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Online Socialization and Delinquency: Expanding the Study of Peer Influence in Criminology

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Online Socialization and Delinquency:
Expanding the Study of Peer Influence in Criminology

by

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ABSTRACT

Criminologists typically study peer influence within traditional contexts such as schools and neighborhoods. Spurred by the ubiquitous use of electronic devices, recent research finds that online peer delinquency can also have deleterious effects on adolescent behavior. This has important implications for the study of delinquency since youth today are digital natives, meaning their developmental years are spent in a world reliant on technology and Internet-connected devices. Through the use of computer-mediated communication (CMC), adolescents can forge friendships with those found within the cyber context, a virtual environment unrestricted by the confines of space and time. This context not only provides access to a distinct group of online peers, it connects youth with their face-to-face (FTF) friends, thereby enabling instantaneous contact with offline associations. Furthermore, extant research on CMC has revealed that individuals are disinhibited and disclose personal information when communicating online. The cyber context thus (1) extends the view of peer groups by providing access to online peers, (2) increases the frequency, duration, and intensity of contact with existing FTF peers, and (3) affects the content of communication which may alter what is perceived as peer deviance.

This dissertation uses self-reported data from a multi-site study of 3,641 middle school students to explore how youth interact with their friends as well as the association between peer delinquency and personal delinquency. Results indicate that few respondents prefer communicating online, but many find it easier to make friends online, and most communicate online with their FTF friends. The cyber context generally does not enable exposure to new peer delinquency; rather, it enhances the peer delinquency of those who are already exposed offline. Moreover, online peer delinquency from those who are not regularly seen in person emerges as a robust, independent predictor of self-reported delinquency. These results are discussed in terms of their implications for how criminologists should proceed with incorporating the cyber context into the study of delinquent peer influence.

DISCLAIMER

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CHAPTER ONE: INTRODUCTION

Peers play an undeniable role in adolescent development and criminologists have long been interested in understanding how peers facilitate the development and maintenance of criminal and deviant behavior (Brown, 1990; Warr, 2002). In fact, theories emphasizing the importance of intimate associations, such as Sutherland's (1947) theory of differential association and Akers' (1985; 2009) social learning theory, are among the most supported explanations of crime (Pratt et al., 2010). The consistent and robust peer effect in criminology has led researchers to speculate why peers matter by specifying mechanisms of influence, such as attitudinal transference, behavioral reinforcement, and group pressure (e.g., Akers, 2009; Matsueda, 1988; Reed and Roundtree, 1997; Prinstein and Dodge, 2008; Warr, 2002, cf. Gottfredson and Hirschi, 1990). Other studies focus more on answering methodological questions, such as the validity of direct or perceptual measures of peer behavior (e.g., McGloin and Thomas, 2016; Young et al., 2011). While these are paramount issues in the study of peer influence, the social world of adolescents is changing in ways that may impact the types of associations youth develop and the reinforcement from peers.

At the turn of the century, Warr (2002:88) summarized what scholars have come to know about the "social aspects of criminal conduct," and called attention to an emerging yet unstudied population, the "virtual peer group," which "contains an ample supply of dubious role models." Adolescents who use electronic devices such as computers and cell phones could broaden their peer group by forming new, online friendships. Warr conceptualized these virtual (i.e., online) peers as "living thousands of miles apart in highly disparate communities" and further differentiated them from the

"real" peers who are physically present in daily life. While prior research had been focused on answering why peers matter in the etiology of delinquency, criminologists were suddenly unsure *if* this emerging peer group had the potential to influence delinquent and deviant behavior.

It did not take long for scholars to attempt to answer this question; however, the clearest findings were outside the purview of what would be considered typical acts of delinquency. Most of the early studies focusing on online peers were limited to examining how these peers influenced computer-assisted cybercrime. Given the assumption that online peers were a distinct entity, scholars viewed online peer influence as operating within a *cyber* context where peers promote the learning of definitions and provide the basis of reinforcement for *cyber*crime. For example, studies have found that exposure to online peer delinquency is associated with hacking (Bossler and Burruss, 2011; Skinner and Fream, 1997) and digital piracy (Hinduja and Ingram, 2008; Wolfe and Higgins, 2009). While other theories have been used to explain these cybercrimes (e.g., routine activity and self-control theory), studies continue to find overwhelming support for differential association and social learning theory when applied to online deviant and criminal acts (Higgins et al, 2006; Holt, 2007, 2013, Holt et al., 2010; Ingram and Hinduja, 2008). Although these studies expanded the conceptualization of peer influence, the social world of adolescents is even more complex than what Warr or others suggest.

The cyber context not only exposes adolescents to a distinct group of online peers, computer-mediated communication (CMC) [1] enables youth to remain connected with

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[1] CMC refers to the computer or electronic device as a mediator of communication between individuals. Despite the popularity of mobile devices, the term "computer" is retained in this acronym as it is commonly

those in traditionally offline contexts, such as schools and neighborhoods, even without

hanging out in person (Palfrey and Gasser, 2008; Subrahmanyam and Smahel, 2010).

Electronic devices allow youth to socialize with one another at all hours of the day, which

was not possible in the past since time spent with face-to-face (FTF) peers was limited by

physical opportunity. The ubiquitous use of CMC among contemporary adolescents

means they can be classified as digital natives, a term reflecting the fact that

developmental years are spent in a period where their closest friends are a few clicks or

taps away (Prensky, 2001).[2] The cyber context thus connects adolescents with friends

found in schools, neighborhoods, *and* in more spatially distant locations. Furthermore,

CMC can affect the content of communication as adolescents are often disinhibited when

using such technologies, meaning they self-disclose more personal information when

socializing online (Suler 2004, 2016). The cyber context can therefore be viewed as both

a context that provides a source of peer influence and a mechanism that alters the content

of communication with peers.

Under this expanded view of the cyber context, emerging studies have moved past

examining computer-specific cybercrime and have uncovered some evidence of an

association between online peer delinquency and offline crime. For example, associations

have been found with online peer substance use (Huang et al., 2014), theft (Miller and

Morris, 2014), and both violent and non-violent offending (McCuddy and Vogel, 2015a).

However, these findings should be viewed as preliminary given methodological

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used in the literature. Wood and Smith (2005:24) define the study of CMC as "the ways in which human behaviors are maintained or altered by exchange of information through machines."

[2] The term "digital native" originally referred to anyone who experienced adolescence through the technological revolution of the 1990s. The original conceptualization marked these natives as being a qualitatively different group of youth, characterizing them as a homogenous group of tech-savvy kids with a high degree of computer skill (see Barron et al., 2014 for a critique of the original term and conceptualization).

limitations. Many of these studies do not include measures of FTF peer delinquency, nor do they consider the fact that a portion of one's online friends are also the same friends who are communicated with in person. This means that only part of the cyber context has been incorporated into this body of research. Furthermore, these studies often rely on small samples in geographically finite settings and are unable to control for other factors often associated with delinquency. A more nuanced approach is necessary to determine whether there is an association between online peers and offline behavior.

In order to properly study the criminogenic effects of socializing with online peers, careful attention must be given to the operationalization of online peer delinquency. Unlike Warr's original depiction of virtual peers, there is not a simple dichotomy distinguishing between offline and online friends. Rather, researchers must consider the separate and overlapping groups in the broader spectrum of friendship composition. On the one hand, friendships with spatially distant online peers would not exist without CMC and therefore represent a distinct peer group in the sense these are additional peers that are different from one's offline friends (Aiken, 2016; Jurgenson, 2011). On the other hand, many of adolescents' online friends are in fact peers found in traditional contexts, although the degree of interaction with these peers may be quite dissimilar from what is found in the school and neighborhood (Subrahmanyam and Smahel, 2010). That is, the people youth consider their close FTF friends often differ from those they consider their close online friends (Lenhart and Madden, 2007). This distinction between multiple types of online peers is largely absent in prior work as most scholars consider either the entirety of adolescents' online network or focus solely on peers who are only known online.

This dissertation attempts to resolve some of the theoretical and methodological issues surrounding deviant and delinquent online peer influence through an expanded conceptualization of the cyber context, which is illustrated in Figure 1.01 (see page 6). Within this model, the shaded circles represent the entire peer group of adolescents. The left side of the model demonstrates how the traditional and cyber context work together to create separate and overlapping peer groups. Traditional contexts, such as the school, neighborhood, and other social groups, provide a FTF peer group from which adolescents befriend others. These peers are depicted by the lightly shaded, top circle and represent the primary group examined in past criminological research. Although it lacks a physical setting, the cyber context is similar to traditional contexts since the Internet and cellular networks provide an environment in which online friendships are formed. A portion of these peers come from distant traditional contexts and represent a distinct set of individuals whose friendships is attributed exclusively to the cyber context. These online peers are depicted by the lightly shaded bottom circle.

The complexity of the cyber context stems from the fact it does more than just create access to these distant peers; CMC also facilitates contact with peers found in traditional contexts. This is represented by the darkest shaded region in the figure. Online communication with FTF peers may be different from what is found in traditional contexts, potentially fostering intimacy among FTF acquaintances or increasing contact with close FTF friends. Importantly, the content of communication may differ from what is discussed and displayed when communicating offline. Criminologists should be particularly interested in this process since CMC can provide exposure to peer delinquency from FTF friends who lack opportunity to communicate in person, or who

Figure 1.01: Conceptual Model of Traditional and Online Peer Groups

Primary
Traditional Contexts

School,
Neighborhood, and
Social Groups

Face-to-Face
Peers

Face-to-Face /
Online Peers

Cyber
Context

Internet and
Cellular Networks

Online
Peers

Distant
Traditional Contexts

Other Schools,
Neighborhoods, and
Social Groups
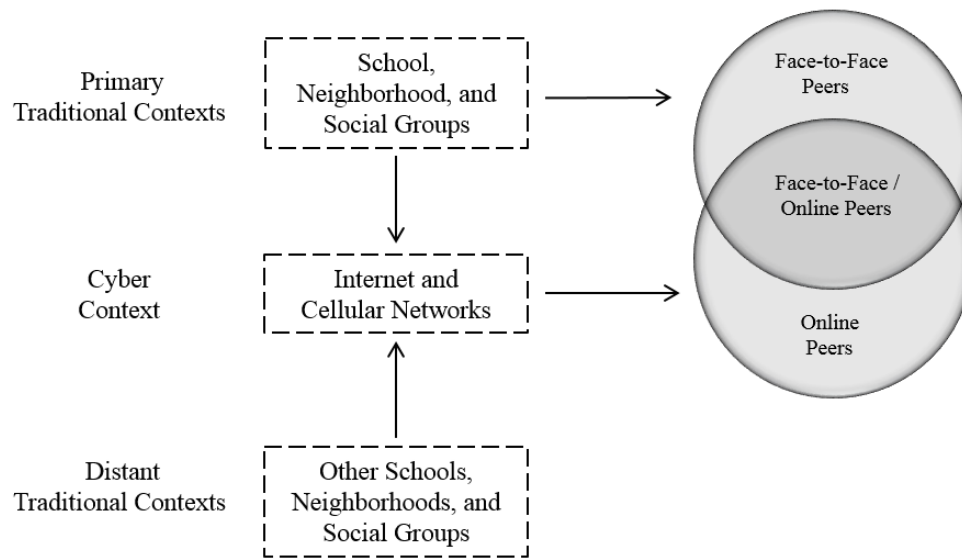
may otherwise repress or hide their attitudes or behaviors supporting crime when in traditional contexts. Given the well-established scholarship on peers and delinquency, peer attitudes and reinforcement made available through the entire cyber context may provide auxiliary influence that transgresses the Internet and affects the learning and maintenance of offline behavior.

The social world of adolescents is clearly more complex than in the past, and the intricacies of the cyber context create challenges for researchers interested in studying peer relationships. This dissertation aims to provide a more complete picture of delinquent peer influence through the use of the cyber-contextual model to explore the ways that online peers contribute to socialization into delinquency. Before diving into how and when online peers are influential, it is first necessary to look at preferences and involvement with the cyber context in order to illustrate how CMC impacts the lives of digital natives. Moreover, comparing exposure to peer delinquency within different

contexts is informative as there are only a small handful of studies describing the criminogenic influence of online peers. While the dissertation is partially concerned with how the cyber context serves as a mechanism that affects communication with others, the analysis of online peer delinquency focuses on how the cyber context is a source of influence that provides exposure to friends who are not regularly seen in person, meaning it examines online peer delinquency that should be distinct from FTF peer delinquency.

Research Question #1: How do youth use CMC to connect and interact with peers?

In order to determine if there is an online peer delinquency effect, multiple hypotheses are tested that explain the various ways that these peers exert influence. First, it is possible there is a direct effect of online peer delinquency on self-reported delinquency. This effect is likely due, in part, to factors unique to online socialization. For example, the cyber context provides access to a heterogeneous online peer group which can affect what is perceived as normative or socially acceptable behavior, and the modalities of association (i.e., frequency, duration, intensity, and priority) have been enhanced, which increases the opportunity for exposure to peer attitudes and behaviors.

Second, it is possible that online peer delinquency influences personal delinquency independently of FTF peer delinquency by providing an additional way to learn definitions and receive reinforcement toward crime. Most prior work examining the criminogenic effect of online peers has been unable to include FTF peer delinquency due to lack of appropriate measures. While this body of research has found preliminary evidence that youth are exposed to delinquent attitudes and reinforcement from online peers, controlling for FTF peer delinquency in addition to other criminogenic risk factors

means the current study is able to rule out potential confounders of the online peer-delinquency association.

The third way online peers may contribute to socialization into delinquency is by moderating the traditional peer delinquency-offending association. On the one hand, this process may operate through what Cressey (1964) called differential receptivity (i.e., individual response patterns), or where the way individuals respond to new definitions and associations is directly related to past exposure to definitions and associations. Exposure to online peers can allow for FTF peer interactions to be more influential if youth become more receptive of delinquent values and reinforcement from friends who use CMC. Youth may be initially averse to delinquent acts such as violence or theft when witnessing or hearing about such behaviors in person. Feelings of apprehension and of uneasiness may dissipate as youth are desensitized to these behaviors through exposure via CMC. In other words, having online peers can make youth more receptive of offline behavior, thereby making them more susceptible to the influence of offline friends. Thus, the cyber context may introduce new behaviors and attitudes that lead to the adoption of new types of delinquent or deviant behavior, or it may exacerbate the delinquency for those who already engage in such behavior by providing reinforcement that may not be present in offline friendships.

Alternatively, online peer delinquency may reduce the influence of FTF peer delinquency due to a surplus of definitions and reinforcement (McCuddy and Vogel, 2015a). For those with low levels of online peer delinquency, increases in FTF peer delinquency may have a strong effect on self-reported delinquency since the influence from FTF friends represents exposure to relatively new types of peer behavior. Among

those with high levels of online peer delinquency, increases in FTF peer delinquency may

have a weaker effect since individuals are already inundated with peer delinquency. This

is akin to the saturation effect observed within neighborhoods. Zimmerman and Messner

(2011) find that increases in the number of violent peers among those who already have

high levels of exposure has a diminishing effect on delinquency due to a surplus of

violent peers. Additional messages become 'boring' and have a less pronounced effect on

behavior. Under this view, the effect that online peer delinquency has on the traditional

peer-offending association may be weaker at high levels of online exposure.

> *Research Question #2: Does online peer influence affect delinquency*
> *independently of what is viewed as traditional peer influence?*

This dissertation lays the foundation for the study of online peer influence by

considering the implications of a cyber context for socialization into delinquency. Peers

play an important role in adolescent life as this is a time where youth distance themselves

from their family and embrace friendships with those in their peak years of delinquency

(Brown, 1990; Elliott et al., 1985). However, the meaning of the word "peer" is much

different for today's digital natives than the adolescents studied in past criminological

research. Some scholars view the peer group culture as "more of a painting than as a

moving picture" where each generation passes through a relatively stable social system

(Brown, 1990:185). "The actors change, but the play remains the same." Since CMC

enables access to a context of peers and is a mechanism influencing socialization, it

changes both the "actors" and the "play."

