affiliation has the effect of mobilising others in that group. Family and friends approve of the affiliation, guaranteeing positive feedback. Facebook simply provides the medium in which that type of vanity and affirmation may be had. Therefore, it is not surprising that showcasing gang colours and symbols is most prominent on Facebook compared to other SNS.

Lastly, 'displaying drugs/weapons' was the cyber-banging technique most prominent on YouTube. As Pyrooz, Decker & Moule Jr. suggest, SNS serves to "compliment the streets as an extension of gang life […]" (2015, p. 493). YouTube videos serve to meet the normal expectation of the street gang lifestyle, while enhancing their status within the gang and the status of the gang in comparison to rivals. The YouTube rap videos analysed did not provide the opportunity to understanding the specific motivation of each artist in the images they chose to share. However, displaying drugs/weapons may serve to meet the two reasons illustrated by Pyrooz, Decker and Moule Jr. (2015). Drugs and weapons are often associated with the street gang lifestyle. Drug dealing is one of the many sources of income for street gangs, and guns are often involved in

altercations between rival gang members (Pyrooz, Decker and Moule Jr. 2015; Totten, 2012). Displaying both may have the effect of intimidating rivals. Displaying drugs suggests that the gang in question is better at drug dealing or has more drugs to sell signifying more profit to be made. Displaying weapons has an immediate effect of enhancing the status of the gang, as it exhibits gang members' willingness to wound, or possibly kill rivals if need be. This willingness for violence often separates the "real" gang members, from "wannabees" who are play acting. If displaying drugs and weapons have such an effect, as described by Pyrooz, Decker and Moule Jr., then it is possible to understand why this technique is so prominent on YouTube rap videos created by street gang members.

While it has been established which cyber-banging techniques are most popular on SNS, these findings must be understood in context of all the artifacts analysed in order to properly answer the research question, *what is the prevalence of cyber-banging and recruitment on social networking sites in Canada*? Of all the variables analysed, the most frequently observed content was non-criminal content. On Twitter, non-criminal content is present in 72.48% of the photos and tweets categorised. On Facebook, non-criminal content is present in 61.08% of the photos and posts categorised. YouTube results are radically different because the videos analysed were created by gang members, about gang lifestyle, to promote gang ideologies that go along with it. In that context, non-criminal content is present 17.20% of the time. Therefore, depending on the SNS, the answer to the prevalence of cyber-banging in Canada differs, but only slightly. The prevalence of cyber-banging on Twitter is low, at 27.51% of all content found on a street gang member's Twitter page. The prevalence of cyber-banging on Facebook is moderately low, accounting for 38.91% of all content found on a street gang member's Facebook page. Lastly, YouTube videos created by some of the sampled gang members have a high prevalence of cyber-banging, accounting for 82.80% of all content found on those videos. However, as the goal of those videos is to promote street gangs, the high level of cyber-banging on YouTube videos is to

be taken with a grain of salt. Excluding YouTube, the results indicate that cyber-banging is relatively low on SNS and is not even the dominant type of content posted by street gang members themselves. This is explained through the theory of intersectionality. Intersectionality suggests that human beings are complex, with multiple facets, interests, perceptions, and identifications (Collins & Bilge, 2016). When understanding human behavior, intersectionality suggests that no one factor shapes the actions of human beings, and therefore analysing human behavior with an intersectional lens is to see all the different parts of a human being. The users sampled on Twitter are street gang members, but they are also sons, sisters, Canadians, First Nations members, fathers, mothers, students, etc. They have multiple interests, many of them outside the realm of their street gangs. Being a gang member is only one part of the individual persona and do no seem to dominate their online presence.