To properly situate the online peer effect, this dissertation aims to bridge the

criminological and cyber literature developed by the fields of psychology and

communication. Chapter 2 begins by examining the existing peer influence theories and

findings in criminology. Where applicable, references to the cyber context are made in order to raise questions that are discussed in later chapters. In Chapter 3, the emerging body of work on CMC and peer relationships is presented to illustrate the changing dynamics of socialization. Emphasis is placed on how CMC has altered the lives of adolescents which sets the stage for explaining how online processes affect offline behavior. Chapter 4 connects these fields of study by presenting the cyber-contextual model of delinquent peer influence in detail. This model serves as the basis for empirically examining how both online and offline friends work together and separately to influence delinquent and deviant acts. Chapter 5 explains the research methodology of this dissertation, which uses a multi-site sample of middle school students to test the cyber-contextual model. Chapter 6 then presents the results of bivariate analyses addressing the first research question, followed by Chapter 7 which uses multivariate analyses to explore the second research question. Finally, Chapter 8 discusses the implications of the findings from this dissertation, which should help criminologists understand the criminogenic effects of peer relationships in the digital age.

CHAPTER TWO: PEERS AND DELINQUENCY

There is a rich tradition of criminological research aimed at explaining the association between peer delinquency and personal delinquency. In the early 1930s, scholars noted that peers serve as the nexus for the "transmission of the traditions of delinquency" (Shaw and McKay, 1931:390). In the following decades, the link between peers and delinquency received extensive theoretical and empirical attention (Pratt et al., 2010; Warr, 2002). Focus has primarily been directed at adolescence as this is the time period within which individuals are most likely to be influenced by their peers and are most likely to engage in criminal and deviant behavior (Brown, 1990, Elliott et al., 1985; Moffitt, 1993). In the classic sense, a peer is someone who considered a social equal (Hartup, 1983) or someone who is the same age (Rubin et al., 1998). As children mature into adolescence, they experience more frequent contact with peers, are motivated to develop a sense of self and personal identity, and rely more heavily on the feedback from others (Brechwald and Prinstein, 2011). As such, peers serve as the primary agents of socialization, and it is imperative for criminologists to understand how behavior is learned and/or reinforced during key development years.

In order to illustrate how changing socialization processes are related to peer influence, this chapter first delves into criminological theories related to the learning and maintenance of delinquency. Exposure to attitudes and behaviors from others provides the basis of acquiring criminal definitions, and reinforcement from delinquent associates encourages and affirms criminal behavior. While these basic mechanisms of peer influence are still applicable to online peers, the cyber context enables and extends certain features that can facilitate the peer influence process for both online peers and

FTF peers who use CMC. This chapter also explores the complexity of the peer effect by identifying specific contextual factors that have been directly affected by online socialization. These themes are revisited in later chapters in relation to how these processes operate within the cyber context.

THEORIES OF NORMATIVE INFLUENCE

Criminological explanations of peer influence typically fall under the perspective of normative influence, or how deviant others affect delinquent tendencies by exposing individuals to attitudes, behavioral models, and reinforcement contingencies (Haynie and Osgood, 2005). This overarching perspective assumes that peer behavior directly affects individual behavior by exposing individuals to deviant or conforming behavior patterns. In particular, the work of Sutherland (1947) and Akers (1985; 2009) suggest it is how we interact with others, and the content of these interactions, that is of primary importance in the etiology of delinquency.

Differential Association

Principle among the normative influence perspectives is Sutherland's (1947) seminal theory of differential association. At the heart of his theory is the proposition that criminal behavior is learned through interaction with intimate associates. Specifically, those who are differentially exposed to delinquent definitions (i.e., behavior patterns) are more likely to adopt such behavior themselves. This marked a departure from other individual-level explanations espousing multiple causal factors related to crime and delinquency. The multi-factor approach that was popular before Sutherland held that a

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variety of conditions, such as broken homes, age, and socioeconomic status, all worked together to produce criminal behavior. Sutherland acknowledged that these risk factors were important predictors of crime, but he emphasized the fact that most individuals with these risk factors do not commit crime. For example, while it may be that men and those with low socio-economic status are more likely to offend, most men and most poor individuals conform and are law abiding far more often than they are deviant and engage in illegal behavior.

Sutherland sought to develop a theory describing conditions that were always present when individuals commit criminal acts, and that were always absent when crime does not occur (Sutherland and Cressey, 1974). In other words, he wanted to identify what all of the multi-factor explanations have in common. This led to the development of his theory of differential association, which states that crime is the result of learning by acquiring from others the attitudes, techniques, motivations, and rationalizations supporting crime. Individuals will then draw from these factors, known as definitions, when making the choice to participate in criminal acts. Delinquency thus occurs when the ratio of definitions favorable toward crime surpasses those that are unfavorable toward crime. The strong correlates of offending could thus be explained through differential exposure to definitions. For example, men and impoverished individuals are simply more likely to encounter others who provide support for crime. This suggests that delinquent associations are the key to understanding why individuals engage in criminal behavior.

In a broader sense, Sutherland's theory explains how contact with different groups can lead to delinquency. He posited that crime is the direct result of normative conflict between groups that hold competing values. This group-level explanation suggests that

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the reason males and those with low socio-economic status have different rates of crime is because they hold different values than mainstream society. At the individual-level, differential association can thus explain differences in offending by patterns of association with those who provide definitions favorable toward crime. In particular, communication plays a significant role in this process. According to the second principle of differential association, "criminal behavior is learned in interaction with other persons in a process of *communication*" (Sutherland, 1947:75, emphasis added). Factors that facilitate or hinder communication, such as mobility and propinquity (i.e., physical proximity), directly influence the degree of contact with others and thus the type and level of definitions an individual is exposed to on a daily basis. It is for this reason that Sutherland suggests that crime is rooted in, and an expression of, social organization since learned definitions are derived from contact with social groups. As available associations become more abundant, this in turn affects exposure to norms and values supporting or disapproving of crime. Therefore, context is of utmost importance when studying delinquent peer influence.

Sutherland's (1947) modalities of association add an additional layer of complexity to the process of socializing with others. It is not simply exposure to attitudes or behaviors that matter; rather, the frequency, intensity, duration, and priority of exposure determine the extent to which associations are influential. Frequency pertains to how often one is exposed to definitions, while duration describes the length of time in which socialization takes place. Intensity was originally described as the prestige of peers, although Akers (2009) clarifies that intensity pertains to the significance, salience, and importance of an association, meaning closer (i.e., more intimate) groups exert more

influence. For priority, Sutherland posited that behavior learned early in life will persist over time, meaning early associations will have a long-term effect by carving the path that will affect later behavior and associations. Taken together, early, frequent, and intense association lasting long periods of time should collectively affect the adoption and maintenance of behavior. These modalities of association are an integral component of online socialization as these processes have been enhanced in the cyber context.

Symbolic Interactionism

The idea of internalizing definitions favorable toward crime as the result of communication with peer groups was a central component of early work in social psychology. In fact, Sutherland drew heavily from Mead's (1934) work on symbolic interactionism which focused on the meanings or definitions that individuals ascribe to certain situations and experiences. These meanings are developed through interaction with associates in various social situations, thus the individual is influenced by the perspective of others, which in turn forms the basis of attitudes which ultimately influences behavior. Furthermore, adolescents may develop multiple 'selves' that they will choose between when in different social situations (e.g., deviant when around friends but conforming when in school). This means that the self is inherently social since identity is developed through interactions.

Following Cooley's (1902) notion of the 'looking glass self,' an individual's self-perception changes as shifting peer groups alter the 'mirror' within which one views their identity. Over time, these collective perceptions form a more fixed conceptualization of the self. At this point a perceptual label may be internalized and an adolescent may come

to identify as a delinquent if such a label is applied by associates (Becker, 1963, Tannenbaum 1938). Matsueda (1992) views this process as a reflected appraisal that shapes one's self-concept, and this appraisal then mediates the association between actual peer appraisals and deviance.

In other words, associations can facilitate the development of a deviant identity, and once this identity is internalized, it can affect the likelihood of future deviant and delinquent acts (Matsueda, 1992; Tannenbaum, 1938). As Heimer and Matsueda (1994) point out, delinquency itself can help shape one's conceptualization of the self through anticipated reactions to behavior from others. As a whole, the symbolic interactionist perspective draws attention to the fact that individuals both influence, and can be influenced by, their environment through communication with others. While both differential association and symbolic interactionism place heavy emphasis on definitions, neither theory explicitly details why definitions shape behavior.

Social Learning Theory

A limitation of this early work is that it did not specify how criminal definitions are learned. Burgess and Akers (1966) and later Akers (1985) helped reformulate Sutherland's theory by including the tenants of differential association and adding the mechanism of differential reinforcement. Through integrating behavioral components established by psychologists of the era (e.g., Bandura and Walters, 1963; Skinner, 1953), social learning theory proposes that behavior is conditioned by reinforcement through both actual and anticipated rewards and punishments. Like Sutherland's theory, Akers posits that the likelihood of delinquent or deviant behavior increases as one associates

with others who provide definitions favorable to such behavior.[3] Individuals then weigh

the pros and cons of past, present, and future rewards and punishments when deciding to

offend. Moreover, the relative frequency, level, and probability of these rewards and

punishments affects whether or not one will initiate or refrain from delinquency. This

means that reactions to delinquency provide reinforcement by illustrating the benefits of

crime, which when outweighing the consequences of not engaging in such behavior,

increase the likelihood of delinquency. Akers goes on to describe how imitating the

behaviors of others can also shape behavior, although this process plays a stronger role in

the initial acquisition, rather than the maintenance, of deviant or criminal behavior.

In sum, social learning assumes that differential contact with pro-delinquent

associates, who provide actual and anticipated reinforcement in addition to models of

behavior, leads to adoption of definitions favorable toward crime. These definitions alter

one's orientation toward what is perceived as right and wrong, meaning individuals are

more likely to violate the law and be deviant when faced with the opportunity to do so.

Given the strong and consistent support for differential association across studies, Krohn

(1999) views this concept as a type of summary index that includes all of the behavioral

processes found in the full social learning model. In fact, in the first test of social learning

theory, Sutherland's concepts of differential association and definitions accounted for

almost all of the explained variance in their measure of marijuana use (Akers et al.,

1979). Nevertheless, Akers (1999) cautions that differential association cannot be used as

a replacement for the individual components of social learning and studies need to

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[3] These definitions cover multiple domains, as they can be verbalizations, rationalizations, techniques of neutralization, accounts, disclaimers, and moral disengagement, which all contribute to the formation and sustainment of definitions (Akers, 2001).

explicitly measure these additional components, although he also states that any test of differential association is also a test of social learning theory since "the groups with which one is in differential association provide the major social contexts in which all the mechanisms of social learning operate" (Akers, 2009:62). While scholars continue exploring the role of these mechanisms, one thing remains clear: peer delinquency is instrumental in shaping one's involvement in deviant and delinquent behavior.

Issues Related to Selection

An ongoing theoretical and methodological issue plaguing theories of normative influence is related to selection. Many scholars interpret the robust peer effect in criminology as evidence that peers affect delinquent tendencies. Alternatively, control theorists often assume this association is spurious and that those with a propensity toward crime select delinquent friends, in turn explaining the association between peers and crime. Glueck and Glueck (1950), in sharp contrast to Sutherland and Akers, famously proposed that "birds of a feather flock together." This raised the question of whether peers influence personal behavior or if individuals simply select peers based on underlying similarities, such as involvement in delinquent and deviant behavior (see also Gottfredson and Hirschi, 1990).

Prior longitudinal studies have provided some evidence for learning over selection. For example, Elliot and Menard (1996) found that forming bonds with delinquent peers preceded the onset of delinquency and Weerman (2011) found no evidence of selection based on prior delinquency. Other work attributes the selective process to factors beyond delinquency, such as weak attachments to conventional society

(Thornberry, 1987), low self-control (McGloin and Shemer, 2009), and experiencing peer rejection (Dishion et al., 2008; Patterson et al., 1989). However, others find support for control theorists' position that delinquency has a stronger effect on peer selection than vice-versa, although peers still have a non-trivial effect on delinquency (Matsueda and Anderson, 1998). Despite decades of research exploring this issue, the peer selection debate continues within the field of criminology.

Although selection and learning are often pitted against one another, differential association actually accounts for both processes. According to Sutherland and Cressey (1974:200), "selection or rejection of delinquent or anti-delinquent companions is itself a function of previous associations with anti-delinquent and delinquent behavior patterns." Therefore, it is perhaps most probable that both processes are taking place albeit at different times during adolescence (Akers, 2009). Akers argues this reciprocal process operates by peer delinquency increasing the likelihood of personal delinquency, which then increases the likelihood of forming relationships with additional delinquent peers. Although forming associations with delinquent peers will likely precede the onset of delinquency, additional bonds might be formed with similar peers, thus increasing the overall level of delinquent associations which may affect future behavior (Elliot and Menard, 1996). In this sense, even if delinquency was the basis for friendship formation, the frequency and seriousness of behavior would continue to influence one's own actions. Akers (1991: 210) states that "social learning admits that birds of a feather do flock together, but it also admits that if the birds are humans, they will also influence one another's behavior, in both conforming and deviant directions." While selection may

explain part of the association between peers and crime, it does not account for all of the peer effect.

As a whole, the theories of normative influence describe how one's social group is instrumental in shaping one's behavior. While multiple types of associations exist (e.g., parents, siblings), peers form the primary social context among adolescents (Brown, 1990; Warr, 2002) and are often the sole focus of empirical research since these associations typically provide initial exposure to delinquency (Akers, 2009). In this sense, these theories illustrate the salience of peers in the study of crime; that is, the salience of *face-to-face* peers. In the introduction to his 2009 update of social learning theory, Akers states that:

> Peers provide a concrete social interactional context in which relatively more association with deviant than conforming peers makes one more likely to be exposed to, and learn, definitions favorable toward deviance, observe deviant behavioral models, and experience both direct and vicarious social reinforcement for deviant behavior (Akers, 2009: xxv).

As will be argued, the cyber context has expanded the landscape of social behavior among digital natives, meaning the "social interactional context" has been affected in ways previously unaccounted for in criminology. Although some of the changes are unique to the cyber context (e.g., online disinhibition leading to increased self-disclosure), other factors have been enhanced that alter the degree of interaction and type of peer with whom intimate associations are formed.

CONTEXT AND PEER DELINQUENCY

There are additional considerations related to broader communication processes that directly affect differential association and social learning. In reviewing the status of

Sutherland's theory, Matsueda states that:

> Sutherland clearly intended that the learning of definitions ... is structured by the concrete elements of social organization that determine communication patterns ... [and that] structural differentiation led to constraints on communication, divergences in interests, and restrictions on opportunities – all of which helped spawn different definitions and interpretations of crime" (Matsueda, 1988: 292-3).

These structural and opportunistic determinants of communication were previously physically defined, requiring the physical presence of friends in order to provide definitions and/or reinforcement. Thus, the study of contexts such as schools and neighborhoods was integral in the early work examining peer influence. These contexts not only provide the pool of potential peers, communication with peers takes place in these settings. In particular, three factors determine the amount and variety of delinquent associations within these contexts: (1) time spent communicating with peers, (2) structural determinants of peer group formation, and (3) the presence of multiple peer groups.

Time Spent with Peers

Time spent with peers is an important factor in the broader peer influence process (Warr, 1993, 1998). Some scholars view the criminogenic potential of time as operating through unstructured socializing, which according to Osgood and colleagues (1996) provides situational inducement and opportunity to offend. Under this view, peers do not have to be delinquent to affect one's behavioral tendencies. Rather, time spent socializing in unstructured settings is inherently criminogenic in and of itself. Diverging from this view, Sutherland (1947) believed that more time spent with pro-deviant peers is criminogenic through the modalities of frequency and duration. Having more frequent

contact with others over long periods of time should allow for learning mechanisms to have a greater effect, such as more opportunity to be exposed to reinforcement and models of behavior (Akers, 1985). Research by Agnew (1991) also supports the importance of time as it allows for individuals to become more attached to their peers and thus be subjected to their influence. Specifically, more time hanging out means peers can monitor and sanction behavior, provide models for delinquency, and transmit delinquent values.

As youth progress through adolescence, their time spent with friends increases, which coincides with youth placing greater importance on these relationships. Not only do adolescents spend more time with peers, they rank activities with peers as more enjoyable than time spent doing anything else (Brown, 1990; Savin-Williams and Berndt, 1990). In a study that aimed to explain how offending declines as individuals age into adulthood, Warr (1993) found that exposure to peer delinquency completely attenuated the association between age and delinquency. Furthermore, Warr (1998) found that peers mediate the association between marriage and crime, arguing that marriage dissolves associations with peers, and this reduction in time spent with peers is what leads to desistance for married individuals. These findings tend to support Sutherland's position that frequent contact with others that endures over time can shape behavior as these mechanisms contribute to more time socializing with others.

Structural Determinants of Peer Group Formation

Structural characteristics have been described as the driving mechanism determining peer influence (Warr, 1996). In fact, Haynie (2002) maintains that in order to

understand why peer associations lead to delinquency, criminologists must consider the social structure and composition of friendship networks. Likewise, Matsueda (1988) noted that that social structure constrains communication and thus reduces opportunity for exposure to different attitudes. In this sense, social structure can be seen as the mechanism determining motives, attitudes, and rationalizations.

Prior work has determined that schools form the primary context for developing social networks among adolescents (Blyth et al., 1982; Coleman, 1961), whereas neighborhoods determine peer groups for younger children (Brown, 1990). For example, Ennett and Bauman (1993) found that 95 percent of adolescents' friends were found within the same school, and Cairns and Cairns (1995) documented that the best predictor of friendship formation is the classroom one finds himself or herself in during school hours. Other factors such as religious institutions or places of employment can likewise affect friendship formation. Simply put, youth become friends with other people to whom they are exposed, and this exposure is often dependent upon propinquity. Differential contact has been linked with racial (Matsueda and Heimer, 1987), neighborhood (Mouw and Entwisle, 2006, Zimmerman and Messner, 2011) and gender (Smith and Paternoster, 1987) disparities in offending.

Peer groups in adolescence often lack stability (Elliot and Menard, 1996). Part of this fluidity is associated with changing social contexts, such as moving between neighborhoods or changing schools (Haynie and South, 2005; Haynie et al., 2006; Savin-Williams and Berndt, 1990). Sherif and Sherif (1964) noted early on that when adolescents change residences, they often replace their old peer group with a new one. The farther away peers are geographically, the higher the cost of face-to-face meetings.

Forming ties with those who are geographically close is primarily attributed to the low effort associated with maintaining such connections (Zipf, 1949).

The mechanisms through which the environment facilitates friendship formation is essential to the study of peer influence as these contexts, although geographically confined, still provide a mixture of similar and diverse peers. Generally, when there is behavioral homogeneity, the reinforcement process will be stronger since there will be established behavioral expectations (Haynie, 2002). Thus, when an entire peer group is similar, deviating will be more noticeable. In this sense, social homogeneity leads to embeddedness, in turn encouraging behavioral compliance by constraining behavior to resemble the behavior of the entire network.

With the transition into high school comes the possibility of being exposed to more diverse friends within a heterogeneous, ever-shifting, and much larger population of potential peers (Brown, 1990; Bukowski 2008). The greater the potential options for friendship formation, the greater likelihood of forming homophilous relationships (McPherson 1983), especially among those who have less desirable traits. If youth have delinquent attitudes or tendencies, it may be difficult to find like-minded others within the same neighborhood or elementary school. As they become older and have exposure to more peer options, the likelihood of finding others with similar attitudes and behaviors will increase, thus increasing the likelihood of forming relationships with such peers (Schaefer, 2012).

While social structure determines the pool of potential peers, other factors lead to friendship formation. In describing homophily, McPherson and Smith-Lovin (1987) refer to two types. On the one hand, the 'focused choices' described above can be referred to

as induced homophily where selecting friends is limited to what is available in a given context. On the other hand, choice homophily refers to the underlying propensity to choose others with similar attitudes. In general, when youth have a choice when associating with others, these relationships are likely to be more influential (Akers, 2009). Although there may be multiple underlying explanations for friendship formation, McPherson and Smith- Lovin (1987) find that opportunity and social structure do more to influence homophily than preexisting, individual choices.

Drawing from the social augmentation hypothesis, two factors contribute to why adolescents choose delinquent peers, who to the general public may appear as unattractive options for friendship (Dishion et al. 2008). First, similar to what was proposed by Glueck and Glueck (1950), some adolescents may possess preexisting delinquent and deviant characteristics and choose peers who are similar to themselves (Cairns, 1979). Second, if adolescents experience social rejection, they may find delinquent peer groups to be more welcoming (Haynie et al., 2006). This latter point is especially pertinent for those who have difficulty forming friendships with others. Prosocial peers will be less accepting as interactions with socially rejected youth will likely be negative, whereas interactions with delinquent peers can be a more rewarding, and importantly, a more reinforcing experience.

Multiple Peer Groups

Despite the advancement in scholarship on peer influence, there remains a dearth of studies examining the variability of peer influence across contexts. It is often the case that adolescents will be exposed to multiple types of peer groups, but even the term 'peer

group' means different things to different researchers (Brown 1990). According to

Prinstein and Dodge (2008), the general literature refers to peers as being the best and

closest friends; however, peer groups may consist of more distant acquaintances,

romantic partners, and even siblings (Brechwald and Prinstein, 2011; Rowan, 2016). A

few studies have begun to examine the role of peers within broader contexts, such as an

entire school or neighborhood, and results largely demonstrate that interactions with

peers who are not considered friends can have an effect on behavior.

For example, McGloin et al. (2014) found that schoolmates condition the

influence exerted by friends within the school. Although one may have friends that

provide definitions and reinforcement supporting substance use, when schoolmates'

behavior is dissimilar this diminishes the influence of these friends. Vogel and colleagues

(2015) found similar results, as the structural characteristics of the school conditioned the

effect of social status on substance use. Specifically, they found that not only do both the

school and the peer group exert independent effects, school connectedness reduced the

effect of popularity on marijuana use. Extending beyond the school, Zimmerman and

Messner (2011) found that exposure to violent peers increases as the level of

neighborhood disadvantage increases. They posit that adolescents in deprived

neighborhoods will be isolated from prosocial norms associated with more affluent areas,

meaning the broader neighborhood context impacts the type of normative influence

provided by friends. They find that the influence of violent peers is attenuated in

disadvantaged neighborhoods as these areas are saturated with an abundance of violent

peers, meaning additional exposure to these peers becomes redundant.

Collectively, these studies show it is not only one's friends that affect behavior, but broader adolescent social groups also contribute to peer influence. Although it has been clearly established that adolescents are more susceptible to peer influence from a close friend compared to a distant acquaintance (see Brown et al., 2008), Granovetter (1973) emphasized the importance of less intimate peers through the process of weak ties, traditionally characterized as being emotionally, and in many cases physically, distant. Without these ties, homogenous groups would be separated by their inability to connect with those who differ in views or opinions. In a large network, although a given individual may interact with only a few friends, additional peers can provide the nexus for diverse rewards and reinforcement (Akers 2009). This is especially true for less dense networks, as those characterized as highly dense are more homogenous (Granovetter, 1983). If one's closest friends provide definitions and reinforcement for behavior that contrasts to the rest of one's peer network, the influence of those close friends can be weakened (Rees and Pogarsky, 2011). However, if peer groups exhibit similar characteristics, it will serve as additional reinforcement.

Drawing from the work of Granovetter, McGloin et al. (2014) find that highly dense peer groups are less affected by contrasting and diverse norms imposed by the broader peer network. Yet research has found that, over time, smaller factions will gravitate or be pulled toward the mean level of peer aggression found within the larger context (Boxer et al., 2005). Broader contexts thus have the ability to influence behavior, although the degree to which influence takes hold depends upon specific characteristics of each group. An important implication from the findings concerning the influence of

these less intimate peers is that peer behavior in general must simply be known in order to have an effect on behavior (Payne and Cornwell, 2007).

CONCLUSION

This chapter illustrates the diverse ways that peers can influence adolescent behavior and how peer influence is contextualized within offline environments. Multiple processes have been hypothesized and scholars continue to debate how normative influence operates among adolescents. The one consistent finding is that peers matter in the development and maintenance of delinquent and deviant behavior, yet this rather large body of work has focused exclusively on traditional forms of adolescent socialization. Questions remain concerning several peer-related processes that occur within the cyber context. For example, how are youth exposed to delinquent peer attitudes and behavior online? Does this differ from peer delinquency in traditional contexts? Perhaps most important for this dissertation, how does the effect of FTF peer delinquency on self-reported delinquency compare to effect of peer delinquency found within the cyber context? Before these questions are answered, it is necessary to take a closer look at computer-mediated communication. The following chapter discusses how adolescents communicate online and the implications of this technology for exposure to peer attitudes and behaviors.

CHAPTER THREE: CHANGING LANDSCAPE OF SOCIAL BEHAVIOR

In order for peers to exert influence, one must communicate with others or observe behavior first-hand. Prior to CMC, communication was contingent on physical proximity, meaning face-to-face contact with peers was a necessary component of differential association and social learning. Criminologists largely assume that peer-group formation and communication continue to occur primarily through offline contexts, such schools and neighborhoods. Scholars from other disciplines, such as developmental psychology, suggest that peer communication among digital natives is different from past generations, and these differences have not yet been factored into the study of crime (Aiken, 2016; Suler, 2004).[4] For the purpose of understanding why CMC is important in the study of delinquency, this chapter explores socialization processes that are largely unaccounted for in past research on delinquent and deviant behavior.

Gone are the days when neighborhoods and schools completely determined the social boundaries of adolescence. For digital natives, CMC expands the social world of youth by enhancing the ways they connect with one another.[5] A nationally representative sample revealed that as of 2015, 92 percent of teenagers in the United States used CMC daily, with about a quarter of teens using it "almost constantly" and just over half using it several times a day (Lenhart, 2015). While widespread use of such technologies may be indicative of a fascination with electronics in general, most scholars agree that the motivation to use CMC is directly related to the desire to be connected with friends

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[4] Contemporary work on CMC has moved beyond demonstrating the benefits of the Internet as this was well-researched in the early days of computing (Aiken, 2016). Given that this dissertation is concerned with the relationship between peers and crime, I likewise focus exclusively on negative outcomes.

[5] CMC disproportionally affects adolescents since the use of technology increases with age among non-adults. Although all ages use CMC to some degree, social media platforms must abide by the Children Online Privacy Protection Act (COPPA) which restricts websites from collecting information from those under the age of 13 (Federal Trade Commission, 2017).

(boyd, 2014; Madden et al., 2013). In fact, the use of the term "digital native" to describe youth reflects a generational shift in which social media and the use of CMC is normative and not merely a temporary, subcultural artifact (boyd, 2014; Palfrey and Gasser, 2008). As a result, adolescent development now occurs in a world reliant on mobile, Internet-connected devices. Within this context, youth routinely use CMC to maintain in-person friendship and forge new associations. As will be argued in this chapter, the cyber context may influence the type, magnitude, and scope of exposure to peer attitudes and behaviors, in turn affecting perceived social norms and peer reinforcement.

The cyber context has certain unique characteristics that differ from traditional, FTF settings commonly examined in criminological research. For example, CMC is characterized by its asynchronous nature, or the indefinite time lag between correspondences (Joinson, 2001; Suler, 2004).[6] This allows participants to think about, develop, and refine the way they interact with their peers, meaning they are able to process information before reacting. Messaging can take place between two individuals (one-to-one) or a group (one-to-many, many-to-one, or many-to-many). CMC initially grew in the late 1980s through the use of email and chat rooms, yet it was at the turn of the century when other mediums, such as social media, became popular among adolescents (Palfrey and Gasser, 2008). Now the most popular form of CMC, social media are public or private networks of friends who interact using online platforms where text, pictures, audio, and video are used to discuss and share personal thoughts, attitudes,

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[6] This is in contrast to synchronous communication that typically takes place in FTF encounters, where pausing between words or responses may add a layer of complexity to the interpretation of words. Within CMC, lags are expected, although an early study by Walther and Tidwell (1995) found that respondents base their liking of their friends on how long they take to respond to messages.

and behaviors (Subrahmanyam and Šmahel, 2010).[7] Facebook, the largest platform of social media, was opened to the public in 2005. Within five years it became the most visited website in the United States (Dougherty, 2010). By the end of 2016, approximately 1.79 billion individuals access Facebook at least once a month, representing over 24 percent of the world's population (Facebook, 2016; U.S. Census Bureau, 2016). These trends in usage underscore the tectonic shifts in interpersonal communication occurring over the past 20 years.

Despite the evidence supporting the ubiquity of CMC, attention must be given to those who cannot afford electronic devices and are thus restricted from accessing the cyber context. The rise in the use of technology has coincided with a reduction in the "digital divide" between socioeconomic status and computer use (Madden et al., 2013). Cheap mobile devices and public access to computers has resulted in over 95 percent of U.S. adolescents having access to such technology (Rideout et al., 2010). In fact, even 80 percent of homeless youth report having access to computers and use them at least once a week (Rice et al., 2010). Furthermore, Lenhart et al. (2010) found that teens from lower income families were actually more likely to use social media than those from more affluent families, although other research suggests there are no demographic differences among users of CMC regarding race, educational attainment, or household income (Duggan and Brenner, 2013). In particular, disadvantaged populations are more likely to use cheaper smartphones as opposed to more expensive computers to access the Internet,

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[7] Social media rarely refers to one specific medium of CMC as adolescents are likely to use multiple platforms (Madianou and Miller 2013). While Wilson et al. (2012) support using a single definition to describe social media, they caution that distinctions among specific platforms may be useful in examining its influence on behavior.

which may explain why the divide has been narrowed in recent years (Mossberge et al., 2012).

Moving beyond studying general usage patterns, psychologists who research the technological advancements of communication have found evidence that CMC influences socialization in at least two ways. First, those who use CMC to communicate with one another sometimes act differently when online compared to how they act in FTF settings (Aiken, 2016; Joinson, 2001). In discussing certain basic psychological features of the Internet, Suler (2004, 2016) explains how the lack of physical contact lessens inhibitions. This may embolden users and enable identity exploration in an environment where youth are not restricted to forming ties with peers found within their geographic area, meaning it is easier to find like-minded others who reinforce what is perceived as socially acceptable attitudes or behaviors. Second, the boundaries of peer group formation and interaction have been expanded such that it is easier to spend time communicating with both FTF and online-only friends, that is, those who are part of traditional contexts and those who are unique to the cyber context. These factors affect not only the content of communication, but the type of associations available to adolescents. While this chapter largely focuses on the work of disciplines outside of criminology, it concludes by exploring the limited research that has incorporated the cyber context into the study of delinquent and deviant peer influence.

SELF-DISCLOSURE

The content of communication within the cyber context is affected by factors unique to CMC. In particular, individuals are more likely to self-disclose information and

be disinhibited when socializing online with peers. Self-disclosure refers to the overarching concept of revealing personal information about oneself, while disinhibition refers to doing or saying things online that would not be done or said in traditional, FTF contexts. Both of these concepts are influenced by dissociation and deindividuation, processes that affect the content of messages depending upon the specific context and those individuals within that context. In other words, what people say and do online can often differ for how they communicate and behave offline.