Concerning the prevalence of recruitment on SNS, the results are much less nuanced than those results related to cyber-banging. In all three of the SNS evaluated, there was no evidence of active or proactive recruitment techniques. Certain observations by the sampling method must be addressed in understanding why there was no recruitment techniques observed. Densely (2012) defines recruitment as needing a party willing to volunteer to join a group as well as a party looking to add a member to their group. Grekul & LaBoucane-Benson (2008) and Densely (2012) concur that potential recruits are simply related to gang members. With no prior relationship it can be extremely difficult to find a street gang, despite the motivation of a potential recruit. The sampling method utilised suggests this level of difficulty. On Twitter, the keyword searches led to 5,385 tweets read to find a total of 23 gang users in Canada. On Facebook, 9,267 public posts were read to find a total of 36 gang users. Twitter data suggests that street gang members in Canada make up 0.42% of all tweets. The same goes for Facebook, which suggests that street gang members in Canada make up 0.38% of all profiles. Therefore, unless there is already a pre-established connection between someone willing to contact a gang member and a gang member

active on SNS, the idea that someone at random can happen onto a gang member on SNS seems extremely unlikely.

The result suggesting no active or proactive recruitment online is consistent with results found by Morselli and Décary-Hétu (2013). While cyber-banging suggests that it is real-life gang culture/activities online, the same cannot be said for recruitment. None of the ways in which street gang members recruit in the real world were found to exist on the SNS evaluated. One reason for this was posited by multiple researchers who suggest that gang members are weary of using SNS because of an inherent distrust of the internet (Moule et al., 2014; Filippelli, 2008).

However, the concept of "indirect recruitment" presents different results. Suggested by Morselli and Décary-Hétu (2010), indirect recruitment argues that some of the cyber-banging techniques may entice potential recruits. They link promotional online material as a possible precursor for recruitment. As this study's typology suggests, a portion of cyber-banging is defined as the promotion of gang ideologies online. The variables displaying drugs/weapons, displaying money/illegal gains, boasting facets of gang lifestyle and other propaganda, can serve to entice potential recruits. As suggested earlier, displaying drugs/weapons has a status effect. Displaying money/illegal gains and boasting about the gangster lifestyle also has the effect of demonstrating the positive side of street gang membership. Parts of other propaganda include images of clubbing, jewellery, and rap quotes about gangster lifestyle. These, like the other variables mentioned, are techniques which show gang membership as an achievable ideal.

Thusly, when discussing the prevalence of recruitment online, the results of this study suggest that active or proactive recruitment is not present on Twitter, Facebook and YouTube. However, promotional cyber-banging techniques blur the line between cyber-banging and indirect recruitment. Promotional cyber-banging can entice potential recruits by demonstrating a glamourous lifestyle of money, drugs, weapons, women, and positive lifestyle choice all associated with gang membership. This study's hypothesis suggested that the results will

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demonstrate little to no online recruitment. While it would be easy to declare the hypothesis justified, given the intricate understanding of what content can lead to recruitment, there is still content that can be considered the precursor to recruitment, or the content necessary for recruitment to take place elsewhere. As the results suggest, promotional cyber-banging was found to be the most prevalent form of cyber-banging, making indirect recruitment the most prevalent form of recruitment techniques on SNS.

6.2 Network Analysis and Research Question #2

Table 6 demonstrates how the level of activity on Twitter can be associated with different roles. This is congruent with literature discussing different roles of gang members both online and in the real world (Grassi, Calderoni, Bianchi and Torriero, 2019). As the results suggest, many of the gang members on Twitter have a comparatively lower number of total tweets as well as a smaller online audience compared to the other sampled users. Authors such as Gunnell, Hiller, and Blakeborough (2016) argue that these members are considered peripheral, holding no level of prestige or connections. Other authors have come to contradict those claims, suggesting that an analysis of 140 gang members demonstrated those with "stable gang membership reported being more peripheral in their gangs than did the transient members" (Melde, Diem & Drake, 2012, p. 492). Their explanation uses variables such as age, violence, and victimisation, which are outside the scope of this study. The concept of stability within the network is interesting as it submits that gang members do not wish to be most visible or most popular online. Storrod and Densely (2017) have two varying explanations for this lack of presence: first they suggest the younger members must follow certain rules: "[…] younger gang members had to be especially careful about what they posted online to ensure they were not [using] the main (gang) hashtag in the wrong way" (p. 686). This implies strict rules that must be followed. Secondly, the wrong message, the wrong tweet, asking too many questions, posting too much, or attempting to connect to too many people

may be categorised as suspicious activities, that can only cause more attention to law enforcement.

Table 6

The position of the sampled users in their network and their role online

Position	Role	Description	User
Peripheral	Stable gang members	Follows rules, does not create waves within their online network	User #7, User #8, User #10, User #11, User #12, User #14, User #15, User #16, User #17, User #18, User #19, User #20, User #21, User #22, User# 23
Influencer	Human resource officer	Monitors the online presence of other gang members	User #2, User #3, User #5
Highly Visible	Wannabe	Over-sharing online, not completely accepted by the gang	User # 8, User #9, User # 13
Central individuals	Marketing Strategist	Fosters community engagement and social relationships.	User #1, User #4, User #6

The notion of the influencer suggests these users have a low level of tweets, but a high number of connections. They are not overly active online, but when they are it is to address a high number of people. This puts them in the position of the human resource (HR) officer. A human resources officer, in the most general definition, is responsible for developing and looking out for employees (in this case, other gang members). Though never labelled as a HR officer, literature regarding responsibilities of some gang members online indicate that there are those within the gang responsible for other members in two ways. The first of these is through their capability to

provide necessary information. For example, police officers have observed gang members using social media to warn each other of potential dangers, to give an "all clear" if police officers are around, to update members when an officer leaves, to expose a rival gang member entering their territory etc. (Rizzo, 2013). Second Storrod and Densley's (2017) discussion regarding suspicious activity and over-sharing demonstrates an inverse role. While stable gang members must watch what they post online for fear of retribution or upsetting the elders in the group, it would suggest if younger members are following rules, there must be someone else enforcing those rules. In both cases, the role of the HR officer demonstrates that quality over quantity is preferred. If the HR officer tweets too much, the information passed along may simply become white noise and ignored. HR officers must direct their attention at multiple sources and remain connected to other gang members, friends, family, and people in the neighborhood if they are to monitor the neighborhood, the police, and their own members—which explains their high level of followers.

The highly visible individual is considered to have a high number of tweets but a small following. Literature suggests that this role is reserved for new recruits and members, also known as "wannabes". When analysing traditional street gang roles, the wannabe role fits with the high-tweet, low-following dyad found within the highly visible individual. Wannabes are often infatuated with gang behavior attempting to emulate them at every opportunity (Conly et al, as cited in Ruble & Turner, 2010). For this reason, these users may favor a quantity over quality approach to their tweeting, pushing to promote as much gang information and affiliation as possible in order to prove themselves official gang members. This has been documented several times, suggesting wannabe gang members put in "work" (promoting and/or completing tasks for elder gang members (Storrod and Densley, 2017; Akiyama, 2012). What can explain the low level of followers they have? Akiyama (2012) suggests wannabes are at the bottom of the gang structure and infer they can be isolated form the larger network until they have proven that they are committed and dedicated to the gang. The recruitment process as well can explain the low

level of followers. When a potential recruit has been signaled to the gang, the elder gang member vouching for him is responsible for rearing the recruit into the gang (Densley, 2012). The recruits who wish to prove their commitment are generally seen as merging their identities and relationship to the gang. This suggests potential recruits do not have a booming social network (both in real life as online), as their focus must be tied to the gang which they wish to be a part of. This translates to online to users with a lower following online. Therefore, those fit for recruitment must 1) constantly promote the gang, and 2) are not connected to many social groups, which may be reflected in their audience online as well.

The central individual is one who has both a high presence online as indicated by many tweets and has a high following. Contrary to those in the peripheral, central individuals can be considered hard workers, constantly attempting to be known, be seen, and be heard. This can suggest a gang member attempting to build a reputation, or hard worker promoting their gang for reason such as status within their community and their gang (Malone, 2002). Once again, Storrod and Densely (2017) explain these central figures: while some gangs control their members, others understand the role of brand recognition, having their younger members "communicate with other lower ranking members and girls to help build presence" in order to augment their brand strategy (Storrod & Densley, 2017, p. 686; Moule, Pyrooz & Decker, 2014). Specifically, on Twitter gang members and their gang can augment their status through tagging multiple people; linking articles to mainstream media coverages, the neighborhood, and members of the community; and attempt to monetise on their popularity. This may explain the central role these individuals play within their social network. This role labelled the "marketing strategist" implies they are not necessarily looking to go viral but are looking for "soap fandoms" (Storrod & Densely, 2017, p. 690) where users post daily instalments of updates, videos, conversations, and pictures to as many people as possible to garner the respect of their peers.