Adolescents open up to one another through self-disclosure, which lets youth navigate and explore their own identities while understanding the needs and desires of others (Savin-Williams and Berndt, 1990). The social aspect of disclosing information is important for the psychological well-being of youth as it enables them to work through personal issues with their friends and learn how to approach daily life. In a similar way, digital natives turn to the Internet when faced with developmental challenges associated with adolescence (e.g., puberty, self-image, romantic relationships, etc.).

Numerous studies have found evidence that CMC facilitates self-disclosure of personal information (Amichai-Hamburger et al., 2013; Joinson, 2001; Suler, 2016) which can increase the intimacy of existing FTF friendships (Buhrmester and Prager, 1995; Valkenburg and Peter, 2009). In a national study, Lenhart et al. (2015) found that around 85 percent of teens report that social media allows them to show different sides of themselves that they would not show offline. Other work has found that about one-third of adolescents prefer communicating with their friends online rather than in person (Schouten et al., 2007). Since the cyber context provides a "cloak of safety" (Quarantiello, 1997), it enables youth to reveal more information about themselves than

they would in traditional contexts. For example, according to Tamir and Mitchell (2012), self-disclosure takes up about 40 percent of one's daily speech when in physical settings. When online, this increases to about 80 percent. Antheumis (2009) looked at the association between self-disclosure and interpersonal attraction and found that it is not just the amount of self-disclosure, but the depth (i.e., intimacy) that is most influential. As a whole, revealing more information about oneself combined with the greater availability of peers afforded by CMC means there are more reinforcement opportunities for encouraging and/or supporting attitudes or behaviors.

Disinhibition

The perceived emotional distance when online reduces the fear of repercussions as individuals no longer feel responsible for what they say or do (Aiken, 2016; Suler, 2004). This can allow youth to test norms, values, and morals with their friends, in essence using cyberspace as "training wheels" for identity exploration (Subrahmanyam and Šmahel, 2010). Factors that would inhibit the disclosure of personal information, such as status and authority or the threat of punishment and being ostracized, are attenuated when communicating online. Cyberspace can therefore be viewed as an equalizer that creates a perception of social acceptance where one might be more willing to act out or be deviant online where there is no fear of disapproval or sanctioning.

There are two ways that communication within the cyber context can be disinhibited through anonymity. First, total anonymity can lead to the disclosure of thoughts and feelings without the fear of social consequences (Pedersen, 1997). This phenomenon is often attributed to the "stranger on a train" effect (Rubin, 1975). When

people are on a train or airplane, they often discuss intimate details with those sitting next to them although they have never met these people and will likely never see them again. Since there are no negative consequences associated with self-disclosure, individuals feel they are able to open up to complete strangers. When online, this self-disclosure is the result of a lack of identifying information, such as participating in chat rooms (Hayne and Rice, 1997). On a train these brief encounters reflect fleeting, ephemeral associations. Conversely, CMC may facilitate more long-term contact with those who have not been met in person, potentially converting what would otherwise be strangers into more intimate associations. This means greater self-disclosure can help develop new friendships with those who would not normally become part of one's social network.

The second type of anonymity is social anonymity, which is when some identifiable information is present, but there is the perception that one feels anonymous due to the lack of social cues such as averting one's eyes or shrugging one's shoulders (Suler, 2004). This disembodiment allows youth to bypass certain gating features that can inhibit communication (McKenna et al., 2002; Valkenburg et al., 2006). For example, socially anxious individuals who have difficulty communicating with their FTF peers may feel more comfortable when online and simply open up and reveal more about themselves (Cuming and Rapee, 2010; Sparrevohn and Rapee, 2009; Tidwell and Walther 2002). This may be especially true for those who are shy and self-conscious, those who are unattractive, those easily embarrassed, and those who are introverted in social gatherings (Valkenburg and Peter, 2011).

Social anonymity is particularly important for those who have difficulties making friends in person, such as those with certain stigmas (i.e., physical irregularities or

deformities such as blemishes, handicaps, or stuttering) (Goffman, 1963; McKenna et al., 2002). Goffman (1963) argues that stigmas can lead to social isolation as it is difficult to interact with others, especially when talking to strangers. By meeting new people online, those with stigmatizing attributes can develop more intimate friendships, and when and if there is offline contact with these new associations, the intimacy previously fostered will reduce the negative social interactions often experienced as a result of the stigma.

Other youth may have difficulty communicating in offline settings due to a lack of general social skills, which would normally create a barrier to friendship formation (Mesch and Talmund 2006; Skues et al., 2012). Introverts and those with low self-esteem are more likely to form online relationships and communicate more frequently when online (Peter et al., 2005; Schouten et al., 2007) and tend to use CMC as a replacement for FTF friendships rather as a facilitator to form such bonds (Lee and Stapinski, 2012). These youth also report that the only place they feel loved and respected is online (Caplan, 2005), and the cyber context is seen as safer (Amichai-Hamburger et al., 2002) and less stressful (Caplan, 2007) than FTF settings. As a result, those who feel inhibited when communicating in person not only use CMC more than those who are sociable, but they are more likely to discuss intimate and personal matters and thus self-disclose more when communicating online (Bonetti et al., 2010; Shaw and Gant, 2002).

Dissociation and Deindividuation

Additional processes relate to how the content of messages can depend upon the type and amount of individuals present within a social environment. Drawing from role theory (Mead 1934; Stryker and Burke, 2000), dissociation refers to how individuals only

present certain parts of themselves in a given context. This concept ties directly into the work of Goffman (1959), who claims that when we interact with others within a social world, we put forth a "front" that represents the way we wish others to see ourselves. Each individual has different fronts that they project depending upon the audience, a concept Goffman refers to as "audience segregation." While one may adhere to certain values within a context, for example being studious and subordinate to authority when in school, this same person may express different values when away from the audience of that context. In the preceding example, the student may actually have disdain for authority and exhibit carefree and reckless behaviors when away from school. Goffman (1963:82) argues that an "individual's world is divided up spatially by his social identity," meaning the behaviors and attitudes one displays is dependent upon one's physical location.

The ubiquity of electronic devices creates an online audience that is always available, in turn reducing the inhibitions associated with certain contexts (e.g., being around teachers, parents, or other authoritative figures). In other words, although adolescents may be forced to put up a front in an offline context, they can use CMC to discuss things with others that would or could not be discussed in person. Suler (2016) argues that cyberspace can be liberating since individuals disclose 'bad' behaviors and thoughts when communicating online. When part of one's identity emerges within this cyber context, support from others can reinforce this dissociated self, thus allowing it to manifest and become a dominant part of one's identity.

Another social process explaining self-disclosure is related to how peer groups can create or instigate violence through deindividuation, or when youth are more

aggressive when behavior cannot be easily distinguished at the individual level (Festinger et al., 1952; Zimbardo, 1969). When online, participation in group discussions via chatrooms or social media can enable youth to experience a loss of self-awareness and inner restraints since a large group creates a sense of detachment and individuals lose a sense of personal responsibility. This is one explanation for why CMC has been linked with using vulgar and racial charged language (Tynes et al., 2004). Deindividuation can lead to more hostile communication within the cyber context since there is no fear of sanctioning (Aiken, 2016). If a substantial portion of a group is affected by these processes, this can lead to the perception that certain behaviors and values are socially acceptable (Suler, 2004). Spears and colleagues (2002) found support for deindividuation within CMC in that students were likely to express opinions viewed as unacceptable by college faculty when utilizing CMC compared to FTF interactions. Similar to the effects of disassociation, within the cyber context youth may espouse values that would otherwise remain dormant, which in turn can be reinforced by the broader peer group.

Finding Like-minded Others

The cyber context affords ample opportunity to find like-minded others, which facilitates a selection process that extends beyond what is possible in offline contexts. The preceding factors contribute to youth discussing and displaying thoughts, feelings, and actions that would not typically be displayed in FTF interaction. Once these attitudes and behaviors have been displayed online, individuals may wish to connect with similarly like-minded others. Finding a supportive peer group that is compatible with one's identity, specifically one's own dispositions and interests, is the most "central

psychological task of early adolescence" (Savin-Williams and Berndt, 1990). Discussing

sensitive material via CMC might be easier since it allows individuals to bypass ridicule

or rejection that can be experienced in FTF settings (Derlega et al., 1993; Hallinan, 1979;

Pennebaker et al., 1987; Valkenburg and Peter 2007). This aligns with the self-concept

unity hypothesis, which states that the cyber context expands the social world of

adolescents in such a way that they can find anyone online with similar backgrounds or

beliefs as their own, in turn providing social validation for their identity (Calvert, 2002).

For example, CMC has enabled those with deviant sexual identities to find others

without the fear of social stigma (Durkin et al., 2006; Tikkanen and Ross, 2003).

According to the social needs perspective, bonds are formed with others for the purposes

of intimacy, self-validation, and companionship (Buhrmester, 1996; Wolak et al., 2003).

Neighborhoods and schools limit the options for selecting peers, and because traditional

contexts often provide social groups centered on a specific purpose, there are a few

"focused choices" regarding friendship formation (Feld, 1982). In the preceding

examples, if associations were not present in offline contexts, these individuals may not

have found others to discuss and explore their hidden thoughts. The cyber context can

liberate this dormant, hidden self and it may manifest and play a more dominant role in

one's life through communicating with online friends (Jewkes and Sharp 2003; Suler,

2016).

Aiken (2016) refers to the process of finding like-minded others as "online

syndication." She relates this concept to a mathematical formula where chance and

proximity determine the likelihood of two individual meeting face-to-face. She uses a

rather nefarious example to illustrate this point. Bound by the laws of probability, it is

highly unlikely a pedophile in rural Kansas would ever come into contact with a pedophile from New York City, although these individuals can meet online which may result in them normalizing and reinforcing their deviant identities. It would be difficult to find a like-minded other within traditional contexts given such an extreme identity. Aikens predicts that online syndication will increase overall deviant, criminal, and abnormal behavior through cyber-socialization, or where "acceptance of new or revised behavioral norms [are] accelerated by the characteristics of cyber environments" (Aiken, 2016:327). The omnipresence of online peers provides ample opportunity for these processes to take place.

The ability to find like-minded others has additional theoretical implications related to selection. For example, cognitive dissonance theory assumes that people will resolve discrepancies in beliefs by altering one's own thoughts to reduce conflict as a result of competing thoughts or values (Festinger, 1957). That is, when one has attitudes that differ from his or her friends, this creates dissonance, and changing one's attitudes is one way to alleviate this conflict since attitudinal consistency is an inherent desire within individuals. Since the cyber context allows exposure to a heterogeneous population, individuals can alleviate dissonance by finding like-minded others online who support and affirm attitudes that may not align with those found within traditional contexts.

In sum, the preceding sections discuss several different processes related to how CMC can affect the content of communication through self-disclosure. These factors affect all individuals who communicate online to some degree, although certain types of individuals may be differentially impacted due to barriers that impede offline communication (e.g., being introverted or stigmatized). Although this dissertation is

unable to test for why adolescents self-disclose online, it is important to understand how online peer delinquency may be different from traditional peer delinquency, even when one's online friends are the same as one's FTF friends. This latter point raises additional questions related to the composition of offline and online networks.

BLURRING THE PEER GROUP BOUNDARIES THROUGH CMC

During the initial growth of CMC in the 1980s and early 1990s, those who used online communication primarily interacted with peers who were only known within online environments, such as bulletin board systems and chat rooms (Greenfield and Subrahmanyam, 2003). Most users were anonymous and sought out new peers based on similar interests. The growth of social media has altered the composition of online peer groups, as CMC occurs with both these distinct online peers and peers known in traditional, FTF contexts (Subrahmanyam and Šmahel, 2010). In other words, social media differs from early forms of CMC in that individuals are likely to connect with existing offline peers in addition to meeting new peers online (Ellison et al., 2007; Suler, 2016). The blending of offline and online contexts became more substantial as social media gained prominence among adolescents and some report it is now difficult to differentiate between offline and online friends (Valkenburg and Peter, 2007). As such, Thomas (2007) uses the year 2006 to mark the period where the 'virtual and real' worlds began to merge into one. This blurring of peer group boundaries makes it increasingly difficult for research to disentangle how offline and online contexts work together to create one's peer group.[8]

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[8] Social media challenges the traditional conceptualization of who is considered a friend. For example, using Facebook, one can send a stranger a "friend request." By the stranger accepting the request, a

In discussing the "semantic predicament" created by cyberspace, Suler (2016) acknowledges the difficulty in differentiating between offline and online environments. In fact, cyberpsychologists disagree on whether to view cyberspace as a distinct context given the intertwining of offline and offline environments. For example, Jurggenson (2011) rejects the idea of "digital dualism" as this presents a false dichotomy since what happens on social media affects in-person interactions, particularly when the same set of friends are known online and offline. While acknowledging this issue, Suler (2016:024) cautions abandoning the idea of duality as people do "subjectively experience its digital realms as unique places" as evident by spatial terms reflecting how one "goes" online, they are "on" social media" and they "visit" websites. Importantly, Suler draws attention to how people act differently online, further justifying the need to maintain duality when studying cyberspace. Aiken (2016: 10) likewise stresses the need to differentiate since the cyber context "is a different location in terms of your awareness or consciousness, your emotions, your responses, and your behavior."

Overlap between FTF and Online Friends

In most cases, FTF friends who use CMC make up the majority of one's online peer group (Gross, 2004; Reich et al., 2009). Using a sample of university students, Subrahmanyam et al. (2008) found that around a quarter of respondents reported 100 percent overlap and around half of these respondents reported interacting the most with the same set of friends in both FTF and online contexts. In terms of those peers who are considered intimate, about 70 percent report their closest online friends are also their

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"friendship" has been established. It is unclear to what extent adolescents refer to all of their online connections when considering their online friends.

closest offline friends. In a national study, Lenhart et al. (2015) found that over 80

percent of teens report that CMC makes them feel closer to their FTF friends, thereby

increasing the intimacy of pre-existing, offline friendships (see also Gross, 2004). This

same study found that over 90 percent of respondents reported they use CMC to connect

with those they see often.

Although there is large overlap between friends in offline and online contexts, the

peers one interacts with the most online are sometimes not the same as the peers one

interacts with the most offline (Lenhart and Madden, 2007; Reich et al. 2009;

Subrahmanyam et al., 2008). According to Parks (2010), almost half of one's online

friends consist of acquaintances and friends of friends, and only 10 percent of friends are

considered close or intimate. The work of Subrahmanyam and Šmahel (2010) shows that

the overlap of these more intimate associations is quite low, meaning the total pool of

intimate peers has increased as a result of CMC by facilitating closer relationships with

distal peers. This means that despite the large overlap between contexts, the most

intimate peers from each group may differ.

Distinct Online Friends

Perhaps the most unique feature of the cyber context is the perception of a

limitless pool of peers made available through the Internet. Social environments were

once confined to physical spaces, but since propinquity is no longer a requirement to

form intimate bonds with friends, the potential pool of friends has been substantially

widened. Almost half of social media users actively try to find new friends when online

and around 30 percent report they will become friends with people online who they have

not met in person (Lenhart and Madden, 2007; Subrahmanyam et al., 2008). Research by PEW finds this proportion to be much higher, with almost two out of three teenagers reporting they have made online friendships with individuals who were not known in offline contexts (Lenhart et al., 2015).

Online-only friends are typically characterized as coming from other cities, states, or countries; however, these friendships can also refer to those who are part of traditional contexts such as the school or neighborhood. In this case, despite being spatially proximate, an ongoing, FTF association was never established. These online friends could have been met in temporally short encounters in school (e.g., school hallways or classrooms) or during social gatherings (e.g., sporting events or parties), but an offline friendship involving ongoing face-to-face contact was never formed. In fact, one study found that over 80 percent of adolescents in their sample report they use CMC to connect with those they rarely see in person (Lenhart and Madden, 2007). As a whole, characterizing online friends as distinct refers to the fact that friendships are either forged or maintained through CMC.

Many adolescents communicate online with individuals they do not know in person, although it is unclear exactly how prominent this is among youth. For example, Stefanone et al. (2008) found that about 15 percent of online Facebook friends had never been met in person, whereas Lenhart and Madden (2007) found that this was the case for almost half of boys and about a quarter of girls in their sample. An early national survey found that 40 percent of those between the ages of 16 and 22 years old have been contacted online by a stranger who tried to get to know them (Annenberg Public Policy Center, 2006). In Lefebvre and Bornkessel's (2013) study, almost 10 percent of CMC

users actively try to find new friends when online, and around one third of youth are willing to accept friend requests from people online who they do not know offline (Jones and Soltren, 2005).

A much smaller percentage of CMC users have ongoing contact with those they have not met in person. Using a Dutch sample of adolescents between the ages of 12 and 18, Jochen and colleagues (2006) found that around 5 percent of respondents used CMC to talk exclusively with friends who are only known online, whereas 10 percent communicate with these friends just as often as with people they know in person. This study also found that younger respondents were more likely to communicate with those they have never met face to face. Gross and colleagues (2002) found similar results in that those who experience feelings of loneliness between the ages of 11 to 13 are more likely to communicate with strangers online compared to those who have FTF friends (see also Peter et al., 2006). Sometimes youth will have offline contact with these new online friends, further blurring the boundaries between different peer groups. According to PEW's national survey, 20 percent of teens have met an online friend in person, thereby changing the categorization of this peer (Lenhart et al., 2015). It remains unclear if such contact leads to sustained offline friendships.

When forming new friendships online, adolescents are likely to seek out others based on similar interests. McKenna et al., (2002) describes CMC as enabling a head start to friendship formation as it creates a catalyst for developing more intimate bonds, especially if interests are considered niche, as it would be difficult to find the same types of people in geographically confined settings. The possibility of finding virtually any type of peer opens a wide door for negative reinforcement that would traditionally not

exist. For example, studies have found that this can be problematic for those who may wish to engage in self-harm behaviors (e.g., cutting, burning, attempting suicide) as they may not be able to find social validation for engaging in such behaviors within offline contexts. (Whitlock et al., 2006). When adolescents have problems with their parents they are more likely to turn to online friends for social support compared to turning to FTF friends. A primary reason is that adolescents may feel embarrassed by discussing personal problems with close, FTF friends. When online, they are more able to find others with similar circumstance and grievances (Mesch and Talmund, 2006).

Time with Peers and CMC

There are two ways that CMC has altered the way adolescents spend time communicating with one another: online peers may replace time spent communicating with FTF peers or it can extend time spent with FTF peers if they are also communicated with online. Four hypotheses have been offered to explain these two processes. The 'displacement hypothesis' predicts that time spent communicating online with friends will be at the expense of FTF time spent interacting with both offline friends and parents (Lee, 2009). Essentially, this zero-sum assumption means that strong in-person ties will be replaced with weaker online ties. Alternatively, the 'increase' or 'stimulation hypothesis' states that CMC increases the amount of time spent communicating with FTF friends in addition to allowing for a larger friendship group and a sense of increased closeness with FTF friends (Valkenburg and Peter, 2007). Numerous scholars have found evidence for stimulation over displacement (for a review see Antheunis et al., 2010), thus

supporting the notion that CMC can be viewed as a relationship maintenance tool enabling contact with FTF friends.

Additional factors may impact the degree that adolescents are affected by time spent communicating online with friends since not all adolescents are affected the same. For example, the 'rich-get-richer' hypothesis states that only those with strong social skills will experience a stimulation effect. This process might primarily benefit extroverts (Kraut et al., 2002), while leading introverts to seek out online-only friendships (Gross et al., 2002). Furthermore, the 'social compensation' hypothesis claims that CMC most benefits those who are socially anxious and isolated, that is, those who are the least likely to form friendships in offline contexts (Peter et al., 2005). For example, the opportunity for expression (Goby, 2006), decreased levels of shyness (Stritzke et al., 2004), and ability to self-disclose (McKenna et al., 2002) aids those who would otherwise refrain from engaging in offline interactions. Further evidence is offered by Peter et al. (2005) who find that introverts were more likely to use CMC to compensate for their lack of social skills in FTF interactions. These youths feel more connected through CMC and this can reduce feelings of depression and loneliness (Grieve et al., 2013).

In a test of the four hypotheses related to how CMC influences time spent communicating with friends, Lee (2009) found that online communication was not related to an increase in overall time communicating with friends, but it was associated with more cohesive friendships. Support was found for the rich-get-richer hypothesis as youth with strong offline friendships benefited most by CMC as the levels of cohesiveness increased without displacing overall time spent communicating offline. No support was found for the social compensation hypothesis, although Lee cautions

inferring too much from these results as the definition of CMC was limited and did not directly measure social networking websites. Lee concludes that social media may be particularly beneficial for those youth who are shy or socially anxious, thus additional studies need to explore the effects of all types of CMC.

In considering the amount of time spent communicating with friends, one should keep in mind some inherent differences between online and offline friendship groups. In a traditional context such as a school, there are likely many individuals who are not friends. The sheer number of students would reduce the likelihood of spending time communicating with everyone within the network. Online friendship groups have been described as substantially larger than FTF groups due to the ability to form connections with less intimate associations (Acar, 2008). In 2006 the average size of an adolescent's online group was around 175 friends; by 2014 this number had almost quadrupled to 650 friends (Lup et al., 2015), although a few outliers with several thousand friends may skew the average (Wilson et al., 2012). Compared to traditional contexts, it would be even more unlikely to spend time communicating with all of these online friends; however, the difference lies within CMC platforms that use a many-to-one mode of communication among online friend with varying levels of intimacy. An individual can now be exposed to posts displaying or discussing attitudes and behaviors from hundreds of people within a single hour. Although time is not spent exchanging messages back and forth between these hundreds of individuals, there is time spent communicating 'with' these people in the sense that there is still exposure to their thoughts and behaviors.

CMC AND PEER DELINQUENCY

Twenty years of research has consistently found evidence that the cyber context can affect the content of communication and the composition of adolescent friendship groups. While criminologists have been slow to incorporate CMC into the study of crime, some scholars have begun to discuss the possible ways that online friends can influence socialization into delinquency. In particular, peer influence may be important for cybercrime given that the technical knowledge required to perform such crime may not be easily learned from FTF friends (Skinner and Fream, 1997). Not only are the techniques for online crime learned, but online friends can also provide reinforcement and motivation. Therefore, it is not surprising that early research linking criminological theory to cybercrime often focused on social learning theory.

In one of the first studies applying Akers social learning theory to cybercrime, Skinner and Fream (1997) found that definitions and reinforcement provided by online peers were associated with involvement in multiple types of computer crime (e.g., pirating software, unauthorized access, virus writing). In general, research focusing on digital piracy, the most studied form of cybercrime, has provided strong support for the influence of communicating with deviant online peers (Holt and Bossler, 2014). Other studies have found support for the effect of definitions that support piracy (Ingram and Hinduja, 2008) as well as those that support hacking (Holt, 2007). This early body of research considers the cyber context a distinct environment where normative influence, operating through online peers, affects the likelihood one will engage in cybercrime. As scholars increasingly recognized the cyber context as more than just a platform for 'new'

forms of behavior, theoretical models began to expand to consider whether and how

online peers influence offline behavior.

Offline Consequences of Online Socialization

Recent scholarship incorporating online peers has moved past focusing

exclusively on computer-assisted cybercrime. Exposure to peer behavior discussed and

displayed online has been linked to offline delinquent and deviant behavior. Initial

studies exploring this phenomenon were limited in that they focused on the willingness to

engage in risky behavior offline as the dependent variable as opposed to measuring actual

behavior (Young and Jordan, 2013; for overview see Branley and Covey, 2017). As

research designs expanded, self-reported deviant and delinquent behavior made its way

into the purview of scholars. For example, Huang et al. (2014) found that exposure to

offline friends who posted online pictures of partying where alcohol was present was

associated with later alcohol use. Furthermore, they found that the risk associated with

exposure is magnified when FTF substance using friends are absent. While others have

documented the prevalent display of substance use via CMC (e.g., Moreno et al., 2009;

Branley and Covey, 2017), Huang and colleague's (2014) longitudinal study provided

preliminary evidence that online peers can provide definitions and reinforcement

favorable toward substance use which can, in turn, lead to increases in personal substance

use even in the absence of FTF friends who engage in such behaviors.

Miller and Morris (2014) further expanded the study of online socialization by

applying Akers' social learning theory to both FTF and online peer groups. Definitions,

imitation, differential associations, and reinforcement were found to operate similarly in

the cyber context as they did to traditional contexts, although the only behaviors included in the online peer delinquency measure that were not cybercrimes were substance use and theft. In examining the effects of being exposed to specific criminal behavior from any online peer, McCuddy and Vogel (2015a) found an association between viewing both violent and non-violent peer behavior online and self-reported offending. This behavioral concurrency illustrates a link between exposure to peer crime online and engaging in the same criminal behaviors offline. Branley and Covey (2017) likewise found the same effect for exposure to violence and substance use on social media. Furthermore, individuals embedded in larger online networks experience an exposure saturation point where messages promoting criminal behavior became redundant and have diminishing returns on self-reported crime (McCuddy and Vogel, 2015b). This finding suggests that peer influence is stronger in smaller, more intimate online peer groups, which aligns with prior work on peers in traditional contexts (Akers, 2009).

Other studies examining online peers utilize an opportunity framework and focus on the amount of time spent socializing with such peers. Weerman et al. (2015) examined both online and offline time spent interacting with peers and found that online time was weakly associated with offline delinquency, whereas FTF time was strongly associated with offline delinquency. They concluded that time spent communicating with online peers does not enhance delinquent behavior. Meldrum and Clark (2015) likewise include measures of both online and offline time spent with communicating peers but they find that online time is significantly associated with both delinquency and substance use. Unfortunately, both of these studies only consider the amount of time spent communicating online and not exposure to specific attitudes and behaviors.

Although criminological work focusing on online peers is limited, a growing number of studies consider peer processes operating among gang members within the cyber context. For example, gangs use CMC to gain respect (Pyrooz et al., 2015), display alter egos (Patton et al., 2013), and spread street culture (Morselli and Décary-Hétu, 2013). The National Gang Intelligence Center (2011) suggests that the promotion of the gang lifestyle online has influenced some youth to join gangs by creating an opportunity for exposure to gangs for those who would otherwise not be exposed. David-Ferdon and Hertz (2007) express concern that more frequent access to gang members through CMC may increase the propensity of youth violence since depictions of gang-related behavior may be seen as popular, especially since the cyber context affords access to a much wider audience than is typically available within traditional contexts.

Collectively, these studies demonstrate that there are offline consequences associated with online communication. An additional implication of this growing body of literature is that youth are not deterred from posting and sharing content that could be viewed as antisocial, deviant, or delinquent. In the early days of social media, Barnes (2006) drew attention to the privacy paradox, where youth self-disclose personal information online despite growing privacy concerns. There may be generational factors contributing to this phenomenon, as adolescents are more likely to share personal information online compared to adults (Dey et al., 2012) and they do not feel they have to be worried with sanctions associated with their beliefs or behaviors (McKenna and Bargh, 1998). The willingness to share criminal activity online may also be offense specific. McCuddy and Vogel (2015a) controlled for hesitancy to post due to potential future employment when examining the association between exposure to peer offending

and self-reported criminal behavior. Hesitancy to post was only significant when predicting nonviolent behavior, suggesting that those who are violent may not be deterred from posting criminal activities when communicating with online friends. Despite potential concerns related to the public nature of CMC, some adolescents share their delinquent and deviant attitudes and behaviors when communicating online.

CONCLUSION

The social world of digital natives is markedly different from past generations. Clearly CMC affects communication with others. Friendships are formed regardless of physical location or the availability of time. Youth are sometimes disinhibited when online and reveal more information about themselves, which affects perceived social norms and reinforcement derived from associations. Furthermore, whereas changes in residence, school, neighborhood, or employment would traditionally knife-off peers, CMC allows relationships to be maintained over long periods of time (Cummings et al., 2006). These factors affect the type and amount of peer influence adolescents receive from peers within the cyber context.

There is some evidence that CMC with FTF and online peers is related to delinquency. What is missing is an overarching research model that focuses on both online and offline contexts in order to study the full spectrum of peer influence. Research has largely applied existing criminological theory to the cyber context without considering how the socialization process may be different among those who communicate online. For example, scholars have examined online peers without attention to offline peer influence (e.g., McCuddy and Vogel, 2015a: 2015b), considered online

peers while ignoring FTF peers who use CMC (e.g., Miller and Morris, 2014), and studied online peers without attention to specific deviant or criminal behaviors (e.g., Meldrum and Clark, 2015). Moving forward, a more complete understanding of the role of CMC in crime causation requires a careful consideration of the nuances of the cyber context.

CHAPTER FOUR:
A CYBER-CONTEXTUAL MODEL OF PEER DELINQUENCY

Incorporating online peers into traditional models of peer influence may not be as simple as adding an extra variable to a model or an equation. Rather, scholars must consider the complexity of this context in order to properly study the possible influence of online peers. The majority of youth report it is easier to find friends online than it is in person (Morahan-Martin and Schumacher, 2003). Some youth even report being more interested in social media than their own offline lives (Bicen and Arnavut, 2015), and identify with their online friends as strongly as they do with their family (Lehdonvirta and Räsänen, 2011). Wilson et al. (2012) go as far as to suggest that any contemporary study of adolescent behavior must incorporate social media in order to fully capture the lives of youth today.

Both Sutherland and Akers explicitly dismiss the role of media and conceptualize the learning process as taking place within intimate interactions. In Sutherland's (1947) presentation of nine propositions that describe the learning process, he states that "learning of criminal behavior occurs within intimate personal groups . . . this means that the impersonal agencies of communication, such as picture shows [movies] and newspapers, play a relatively unimportant part in the genesis of criminal behavior." In other words, the lack of communication within media means it is too abstract to influence behavior. Warr (2002:74) goes as far as adding the phrase "face-to-face interaction" when summarizing Sutherland's principle that learning takes place in small, intimate groups. While Akers (2009:60) acknowledges that media can be an "indirect or symbolic" form of reinforcement, it primarily operates through the concept of imitation. More importantly, he states that the probability of criminal behavior increases when

individuals "are relatively more exposed *in person . . .* to salient criminal/deviant

models." The tendency to dismiss media in the past may be well-served because viewers

of such media were passive recipients; however, technological advancements in recent

years have altered the ability of "social" media to exert influence. Modern adolescents are

able to form intimate bonds with real peers when online. The dismissal of media should

not entail the dismissal of non-FTF communication, as this is very different from the

media Sutherland references in his original presentation of differential association.

Furthermore, CMC does more than just connect peers since it enhances socialization in

ways that were not possible in the past.

Emerging evidence suggests that online peers matter, although it is unclear how

and to what extent these peers influence delinquency. Three factors have been identified

that illustrate how cyberspace is both a context and a mechanism that influences exposure

to peer delinquency. First, CMC extends the conceptualization of peer groups by

providing access to online peers. In this sense, cyberspace is a distinct context comprised

of peers who are separate from those in traditional contexts. Second, the cyber context

increases the frequency, duration, and intensity of contact with FTF peers who use CMC.