When discussing the complex relationship of centrality measurement, three types of relationships suggest three distinct leadership roles. As Table 7 demonstrates, the three types of leadership roles are: the gatekeeper, the managerial leader, and the charismatic leader. The 'gatekeeper' is considered to have a high betweenness score and a low in-degree. A high betweenness scores suggests that the user is a bridge to unique connections. It reflects the amount of control that the user has within a network to communicate with people from different groups (Hansen, Shneiderman & Smith, 2011). In this study, all have relatively high betweenness scores, yet User #1, User #3 and User #5 have the highest scores in the distribution, suggesting they are the bridge between the greatest number of people, otherwise known as unique connections. However, as Sparrow (2001) suggests, the leader of any network is someone that not only has the most unique connections but is difficult to replace. As Borgatti, Everett and Johnson (2018) explain, the ability to exploit a high betweenness position varies inversely by the ease with which each node can create ties: "[I]n principle, this [user] has power because it can threaten to stop transmitting, making nodes use less efficient paths to reach one another. But this threat only works it the other [users] cannot easily create new ties to simply go around the recalcitrant [user]" (p. 201). In relation to in-degree, the user evolves from bridge to gatekeeper, having full control over the few connections the user does have. The user becomes difficult to replace because of the scarce connections surrounding the network. This scarce connection suggests lower levels of visibility. The leader must be the bridge, but as with all roles, too many bridges puts the user at risk of surveillance. As Decker (2001) submits, since gang leaders frequently must meet with other leaders, host meetings, conduct relationship with businesses and neighborhood stores, too many bridges become problematic when alluding surveillance. As for the sampled users, while many had high betweenness scores, User #17 was the only sampled user to come out as a gatekeeper. This shows how the addition of a second centrality degree can lower the number of users with important roles.

Table 7

The position of the sampled users in their network and its role in a network based on centrality measures

High Score	Low Score	Role	Description	Users
Betweenness	In-degree	Gatekeeper	Bridge between connections; low visibility; becomes only option for those connection	User #17
Eigenvector	In-degree	Managerial Leader	Knows a small cohort who themselves are well connected; selective about growing their gang.	NA
In-degree	Betweenness	Charismatic Leader	Locally famous; not interested in being connected to different groups of people.	N/A

In the real world, older gang leaders typically are not personally involved with the crimes committed by their gangs. Instead, these gang members have accumulated a small reliable number of fellow gang members tasked with carrying out criminal activities (Goddard, 1992). This small cohort is essential to criminal activities because they are connected to a plethora of people needed for the successful outcome of the mission: drivers, gunmen, knifemen, contacts inside businesses/organisations who can feed information on payrolls, movements etc. (Ibid, p. 27). Regarding Goddard's description of this type of gang structure, *small reliable* "cohort" [emphasis added] is key. This type of gang is structured with the specific intent of committing criminal activities for financial gains, a goal that cannot be generalised to all gangs. As Dunbar (2017) writes, "they are hierarchically structured with an established leadership and chain of command" and are selective in expanding their membership (p. 14). How does this translate online? As previously elaborated, a high eigenvector is a centrality measurement that does not measure the number of connections a single user has, but the number of connections *the user's* connections have. This is consistent with the notion of a leader who relies on people who are very

well connected. Additionally, the inclusion of the term "small" as suggested by Goddard (1992) and the notion of "selective in expanding their membership" by Dunbar (2017) concludes that this type of leader will have a small amount of connections, otherwise stated as a lower in-degree score. This type of leader manages the organisation as well as exerts control over key figures who themselves are more proactive with the connections they have. Therefore, this type of leadership is labelled the "managerial" leader to match the managerial style of governing the gang. Regarding the users sampled, no one user has both a high-eigenvector score and a low in-degree score combined. As demonstrated in the results, none of the sampled users had a high eigenvector score, with the highest being 0.010 out of possible score of 1.00.