This means that cyberspace transcends offline contexts by altering the level of contact

with these peers. Finally, CMC affects the content of communication. Deviant or

delinquent acts may be initially disclosed online by FTF peers, thereby enabling exposure

to peer delinquency that would otherwise remain absent or delayed, or disclosure from

online-only peers may alter what is perceived as socially acceptable behavior. All of

these factors work together which affects exposure to definitions favorable toward crime,

as well as reinforcement derived from peers.

RQ1: HOW DO YOUTH USE CMC TO CONNECT AND INTERACT WITH PEERS?

The first research question uses descriptive information to explore how youth use CMC to connect and interact with both FTF and online peers. Three sub-questions consider ways that youth favor CMC and the composition of online and offline networks. Specifically, the first two sub-questions focus on general usage characteristics while the third sub-question focuses exclusively on exposure to peer delinquency.

RQ1a: Do Youth Favor Online to Offline Communication?

Incorporating the cyber context into the study of peers and crime requires acknowledgement of how technology influences the social world of adolescents. This raises several questions related to the use and partiality toward computer-mediated communication. For example, emerging evidence suggests that some adolescents may prefer communicating online and find it easier to make friends when online compared to in person, yet it remains unclear how common this is among a large sample of adolescents. While prior work has partially answered this question, it is imperative for contemporary studies to asses these factors as changing technologies continue to alter the experiences of youth as they mature throughout adolescence (Aiken, 2016, boyd, 2014).

Answers to this initial sub-question help determine the importance of the cyber context for socializing with others within the current sample. This relates back to the first factor presented in the previous section explaining how cyberspace is both a context and a mechanism. The online environment allows youth to connect with a distinct peer group, and if youth prefer to communicate online or find it easier to make friends online, this means the online peer group will be particularly important in shaping the patterns of peer

influence. Although more detailed questions would be needed to determine why youth favor the cyber context for social interaction, identifying general preferences will help inform the results of multivariate analyses as well as provide avenues for future research.

RQ1b. To What Degree are Online Groups Similar/Distinct from Offline Peer Groups?

Identifying the peer group composition of FTF and online friendship groups helps illustrate the extent to which these peer groups are unique and overlap in the sense that some portion of one's FTF friends use CMC, some FTF friends do not use CMC, and some online friends are a distinct peer group who have never been met in person. This relates back to the second factor described earlier pertaining to how cyberspace transcends offline contexts by altering the level of contact with FTF peers. Previous findings provide a wide range of possibilities related to the composition of these friendship groups, thus it is necessary to analyze the overlap among a large sample of digital natives.

Identifying the proportion of FTF friends who are also online friends helps determine the level of integration between the cyber and traditional contexts. If the overlap is high, then mechanisms related to online socialization such as increasing the frequency and duration of communication or facilitating self-disclosure will be of primary interest in studies of peer influence moving forward. Furthermore, if there is a large proportion of one's online network who has never been met in person, the notion of a distinct peer group and factors related to forming and maintaining peer relationships will be of primary interest. Of course these two processes work together in that there can be frequent communication with both sets of peers. As Chapter 3 points out, the

conceptualization of what constitutes a peer group has changed in recent years, thus it is necessary to determine the basic composition of online and offline peer groups.

RQ1c. How Does Exposure to Online Peer Delinquency Compare to Exposure to FTF Peer Delinquency?

Moving beyond a general examination of how the cyber context enables communication, the third part of this research question explores how this online context is a distinct source of influence. That is, it aims to examine FTF friends' involvement in delinquency as well as how online friends who are not regularly seen in person provide support for delinquency through the cyber context. At a basic level, this entails comparing exposure to specific types of delinquency (e.g., violence, theft, substance use) among offline and online peers. When looking at general exposure to delinquency, the overlap between FTF and online peer delinquency can be disentangled by looking at respondents' exposure to each of the two forms of peer delinquency. Moreover, some adolescents may be isolated from FTF peer delinquency but could be exposed online, meaning the cyber context introduces a new element of delinquent peer influence for a subsample of respondents.

The last part of this research question focuses on how the cyber context acts as a mechanism that affects the disclosure of information. For instance, some adolescents initially disclose delinquent attitudes and behaviors online rather than in person (Suler, 2016). On the one hand, there may not be time or physical opportunity to be exposed to FTF peer delinquency, so the cyber context affords a new outlet for exposure that is not affected by temporal and/or spatial factors (the following research question discusses how the modalities of association have been enhanced which likely explains part of this

process). On the other hand, CMC disinhibits some adolescents, meaning the content of what is discussed online by FTF friends may differ from what is discussed offline. The vast majority of criminological research on peer delinquency concerns FTF friends, so it is imperative to explore how CMC affects this well-known predictor of crime. Additional explanation is provided below describing why FTF peers may self-disclose delinquency online. This dissertation is only able to identify the proportion of one's FTF peer group who self-disclosure such activity, but these processes also explain why online peers in general may be disinhibited within the cyber context.

Self-Disclosure of Delinquent Attitudes and Behaviors

Chapter 3 discussed several reasons why individuals might self-disclose information through CMC and be disinhibited when communicating online. Additional research has incorporated these concepts in the study of delinquent and deviant behavior. In his Space Transition Theory of Cybercrime, Jaishankar (2008) explains how lack of deterrents online may be especially criminogenic in relation to cybercrime. Regarding online socialization, there are important implications of this theory. Whereas individuals might be deterred from committing offline crime due to their status and position, they may also be reluctant to discuss definitions favorable to law violation for the same reasons.

Drawing from the work of Matza (1964), adolescents may have conforming attitudes and behaviors but drift into delinquency in certain situations and circumstances. This means that some individuals might teeter on the brink of criminality without every committing a crime if the opportunity never arises. For example, although one might

have a vague interest in something they would be ashamed of admitting to friends (e.g., violent or racist ideologies), they might be deterred from discussing or viewing such material due to lack of easy access and social stigma. Applying this concept to cybercrime, Goldsmith and Brewer (2014) identify three unique processes that facilitate this drift in the cyber context: 1) loosening group boundaries; 2) expanding the range of possible interactions; and 3) allowing individuals to control the how, when, and whether they join groups and affiliate with others. As Goldsmith and Brewer put it, criminologists tend to focus on the 'bad guys' but CMC enables affiliations with those who move in and out of doing 'bad things.' This references Matza's (1964) position that delinquents conform to society's norms most of the time, highlighting the importance of context in determining when crime takes place. Expanding this idea further, the cyber context provides new situations in which adolescents can drift into criminal encounters that would otherwise not exist, meaning there is greater opportunity to be exposed to norms and values supportive of crime.

Additional evidence exists for the ability of CMC to reinforce identities typically found in close-knit groups. Williams and Copes (2005) cite the criminogenic potential of forming relationships with like-minded deviants across the globe. If criminal behavior is seen as socially acceptable, these interactions facilitate the acquisition and reinforcement of additional criminal definitions. Certain deviant or extremist individuals (e.g. terrorists or hate groups) with marginalized identities use the Internet for social validation and support (Bowman-Grieve, 2009). This process can likewise take place for other forms of deviancy. For example, in one study around 70 percent of gang members claimed it was easier to make friends in an online environment as opposed to on the streets (King et al.,

2007). Given the ease of finding such peers online, adolescents may think deviant or criminal behavior is more common than it is in real life (Cross et al., 2015). CMC may therefore facilitate the acquisition and/or maintenance of deviant or criminal social norms.

RQ2: DOES ONLINE PEER INFLUENCE AFFECT DELINQUENCY INDEPENDENTLY OF WHAT IS VIEWED AS TRADITIONAL PEER INFLUENCE?

The second research question examines if there is an association between online peer delinquency and self-reported delinquency. Although prior work does indeed suggest there is an association (e.g., McCuddy and Vogel, 2015a; Miller and Morris, 2014), these studies do not consider the entire cyber context and most do not account for other criminogenic predictors of delinquency. In particular, there are two ways that online peers affect self-reported delinquency: a direct effect on delinquency and a moderating effect on the influence of FTF peer delinquency.

Direct Effect of Online Peer Delinquency

Online peers can directly influence individual behavior by providing definitions and reinforcement that support criminal and deviant behavior. These online peers likely impact individual delinquent tendencies primarily through the enhancement of the modalities of association. Additionally, the blending of social contexts, combined with the reduction in social cues and decreased tendency to self-censor, may ultimately increase participation in delinquent behavior.

Enhancing the Modalities of Association

According to Sutherland (1947), not all definitions receive equal weight. The frequency, duration, intensity, and priority of associations determine the effect they will have on an individual. For these first two modalities, this means definitions and reinforcement which are presented more often and for longer periods of time will be more influential. Since the cyber context is spatiotemporally disorganized, there is an increased opportunity to be exposed to both peer attitudes and behavior. Essentially, CMC provides multiple "windows" through which to view peers. Donath and boyd (2004) recommend framing CMC within a signaling theory perspective. For example, if you see someone driving an expensive car, you might perceive that the person is wealthy; however, they could in fact have borrowed the car from a friend or rented it for a short period of time. If you were to see that same person drive the expensive car over the course of several weeks or months, this would lead you to more strongly believe that the person is in fact wealthy. In a similar way, CMC contributes to the continued monitoring of peers, and thus provides an important mechanism of signaling. There are multiple avenues to view friends' actions and thoughts, and this information is perpetually present. Youth now leave digital traces of themselves online, essentially creating an online database of social behavior (Palfrey and Gasser, 2008).

In 2015, a national study found that the average adolescent spends around 84 minutes per day online communicating with friends via CMC (Rideout, 2015). This means almost 10 hours each week are spent connecting with friends online. Furthermore, approximately 10 percent of adolescents spend over 21 hours communicating with online friends per week. Twenty-five years earlier, adolescents spent approximately 20 hours

per week with friends outside of the classroom (Savin-Williams and Berndt, 1990). If the stimulation hypothesis is true (Valkenburg and Peter, 2007), this means the total time spent communicating with friends has substantially increased, leading to more frequent contact by potentially doubling the amount of time spent communicating.

Sutherland's conceptualization of intensity pertains to the degree of intimacy and closeness with friends, which he posits will make associations more consequential. Reich et al. (2009) found that around 43 percent of their respondents reported communicating online with FTF friends made them feel closer, while Valkenburg and Peter (2007) found almost 90 percent of respondents reported increased intimacy with FTF friends. Moreover, youth may perceive the cyber context as a more intimate setting and self-disclose more than in FTF environments (Tidwell and Walther, 2002). Having frequent online contact with FTF and online-only friends means youth have more experiences to draw from and receive social reinforcement. Additionally, the one-to-many, many-to-many, and many-to-one nature of online socialization means that communication in cyberspace spreads rapidly to a large number of people (Jaishankar, 2008). CMC may facilitate the transition of latent ties (i.e., available peers within a context who have not been communicated with) into weak ties so that ephemeral associations can be fostered into more intimate relationships (Ellison et al., 2007). In fact, while there is a large overlap between offline and online friends, studies consistently show there is low overlap in the peers who are communicated with the most in online versus offline contexts (Reich et al. 2009). Close online friends may differ from close offline friends, which may increase the total pool of intimate peers.

Finally, through the modality of priority, Sutherland posited that relationships formed earlier in life may have an enduring effect, albeit mostly through its effects on selective forces. Warr (2002) comments that past friends who have been knifed- off are unable to provide ongoing reinforcement. Furthermore, most adolescent friendships are relatively short-lived (Brown and Klute, 2003), so influence from peers is itself a fluid process. However, CMC allows for friendships to be maintained even after people move to a new school or neighborhood. Around half of social media users report that reconnecting with past friends is a major reason for online communication (Lefebvre and Bornkessel, 2013). This further raises questions about the intensity of peer relationships. Paternoster and Bachman (2001) ask which is more consequential, a short but intense association or a long but less intense association. CMC may facilitate longer *and* more intense associations given the increased amount of time spent communicating with peers and longer duration of friendships.

The enhancements to the modalities of association within the cyber context may influence the way in which adolescents learn behavior. Whereas attitudes and behaviors are typically considered distinct constructs, CMC blurs these boundaries since friends post, share, and discuss content that may incorporate pictures, videos, or depictions of actual behavior. Users of CMC often show rather than tell others about themselves (Zhao et al., 2008); therefore, both peer attitudes and behaviors are an integral component of communication with online peers. A key attribute of social media is the user-generated feature, whereby adolescents create their own content to share among their friends (Subrahmanyam and Smahel, 2010). This differentiates social media from the media that criminologists and psychologists have argued contribute to desensitization or increased

aggression (Zillman and Weaver, 1999). Depictions of malicious, criminal, or otherwise deviant behaviors are perceived as real events which are shared, discussed, and experienced by real friends (Thomas, 2007).

The ability to comment and show support through liking and sharing content in the cyber context means there are multiple ways to learn definitions and receive reinforcement. Online communication may be more frequent, endure for longer periods of time, and be more intense than with FTF communication. It is for these reasons it is hypothesized that *online peer delinquency has a direct effect on self-reported delinquency (Hypothesis 1)* and o*nline peer delinquency directly influences personal delinquency independently of face-to-face peer delinquency (Hypothesis 2).*

Moderating Effect of Online Peer Delinquency

It is also possible that online peers have a moderating effect whereby the traditional delinquency-offending association is conditioned by online peer delinquency. Criminologists have begun to explore the influence of larger contexts such as the broad peer group found within schools or the neighborhood (e.g., McGloin et al., 2014). These studies find that broader social groups can moderate the influence of more intimate friends. In a similar vein, the cyber context can provide additional online friends that condition the influence of FTF friends. There are two possible moderating effects of online peers: they may strengthen the influence of FTF peers through differential receptivity, or they could weaken the effect through a surplus of peer delinquency.

Differential Receptivity

Expanding the ideas of multiple peer groups and differential receptivity to the cyber context, individuals may be more receptive of offline peer influence due to online peer exposure to definitions and reinforcement. While Sutherland originally believed that media was unimportant, Cressey (1964:7) acknowledged that "the impersonal agencies of communication exert some influence but are important principally in determining receptivity to the patterns of criminal behavior when they are presented in personal association." This means that, for example, exposure to violent movies may not make someone violent, but that individual could be more receptive of pro-violent definitions and reinforcement when socializing with friends in person. This process was demonstrated by Gibbons and colleagues (2008) who found that exposure to favorable depictions of alcohol in movies was associated with seeking out other alcohol using peers. The authors concluded that when adolescents encounter delinquent acts from friends, they draw from past experiences to evaluate whether they view the behavior as favorable. Given that social media is considered a personal and intimate mode of communication, Cressey's notion of receptivity could be especially prominent among those with online friends as these associations are real people and thus should be more influential than other forms of media.

In other words, online peers can tip the scale of associations allowing for additional reinforcement from FTF friends. In general, the modalities of association increase receptivity, and given these processes have been enhanced within the cyber context, this may strengthen adolescents' receptivity toward FTF peer influence. Akers suggests that the frequency and probability of reinforcement are crucial in determining

the effect of peer behavior on personal behavior. This means that, even if online and offline peer behavior were exactly the same, the cyber context can enable the reinforcement process to have a stronger effect by increasing the frequency of reinforcement. Recall that some prior studies suggest that the total time spent communicating with peers has increased as a result of CMC, meaning the cyber context specifically increases the frequency and duration of friendships by allowing for communication to occur more often and over longer periods of time. As a result, initial aversion toward FTF peer delinquency may dissipate as youth accumulate online friends supportive of delinquency.

Since the cyber context provides access to multiple types of peer groups, CMC can facilitate friendships with similar and sometimes different groups of individuals, which in turn may influence the differential receptivity process. For delinquent youth, this process means they may find additional online peers with similar attitudes, and over time, reinforcement from these peers may increase their overall level of delinquency. In cases where youth befriend violent online peers, the degree to which they are exposed to pro-violent messages can far surpass the criminal definitions provided within traditional FTF groups (Hawdon, 2012). Alternatively, adolescents may desire to form bonds with dissimilar peers (Savin-Williams and Berndt, 1990); thus, the opportunity for non-delinquent youth to be exposed to delinquent youth may be greater when online. For example, youth of low social status may befriend those of higher status in order to increase their own social position (e.g., gaining status by associating with those perceived as more popular), or one may wish to "select down" in order to achieve a sense of superiority (e.g., affluent youth choosing peers from lower social classes) (Epstein,

1983). The seemingly limitless number of peers in the cyber context means youth can find any type of friend they wish.