The "charismatic" leader is known for his/her ability to mobilise their gang. The low betweenness score coupled with a high in-degree score suggests the user is highly visible within a group, but not with many others. This would make him locally famous (local within the group online). However, what makes a high in-degree and a low betweenness score charismatic? According to research, the charismatic leader is well liked by their peers (Rostami, Leinfelt & Brotherton, 2012). Like most gang leaders, this leader is considered an OG. The charismatic leader is looked up to by other, less experienced members of the gang who follow the leader in search of direction, support, and protection as they learn how to behave and advance themselves within their gang (Ruble & Turner, 2000; Goddard, 1992). This description of a gang leader is distinct from the other two types of gang leaders for two reasons: firstly, the charismatic leader wishes to be in contact with all the fellow members, as he/she is locally famous. Secondly, the other members are encouraged to seek out others within the gang, not worried about visibility or separating themselves from others in the network (Rostami, Leinfelt & Brotherton, 2012). Comparatively to the gatekeeper, this leader shies away from other groups, "holding on to the belief of leading a select few outside of mainstream society and mainstream goals" (ibid, p. 9). Therefore, they will not necessarily be the bridge between many groups, choosing rather to focus

on their gang. The literature suggests a leader who will have many connections, but those connections will cluster in one group, and will not be connected to a wide variety of other social groups. The charismatic leader will then have both a high in-degree, and a lower betweenness score. Within the sample population, no user has both scores.

When coupling the centrality scores, the number of users which are considered leaders within their network lowers significantly. In coupling the centrality measures, one user is extrapolated as a leader out of the sample population. None of the other users sampled fit within the other two leadership roles: managerial leader and the charismatic leader. There are two explanations as to why none of the other users fall into each of the leadership roles. Firstly, other than User #17, the other users could simply not be leaders within their gangs. Secondly, though the sampling method was thorough, a population of 23 users on Twitter is hardly enough to suggest that the roles do not exist. On SNS there may exist users who have a high in-degree/low betweenness or a high eigenvector/low in-degree but were not sampled in this study. What the results of the centrality scores do demonstrate is the complex relationship they have with each other, and the types of leadership roles it could expose. This is important to the discussion of leadership and importance in a network, as independent centrality measures do not explain the ways in which users are important to the gang.

Chapter 7

Summary and Conclusions

The first research question asks: "What is the prevalence of cyber-banging and recruitment on social networking sites?" Vis-à-vis cyber-banging, the content analysis and Table 4 demonstrates promoting gang ideologies as the most frequently observed type of cyber-banging technique on social media. Depending on the type of SNS, the most observed variable differs. For Twitter, 'promoting mixtapes and songs' is the most observed type of cyber-banging. On Facebook, it is 'showcasing gang colours and symbols', usually in photos. Lastly, on YouTube, displaying 'drugs/weapons' is the most prominently observed. As discussed in the previous chapter, there are many reasons for the differences in cyber-banging techniques on different sites. Most of those reasons have to do with the structure of the sites themselves, and what they offer to their users. Twitter is mainly used for promoting a user to a wide audience as possible, which gives rise to street gang members looking to attain fame and popularity through their music. As Facebook is considered more egocentric, promoting gang affiliations to satisfy the "social identity" may explain why 'showcasing gang colours and gang symbols' were most prominent. Lastly, the YouTube videos analysed demonstrate 'displaying drugs/weapons' as the videos themselves are massive promotional material with the goal to increase the gang's status. Though the specific technique differs, they all promote gang ideologies in one way or another.

This study's hypothesis argued there would be little to no recruitment found online. Though it can be considered justified, the conclusion to the hypothesis is much more nuanced. As Morselli and Décary-Hétu (2013) suggest, some cyber-banging techniques can be considered indirect recruitment as they act as a precursor to direct recruitment. Therefore, with the 'promotion of gang ideologies' being the most prominent cyber-banging techniques online, many

of the variables observed serve to implicitly recruit potential recruits, sparking interest of the specific gang.