There are two caveats worth noting that relate to causal conclusions that can be derived from examining differential receptivity. First, it is possible this process may lead to the selection of deviant or delinquent FTF peers. In this case, online peers may facilitate the formation of relationships in traditional contexts by making adolescents more receptive to associating with FTF friends. Over time the effect of online peer delinquency may be attributed to altering the selection of FTF delinquent peers as opposed to moderating the influence of existing peers. This presents a larger issue related to temporal ordering: a significant moderating effect could indicate that online peer delinquency strengthens the effect of FTF peer delinquency, but it can also mean that FTF peer delinquency strengthens the effect of online peer delinquency.

Redundant Peer Delinquency

An alternative to the differential receptivity approach concerns the possibility that additional associations may not be criminogenic. Prior research focused on traditional contexts has shown that the influence of peer delinquency becomes weaker at high levels of exposure (Zimmerman and Messner, 2011). Within schools or a neighborhood, exposure to peers within the broader context may be meaningless if there is a "bountiful supply" of similar peers who already exist within a friendship network. Research considering online peers has likewise found this effect where exposure to peer offending has a diminishing association with self-reported offending (McCuddy and Vogel, 2015b). These studies tested the functional form of the association between peer delinquency and

self-reported offending and found the association to be nonlinear, suggesting that saturation may take place when additional peer delinquency becomes redundant once a certain threshold has been met. Under this assumption, online peer delinquency may in fact weaken the effect of FTF peer delinquency due to a surplus of delinquent definitions and reinforcement.

While other studies have found support for peer saturation in traditional contexts (e.g., Burt and Rees, 2015; Zimmerman and Vasquez, 2011), McCuddy and Vogel (2015b) focused on peers who use online social networks to communicate with one another. Their findings demonstrate that after one and a half standard deviations from the mean of exposure to peer offending, a threshold is met where the positive association with self-reported offending began to decrease. Furthermore, this association was moderated by online network size. Saturation was only evident in medium and large online networks, whereas the association between peer offending and personal offending was linear in smaller networks. The authors suggest this finding was due, in part, to the fact that an abundance of less-intimate ties may wash out the effect of exposure by intimate friends.

Although this dissertation does not seek to test the functional form of the peer-offending association, the notion that FTF peer delinquency may be redundant with online peer delinquency has implications for how online peers moderate the effect of FTF peers. Specifically, FTF peer delinquency may have a weaker effect on self-reported delinquency among those exposed to online peer delinquency due to the redundancy of being exposed in both contexts. For those who are not exposed to online peer

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delinquency, FTF peer delinquency may have a stronger effect since these individuals are not already inundated with peer delinquency from the cyber context.

Similar to the limitation of examining differential receptivity, the causal direction of this moderating effect cannot be determined without the use of longitudinal data. It is also possible that FTF peer delinquency could moderate online peer delinquency through the processes just described. However, the overarching research questions aims to explore how online peer influence affects delinquency independently of what is viewed as traditional peer influence. Since the goal is to determine how the cyber context affects traditional social processes, online peer delinquency is viewed as the moderator, but findings must be interpreted with caution given the alternative explanation.

Taken together, there are multiple ways that online peer delinquency can moderate the influence of FTF peer delinquency. A positive interaction would suggest that differential receptivity takes place, meaning o*nline peer delinquency exacerbates the association between FTF peer delinquency and personal delinquency (Hypothesis 3a).* Alternatively, a negative interaction would suggest redundant peer delinquency, meaning *online peer delinquency diminishes the association between FTF peer delinquency and personal delinquency (Hypothesis 3b).*

CONCLUSION

This chapter presents a detailed explanation of the cyber-contextual model of peer influence by exploring how the entirety of adolescent peer groups affect delinquency. Criminologists who restrict analyses to traditional contexts may miss several pieces to the larger puzzle explaining the association between peers and crime. The question posed at

the onset of this dissertation, if online peers matter, may well be an oversimplification of the peer influence process. Studying peers from both online and offline contexts paints a more elaborate picture of adolescent friendship composition.

The social lives of digital natives are quite different than adolescents studied in a majority of past criminological research. In fact, most datasets used in the study of peer delinquency are quite dated. For example, many peer scholars use Add Health data from the mid-1990s (e.g., Haynie, 2002; McGloin et al., 2014) or the National Youth Survey from the mid-1970s (e.g., Elliott et al., 1985; Warr, 1998). Moving forward it is necessary to collect new data that captures both offline and online experience with peer delinquency. This dissertation uses such data, and the remaining chapters explore the research questions and test the hypotheses outlined in this chapter.

CHAPTER FIVE: DATA AND METHODOLOGY

The data for this dissertation come from the University of Missouri-St. Louis (UMSL) Comprehensive School Safety Initiative (CSSI), a project designed to investigate the causes and consequences of school violence as well as students' experience with school rules and safety, the police, victimization, and offending. A total of 3,641 7th and 8th grade students in 12 schools across 6 districts in the St. Louis area were surveyed in the spring of 2017.[9] Schools were chosen to represent a broad range of characteristics and were selected from across the northern and southern parts of the county. Although this study will collect panel data over three years, only the first wave is currently available. The cross-sectional nature of the data for this dissertation limits exploration of causal processes, thus analyses will be unable to test for selection. This important caveat must be kept in mind when interpreting the findings of this dissertation.

Data from the CSSI sample are unique in that they provide measures of online peer delinquency and CMC use in addition to FTF peer delinquency and self-reported offending. These data are particularly well-suited to answer questions related to the cyber context given that the sample is comprised almost entirely of the post-millennial generation, meaning all respondents are considered digital natives.[10] An older sample would blend into the millennial generation whereas a younger sample would preclude adolescents. In other words, the CSSI sample represent one of the first samples with respondents whose developmental years took place fully emerged in the cyber context.

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[9] One respondent was mistakenly removed from the sample during the first wave of data collection and was excluded from this dissertation. The sample size for the first wave of the CSSI is actually 3,642.

[10] Pew Research Center (2015) defines the millennial generation as those born between the years of 1981 and 1997.

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SAMPLE SELECTION AND STUDENT RECRUITMENT

The St. Louis metropolitan area offers a diverse setting with respect to school context. The city has experienced population decline over the past 100 years, with both middle and lower-class residents moving outward to close-knit municipalities in the county that immediately surround the city. Outlying rural areas have remained largely unaffected by these population shifts (Gordon, 2008). The research team utilized this diversity when recruiting schools to participate in this CSSI study.

Researchers contacted 23 school districts within St. Louis County and met with superintendents and representatives from 14 of these districts. Ultimately six districts agreed to participate in the study. Two of these districts were categorized as high risk suburban areas with more than 80% of students receiving free or reduced lunch (Harwell and LeBeau, 2010). Three districts are categorized as suburban but are geographically close to the city, with one considered high risk and two medium risk (41% and 67% of students within the schools receive free or reduced lunch). The final district represents a distant suburb with some rural sections within the district and contains moderate to low-risk student populations. In total, these districts cover 12 middle schools with enrollment between 226 and 802 students ($\overline{x} =544$).[11]

During meetings with representatives from these six districts, a class was selected that would provide the greatest exposure to students in the school (typically a social studies class) and teachers were asked to send letters and consent forms home to parents that informed them of the study taking place at their child's school. Of the 4,719 students

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[11] Among the 12 schools, between 16% and 95% of students within each school were eligible for free and reduced lunch ($\overline{x} = 62.25\%$) and there were between 0.3 to 12.4 disciplinary incidents per 100 students in each school ($\overline{x} = 3.74$) for 2016 (cases that were missing data for 2016 used previous years' data).

eligible to participate, 3,664 (77.6%) returned positive parental consent forms and 165 (3.5%) returned negative parental consent forms. A total of 890 (18.9%) students failed to return a signed form. Once these consent forms had been collected, researchers visited each middle school and surveyed all 7th and 8th grade students with active consent who were present on that day in the selected class. Each student filled out an assent form and completed a confidential online survey through Qualtrics[TM]. No directly identifiable information was collected from the students within the online survey. Multiple return visits were made to each school in order to survey any students who had parental consent but were absent on the initial survey day, resulting in a completion rate of 99.4 percent among eligible students. Table 5.01 (see page 90) provides descriptive information on this sample.

Overall the sample is evenly split among white and black respondents, with approximately 38 percent white, 42 percent black, and 20 percent of another race. This diverges from St. Louis County, where around 29 percent of the population under 18 is African American and almost two-thirds (61%) are white (U.S. Census Bureau, 2015).[12] The average respondent was 13.15 years old and approximately 47 percent were male. Additional descriptive information is provided in the sections discussing specific measures.

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[12] The 12 schools were primarily located in the northern and southern parts of the county. The North County sample is disproportionally African American (75% black and 5% white) compared to South County (8% black and 71% white) which explains why the proportion of African Americans is higher in the overall sample.

MEASURES

The following variables were largely based on those used in the second National

Evaluation of the Gang Resistance and Education Training (GREAT) program (see

Esbensen et al., 2012). Measures specific to the cyber context represent new items unique

to the current data set.

Dependent Variables

Delinquency is measured by asking respondents how many times in the past 6

months they engaged in 13 different delinquent acts ($\alpha = 0.79$).[13] Respondents were first

asked if they ever engaged in the behavior. If they reported yes, they were then asked to

indicate the frequency within the reference period. Responses ranged from 0 to 5 or more.

Some students answered this second question despite selecting no on the first. As such,

the frequency measure was used but was recoded to 0 if a respondent selected that they

had never engaged in that behavior (on average about 45 cases were recoded per item).

This method represents a rather conservative approach since if a respondent provided any

indication they had not committed the act, the respondent was given a 0. The individual

acts of delinquency varied in seriousness and included items such as skipping school,

damaging property, stealing, attacking others, selling drugs, and carrying weapons (see

Appendix on page 203 for full list of all variables).

Given the positive skew of the distribution for the individual delinquency items, a

variety scale was created by first dichotomizing each individual delinquency item then

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[13] Scale reliability coefficients calculated using the analytic sample.

taking the sum of all items ($\overline{x}$ = 1.12). Some argue that variety scales are the preferred

criminal offending scale because they are not compromised by the high frequency of

delinquent acts perceived as less serious and often possess high reliability and validity

when measuring criminal behavior (Sweeten, 2012). The limitations of this scaling

technique include treating all acts of delinquency the same (e.g., there is no difference

between theft and attacking someone with a weapon in that each of these correspond to

one act of delinquency), ignoring the frequency of individual acts of delinquency, and

difficulties with interpretation (e.g., a one-unit increase does not inform us of the

seriousness or frequency of the behavior). Sweeten argues that when examining the

causes and consequences of crime, differentiating between levels of frequency may not

be necessary since committing the first offense is what distinguishes offenders from non-

offenders (see also Hindelang et al., 1981). Moreover, variety scales are highly correlated

with both the frequency and seriousness of offending, and these scales offer a superior

unidimensional measure that has higher reliability compared to common alternative

approaches (e.g., dichotomous, frequency, and seriousness weighted scales).

In addition to a general delinquency scale, three measures were created to focus

on specific types of delinquency. *Violence* consists of 5 items: hit someone with the idea

of hurting him/her, attacked someone with a weapon, carried a hidden weapon, used a

weapon or force to get money or things from people, and been involved in a gang fight (α

= 0.50). *Acquisitive Crime* consists of 4 items: avoided paying for things such as movies

or bus/metro rides, stole something under $50, stole something over $50, and gone into or

tried to go into a building to steal something (α = 0.71).

Variety scales are not used for the violence and acquisitive crime measures since there is limited variation when looking at these crime-specific outcomes. For example, fewer than two and half percent of the sample engaged in three or more types of violence or acquisitive crime, and around 93 percent of the sample engaged in 0 or 1 act of each outcome. Therefore, a dichotomous measure was created reflecting respondents who engaged in any of the five acts of violence ($\bar{x} = 0.26$), and a separate measure was created for those who engaged in any of the four acts of acquisitive crime ($\bar{x} = 0.17$). While these variables lose information regarding the count of each individual act, they focus on specific types of crime with varying levels of seriousness, thus supplementing findings from the general delinquency models.

Finally, *substance use* was measured by first asking respondents if they have ever used six specific types of drugs and then how often they have used each drug in the past six months.[14] The six items comprising this scale are prescription drugs that were not prescribed, tobacco products, alcohol, marijuana, heroin, and other illegal drugs ($\alpha = 0.67$). Instead of asking about specific frequencies, response categories included 5 items describing general use: 0 time, 1-2 times, about once a month, about once a week, and every day. Similar to the previous two crime-specific measures, there is limited variation within this item when using a variety scale as 94 percent of the sample used one or fewer illegal substances. Therefore, a dichotomous measure was also created for substance use, reflecting those who used any of the six types of illegal substances ($\bar{x} = 0.15$).

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[14] A factor analysis of the peer delinquency measures revealed that substance use loads on a separate factor. As such, it is not included as part of the general delinquency scale and is examined separately.

Independent Variables

Peer Delinquency

Numerous studies have used a perceptual measure of the proportion of delinquent friends as a proxy for differential association, although there is disagreement over whether this is the most appropriate way of measuring peer delinquency. Some claim perceptual measures are the most theoretically correct way of capturing normative influence from friends (McGloin and Thomas, 2016). Others argue that adolescents often misperceive the delinquency from their friends and advocate for direct measure of peer delinquency from peers themselves (Gottfredson and Hirschi, 1990; Haynie and Osgood, 2005). McGloin and Thomas (2016) argue that while there is not complete overlap between objective and subjective peer behavior (i.e., individuals do in fact often misperceive their peers' behavior), the perception of peer behavior is what most strongly influences one's own behavior as this is consistent with Sutherland's (1947) and Akers' view of normative influence since perceptions do not have to be accurate to influence behavior. Aligning with their recommendation, the following peer variables use a perceptual measure of the proportion of one's friends who are delinquent.

Peer delinquency from FTF friends refers to two scales, both measured by asking respondents "During the last year, how many of your current friends have done the following?" The individual behaviors include theft less than $50, attacking someone with a weapon, using tobacco or alcohol products, using marijuana or other illegal drugs, and hitting someone with the idea of hurting them. Response categories consist of proportions of friendship groups, ranging from "0. None of them" to "4. All of them." A factor analysis revealed that these items load on two factors: one reflecting substance use and

the other a more general measure of peer delinquency. Therefore, *FTF peer substance use* ($\bar{x} = 0.28$; $\alpha = 0.85$) refers to the two substance use items and *FTF peer delinquency* ($\bar{x} = 0.27$; $\alpha = 0.64$) refers to the other three behaviors. Offense specific measures were also constructed that match each dependent variable. For violence, this measure consists of hitting someone with the idea of hurting them and attacking someone with a weapon ($\bar{x} = 0.34$; $\alpha = 0.51$). For theft, a single item reflects theft below \$50 ($\bar{x} = 0.34$).

It is important to note that the measure of *FTF peer delinquency* does not use the phrase "face-to-face" when prompting respondents to think of their current friends. However, there are reasons to suspect this measure does reflect these friends. Questions immediately preceding the section ask respondents several questions related to friends in school, which clearly refers to FTF friends. Also, the first reference to online friends in the survey comes after these questions.