With these results in mind, the research question is still not fully answered. Knowing the prevalence of cyber-banging and recruitment online means knowing to what degree the content found online is gang related. The content analysis suggests non-criminal content is the most frequently found content on a street gang member online profile. Excluding the results found on YouTube, the results on both Facebook and Twitter suggests around 1 in every 4 posts are cyber-banging related. In general, the posts observed online have nothing to do with criminal/gang related information. This result open the door to understanding street gang members; not solely as gang members, but as normal social media users, using the site as everyone else does.

As a secondary result, the content analysis also had the effect of creating a new definition of cyber-banging, one that does not depend on simply stating different techniques. This study proposes that cyber-banging be defined as "the promotion of gang ideologies, updates on gang information and the diffusion of conventional gang activities online".

The second research question asks: "What can network analysis reveal about the roles gang members have on social networking sites?" Two different results were revealed using NodeXL. Firstly, the relationship between the number of tweets and the number of followers' present different roles within a gang. Secondly, combining centrality measures may have revealed different leadership roles held by a gang leader online.

Based on the typology by Gunnell, Hiller & Blakeborough (2016), four roles were revealed: the stable gang members, the human resource officer, the wannabe, and the marketing strategist. These roles as bases on varying levels of activity on Twitter (measured by the total number of tweets) and varying size of their audience (measured by the total number of followers). A user with a relatively high number of tweets with a relatively low number of followers can be considered the wannabe role within their gang. A user with a relatively high number of tweets

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and a relatively high number of followers is related to the marketing strategist. A user with a relatively low number of tweets but with a relatively high number of followers is related to the human resource officer within the gang. Lastly, a low number of tweets coupled with a low number of followers may suggests the role of the stable gang member. Each of the roles were backed by literature regarding the different uses of SNS by different gang members. This study simply labelled those users with a particular type of role within the gang.

In combining centrality measures, three leadership roles were inferred, based on the types of leadership roles suggested by past literature of gang roles in the real world. Compared to the four roles within the gang, the leadership roles are not based on literature that discusses leadership roles online, as those articles do not exist. When past research discusses leaders within a gang, researchers depend mainly on betweenness centrality to infer a key player within the network. However, this study puts forth the theory that combining a high betweenness score and a low in-degree score may suggest a 'gatekeeper' type of leader; combining a high eigenvalue and a low in-degree score may suggest a 'managerial' type of leadership role and combining a high in-degree score and a low betweenness score may suggest a 'charismatic' leader. Alone, the three centrality measures demonstrate many central users when comparing the score between others in the sample. However, by combining the measures, the sample population is culled, suggesting only one of the sample users is a central leader within their online network, and demonstrates in which way the user is central, being able to define the type of leader.

7.1 Limitations

In the development of this study, several limitations have been observed. Firstly, though some generalisations were stated within this study, the research is cognisant to the relatively low sample size. Fifty-nine users were sampled through the keyword search technique, which while thorough and exhaustive, cannot fully represent every gang member within Canada. The sample size was reduced further during the network analysis phase due to the accessibility of information

caused by the US inquisition of Facebook in 2018. The centrality measures and its results can only therefore be generalised towards Twitter network, as the users were analysed with only the sampled Twitter users. Secondly, while this study suggests prevalence of cyber-banging and recruitment on SNS, Facebook, Twitter and YouTube are not the only SNS that have risen in popularity. Instagram, Tumblr, and Snapchat have all risen in popularity in the last decade, however, were omitted from this study. Those sites were omitted due to the short time frame in which this study took place and the privacy setting on those sites causing much more of a barrier regarding the divulgence of information online. Therefore, the prevalence of cyber-banging and recruitment can only be generalised for gang members in Canada and only within the context of those specific SNS. As well, the omission of other SNS posses another limitation. SNS like Snapchat and Instagram are much more private, and the structure of snapchat is information and content that is sent to users disappears once it has been read. Because of this structure, there is a possibility that while recruitment was not observable on Facebook, Twitter and YouTube, sites such as Snapchat can foster active recruitment techniques. Lastly, though the prevalence can be generalized only within the context of those particular sites, there is one glaring limitation that must be presented: Private messages. In each site, every user has access to a private messaging option, which is not made public to anyone outside those involved in the message. Therefore, while this study concludes no recruitment techniques were found on Facebook, Twitter and YouTube, it can only suggest this conclusion within the context of publicly accessible information. Those techniques may be prevalent on those sites but were not observed in this study due to the inherent privacy of private messages.

7.2 Conclusion

In conclusion, this study attempts to understand the prevalence of cyber-banging and recruitment online. As the results suggest, promoting gang ideologies was most prominent type of content found online. Contrarily, there was no recruitment technique found in neither Twitter,

Facebook or YouTube. This has profound implications for researchers attempting to understand how gang member are using social media. This study is one of the first to empirically test the theory journalists, police officers and other alarmists have that social media is a hub for gang members to recruit potential gang members. In fact, the sampling method demonstrates extreme difficultly finding gang members online, even when explicitly looking for them. The results even suggest, once someone does find a gang member online, little online content can be labelled as cyber-banging or recruitment, as most of the content is non-criminal/gang related. This sheds a light on gang members' use of social media in a way no other research has, as normal social media users.

The network analysis results open the door for further analysis. The theory presented in this study suggests the information extracted through network analysis can reveal different roles within the gang, as well as different types of leadership. However, with the small sample size utilised, there is no empirical proof that the roles presented are accurate without further analysis and research, such as qualitative interviews. What this research attempted to accomplish is to provide context for the numbers extracted during the analysis phase. Network analysis is, after-all simply numbers. It is up to the researcher to take those numbers and interpret them in ways that may provide information for future researchers and law enforcement agencies. It is important, especially for the latter, to provided context to those numbers so that law enforcement agents can look past the empirical results provided by network analysis, as they are not researchers. For this reason, this study did not simply stop at presenting the results of centrality measures individually but attempts to interpret these numbers in every-day language and give life to the centrality measures.

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Appendix A

'General Research Ethics Board' Approval Letter

Queen's

July 31, 2018

Mr. Francesco Campisi
Master's Student
Department of Sociology
Queen's University
Kingston, ON, K7L 3N6

Dear Francesco:

GREB Ref #: GSOC-171-18; TRAQ # 6024263
Title: "GSOC-171-18 An Analysis of Street Gangs' use of Social Media in Disseminating Information Online"

Dear Mr. Campisi:

The General Research Ethics Board (GREB), by means of a delegated board review, has cleared your proposal entitled **"GSOC-171-18 An Analysis of Street Gangs' use of Social Media in Disseminating Information Online"** for ethical compliance with the Tri-Council Guidelines (TCPS 2 (2014)) and Queen's ethics policies. In accordance with the Tri-Council Guidelines (Article 6.14) and Standard Operating Procedures (405.001), your project has been cleared for one year. You are reminded of your obligation to submit an annual renewal form prior to the annual renewal due date (access this form at http://www.queensu.ca/traq/signon.html/; click on "Events;" under "Create New Event" click on "General Research Ethics Board Annual Renewal/Closure Form for Cleared Studies"). Please note that when your research project is completed, you need to submit an Annual Renewal/Closure Form in Romeo/traq indicating that the project is 'completed' so that the file can be closed. This should be submitted at the time of completion; there is no need to wait until the annual renewal due date.

You are reminded of your obligation to advise the GREB of any adverse event(s) that occur during this one-year period (access this form at http://www.queensu.ca/traq/signon.html/; click on "Events;" under "Create New Event" click on "General Research Ethics Board Adverse Event Form"). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example, you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To submit an amendment form, access the application by at http://www.queensu.ca/traq/signon.html; click on "Events;" under "Create New Event" click on "General Research Ethics Board Request for the Amendment of Approved Studies." Once submitted, these changes will automatically be sent to the Ethics Coordinator, Ms. Gail Irving, at University Research Services for further review and clearance by the GREB or Chair, GREB.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Sincerely,

Dean Tripp, Ph.D.
Chair
General Research Ethics Board

c: Dr. Victoria Sytsma, Supervisor
        Dr. Sarita Srivastava, Chair, Unit REB
        Ms. Michelle Underhill, Dept. Admin.