Peer delinquency from online friends captures the same five items as FTF friends. The prompt for these behaviors asked respondents to think about "online friends that you do not regularly see in person" and to report the proportion who "expressed support for" each behavior.[15] This wording differs from the FTF measure of peer delinquency in order to capture exposure from distinct online peers whose friendships are either developed or maintained through online communication (see Chapter 3, page 43 for elaboration). While respondents could have been directed to think about friends who they never see in person, this would omit peers from traditional contexts whose friendship is dependent upon CMC. This item also differs from the FTF measure of peer delinquency because

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[15] The term 'regular' was not defined, meaning it was open to respondents' own interpretation.

respondents were instructed to select "not applicable (NA)" for each item if they did not

have these types of friends. This resulted in 1,046 respondents (29% of the total sample)

being recoded as missing.[16] As with FTF peer delinquency, the five online peer items

loaded on two factors, thus separate scales were created for *online peer substance* use ($\overline{x}$

= 0.34; α = 0.87) and *online peer delinquency* ($\overline{x}$ = 0.27; α = 0.71). Additional offense-

specific measures for violence ($\overline{x}$ = 0.29; α = 0.59) and theft ($\overline{x}$ = 0.26) were calculated

that mirror the measures used for the FTF peer variables.

The way in which peer delinquency is transmitted online makes it difficult to

measure as peers can post and share material but may not endorse the behavior, or they

could in fact oppose the material. For example, if a respondent reported that a peer shared

a video of a school fight, it could be interpreted that the peer found the fight amusing,

was shocked at what they saw, was scared at what happened, or they could simply try to

raise awareness that the incident occurred. As such, the prompt for online peer

delinquency requires respondents to refer to content that "expressed support for" the acts

of delinquency within the past year. Prior work by Moreno et al., (2009) found that the

display of alcohol references on social media was interpreted as actual use, regardless if

actual use was depicted. Respondents reported that only those who drink alcohol would

post such content. However, to avoid assuming the intent of peers who discuss and

display references to delinquency, the current study requires respondents to only consider

peers who explicitly support such behaviors or attitudes. This presents an issue with

comparing the FTF to online measure of peer delinquency as the former focuses only on

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[16] Given the implications of removing a large portion of the sample, Chapter 7 explores how these respondents differ from the analytic sample and Chapter 8 will discuss ways of addressing this issue moving forward.

behaviors whereas the latter may capture attitudes and/or behaviors. This dissertation will not examine competing influence models and results will be interpreted in light of this limitation. The theoretical and methodological issues related to peer attitudes and behaviors will be revisited in the discussion chapter.

Online Communication Variables

Several variables are included that capture general use and preferences for online communication, which are used to answer the first research question. *Prefer CMC* was measured by asking respondents if they "prefer communicating with friends online rather than in person." Response categories ranged from "1. Strongly disagree" to "5. Strongly agree" ($\bar{x} = 2.35$). *Make Friends Online* refers to how individuals form friendships with peers. Respondents were asked to indicate how much they agree with the statement "Going online has made it easier for you to make friends" ($\bar{x} = 2.65$).

Additional variables are included to measure the overlap of traditional and online friendship groups as well as the proportion of one's online friends who are unique to the cyber context. *FTF/Online Overlap* was measured by asking respondents "How many of your in-person friends are also online friends." Similar to peer delinquency, response categories ranged from "0. None of them" to "4. All of them" ($\bar{x} = 3.36$). *Online-only friends* was measured by asking "How many of your online friends have you never met in person." The same five response categories were used for this measure ($\bar{x} = 2.05$).

Peer online self-disclosure is a single item measure that refers to behaviors from FTF friends who are known to respondents as a direct result of CMC. Respondents were asked "How many of these [in-person] friends have posted about illegal activities online

that you did not find out about in person." While these FTF friends may be some of the

same friends captured in the *FTF peer delinquency* measure, this variable refers to peer

delinquency that is either initially discovered online or would otherwise be hidden in

traditional contexts. Response categories are the same as the peer delinquency measures,

reflecting the proportion of one's FTF peer group that discussed or displayed delinquency

online but not in person ($\overline{x} = 0.37$).

Control Variables

In order to isolate alternative effects, several variables are included to control for

factors consistently associated with delinquency (see Appendix A for a full list of scale

items). The first set of items capture perceptions of disorder experienced in the traditional

contexts of schools and neighborhoods since those with a negative perception of school

climate (Gottfredson et al., 2005) and those who reside in disadvantaged neighborhoods

(Shaw and McKay, 1931; Zimmerman and Messner, 2011) are more likely to be

delinquent. *School disorder* consists of five items related to perceived problems within

schools such as bullying and students not getting along well ($\overline{x} = 1.71$; $\alpha = 0.81$).

Responses ranged from 1 to 3 and capture if respondents felt these issues were not a

problem, somewhat a problem, or a big problem. *Neighborhood disorder* is comprised of

six similar items with some neighborhood specific measures, such as perceptions of

having run-down buildings or groups of people hanging around causing trouble in a

neighborhood ($\overline{x} = 1.54$; $\alpha = 0.84$).

To capture academic achievement, *poor grades* is a single self-reported item

ranging from 1 to 5, with higher values corresponding to lower grades ($\overline{x} = 1.97$). There

is a well-established link between poor grades and negative outcomes such as delinquency, drug use, and police contact (Gottfredson, 2001). While some studies find the link between grades and crime to be spurious, there is evidence that poor academic performance is associated with contact with antisocial peers (Dishion et al., 1991).

Self-control has received extensive empirical support as being a primary correlate of delinquent and deviant behavior (Gottfredson and Hirschi 1990; Pratt and Cullen, 2000). The data set includes items that capture two domains of self-control. *Impulsivity* was derived from the Grasmick et al., (1993) scale and consists of three items comprised of such behaviors as acting without thinking and doing whatever brings pleasure ($\overline{x} = 2.83$; $\alpha = 0.44$).[17] Respondents were asked how much they agreed with each item, with higher values of this scale corresponding to greater levels of impulsivity. Given the low reliability of this construct, an additional variable is included that captures self-control but loads on a separate factor related temperament. *Temper* is comprised of three items referring to losing one's temper, hurting others when angry, and if others should stay away when one is angry ($\overline{x} = 2.94$; $\alpha = 0.79$).

Two control variables are included that capture elements of parental monitoring. According to Hirschi (1969), parental monitoring can function as indirect supervision through the psychological presence of a parent, meaning the perceived presence of a parent can deter involvement with peer delinquency and time spent in criminogenic settings (Janssen et al., 2016). *Offline parental monitoring* consists of a 3-item scale

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[17] Two dimensions of self-control were included due to the low alpha of this single dimension. While this low alpha is concerning, some argue that the Cronbach alpha is not necessarily an ideal indicator of reliability (Devellis, 2016). Sijtsma (2009) argues that it captures the lower bound of reliability as opposed to the best estimate of the item's actual reliability, and Gadermann and colleagues (2012) caution that the estimate assumes data are continuous and bias is introduced when using ordinal measures.

asking respondents about informing their parents if they leave their house as well as parental knowledge of peer relationships outside of the home ($\bar{x} = 4.42$; $\alpha = 0.72$). An additional variable related to *online parental monitoring* is also included since this item reflects an element of supervision via the cyber context. This 2-item measure asked if parents know what their children are doing when using electronic devices as well as if they limit the amount of time spent using such devices ($\bar{x} = 3.14$; $\alpha = 0.50$).[18]

The final set of control variables pertain to basic demographic characteristics. *Male* is a dichotomous variable with males coded as 1 and females as 0 ($\bar{x} = 0.47$). For race/ethnicity, dichotomous variables were created for *White* ($\bar{x} = 0.38$), *Black* ($\bar{x} = 0.42$), and O*ther Race* ($\bar{x} = 0.20$). *Other Race* refers to those who are Asian, Native American, Hispanic, or if the respondent selected 'other' as a response to the race question. *Age* ranges from 10 to 16 and reflects the age of the respondent when they completed the survey. Fewer than one percent of the sample were under 12 years old and just over two percent were over the age of 14. Therefore, this variable was recoded in regression models where those who were 12 and under were coded as 1, those who were 13 were coded as 2, and those who were 14 and older were coded as 3 ($\bar{x} = 2.12$).[19] *Single-parent household* is a dichotomous measure indicating if a respondent lived with only one parent ($\bar{x} = 0.25$).

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[18] A factor analysis of all five parental monitoring variables revealed that the offline and online variables load on separate factors.

[19] Recoding the age variable closely resembles the age-distribution across grade levels, where those who are 12 and younger are mostly in 7th grade and those who are 14 and older are mostly in 8th grade (with a mixture of 13-year-olds in both grades). In its original metric, there were two respondents who were 10, three who were 11, 710 who were 12, 1,740 who were 13, 1,098 who were 14, 74 who were 15, and six who were 16. Therefore, the average respondent age is 13.15. After recoding this variable, the average age is 2.12 with a standard deviation of 0.71.

ANALYTIC STRATEGY

The analyses for this dissertation are guided by the two overarching research questions delineated in Chapter 4. These questions, along with their respective sub-questions and hypotheses, are presented in Table 5.02 (see page 91). Chapter 6 is devoted to the first research question and explores descriptive information and Chapter 7 focuses on the second research question by testing specific hypotheses through multivariate models.

Bivariate Analyses

The first part of research question 1 relates to the use of CMC and the composition of online peer groups, which helps inform the nature of adolescent peer networks for this sample. As discussed in the previous chapter, knowing if respondents prefer online to offline communication and if it is easier to make friends online compared to offline determines the salience of CMC use among respondents. Furthermore, since recent research has found evidence that there are demographic differences in the use of online communication, bivariate differences across demographic characteristics are assessed through a series of t-tests.[20]

Given the descriptive nature of these analyses, most of full sample is utilized when answering these initial questions. Of the 3,641 respondents, 3,552 provide information on all items of interest, thus 89 respondents are omitted due to missing data.

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[20] For example, females are more likely to use CMC but less likely to talk to online-only peers (Bonetti et al., 2010). They are also more likely to self-disclose offline whereas males are more likely to self-disclose online (Valkenburg and Peter, 2009). Regarding race, some find no difference in the use of CMC (Lefebvre and Bornkessel, 2013), while others find that minorities are more likely to engage in risky online communication, such as sexting (i.e., sending sexually explicit material through CMC) (Wolfe et al., 2016).

The last part of this research question addresses the level of FTF and online peer delinquency present among respondents. These analyses examining peer delinquency omit additional cases due to respondents who selected NA on the online peer delinquency items. A total of 1,046 respondents selected NA across all items and were thus recoded as missing.[21] Since the peer delinquency items are the primary variables of interest in the multivariate analyses, respondents who are missing data on items included as covariates are also excluded from these descriptive analyses. As a result, an additional 819 respondents were omitted, meaning 1,776 respondents (49% of the total sample) provided complete information on all items of interest. Chapter 7 includes analyses detailing the differences between the full sample, the analytic sample, and the two sets of respondents removed due to missing data.

The bivariate analyses conclude by providing descriptive information on online and FTF peer delinquency, including the prevalence of each crime type. The overlap between FTF and online measures of general and crime-specific peer delinquency is included along with an examination of peer online self-disclosure about illegal activities. Finally, demographic differences are examined for descriptive purposes as well as informing future research.

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[21] However, there is evidence that some of these 1,046 respondents do have some online peers who are not regularly seen in person. Chapter 7 discusses how 331 of these respondents reported having some online friends who have *never* been met in person. As such, Chapter 7 explores alternative methods for recoding these respondents.

Multivariate Analyses

After exploring the basic associations, the second research question utilizes multivariate models to examine the effect of online peer delinquency on self-reported delinquency. Given the overdispersed, count-based measure of the general delinquency scale, a negative binomial regression is used to estimate the effect of peer delinquency on self-reported delinquency. Within this model, the regression coefficients can be interpreted as the difference in the log-odds of the expected count of different types of delinquent acts for a one-unit increase in the predictor variable. An exponential transformation of this coefficient yields the incident rate ratio (IRR), or the expected change in the count of different delinquent acts for a one-unit increase in the independent variable. Specifically, the IRR is calculated using the equation $(e^{\beta}-1) \times 100$. Since dichotomous indicators are used for each crime-specific outcome, these models use logistic regression to examine the effect of peer delinquency on self-reported violence, acquisitive crime, and substance use. Within these crime-specific models, the measures of peer delinquency are composed of the same behaviors that correspond to each outcome (e.g., peer violence is used to predict self-reported violence). Results of these models are interpreted by calculating the odds ratio, also derived from the exponential transformation of the coefficients. The odds ratio can be interpreted as the expected odds that a respondent engaged in the outcome given a one-unit increase in the predictor variable.

In both sets of regression models, all continuous independent variables are mean centered, meaning coefficients are interpreted as the expected value of the dependent variable on respondents who are average across covariates. Additionally, the research design meant that students were clustered within schools. Since there may be underlying

similarities between students within the same school, this means the assumption of independent observations has been violated. Thus, empirical models are estimated using robust standard errors through clustering by school.

Within Chapter 7, separate sections focus on each of the three hypotheses. The general delinquency model is tested first, followed by analyses focusing on each individual crime type. After these hypotheses have been fully explored, additional analyses are included that help determine the robustness of findings. These tests include focusing on item-specific models matching each type of peer delinquency with its corresponding outcome, dichotomizing the peer delinquency variables, and using different techniques for addressing missing data. The implications of these findings will be summarized in the final chapter.

Table 5.01 Descriptive Statistics (N = 3,641)

	N	Percent	Mean	SD	Min	Max	Missing (%)
Male	3633	46.57	----	----	0	1	8 (.22)
White	3614	37.65	----	----	0	1	27 (.74)
Black	3614	42.20	----	----	0	1	27 (.74)
Other Race	3614	20.14	----	----	0	1	27 (.74)
Single-parent household	3632	25.08	----	----	0	1	9 (.25)
Age	3633	----	13.15	0.76	10	16	8 (.22)
FTF General PD	3583	----	0.34	0.52	0	4	58 (1.59)
FTF Peer Violence	3589	----	0.34	0.56	0	4	52 (1.43)
FTF Peer Theft	3619	----	0.34	0.72	0	4	22 (.60)
FTF Peer Subs. Use	3568	----	0.28	0.62	0	4	73 (2.00)
Online Peer Delinquency	2287	----	0.27	0.52	0	4	1354 (37.19)
Online Peer Violence	2350	----	0.29	0.59	0	4	1291 (35.46)
Online Peer Theft	2351	----	0.26	0.63	0	4	1290 (35.43)
Online Peer Subs. Use	2419	----	0.34	0.70	0	4	1222 (33.56)
Prefer CMC	3621	----	2.35	1.03	1	5	20 (.55)
Make Friends Online	3616	----	2.65	1.14	1	5	25 (.69)
FTF/Online Overlap	3620	----	3.36	1.30	1	5	21 (.58)
Online-Only Friends	3610	----	2.05	1.24	1	5	31 (.85)
Peer Online Self-Disclosure	3615	----	0.37	0.76	0	4	26 (.71)
Poor Grades	3629	----	1.97	0.83	1	5	12 (.33)
School Disorder	3565	----	1.71	0.50	1	3	76 (2.09)
Neighborhood Disorder	3507	----	1.54	0.56	1	3	134 (3.68)
Impulsivity	3516	----	2.83	0.77	1	5	125 (3.43)
Temper	3560	----	2.94	1.11	1	5	81 (2.22)
Offline Parent Monitoring	3613	----	4.42	0.67	1	5	28 (.77)
Online Parent Monitoring	3605	----	3.14	1.01	1	5	36 (.99)
Delinquency	3327	----	1.12	1.72	0	13	314 (8.62)
Violence	3440	----	0.26	----	0	1	201 (5.52)
Acquisitive Crime	3517	----	0.17	----	0	1	124 (3.41)
Substance Use	3526	----	0.15	----	0	1	115 (3.16)

ABBREVIATIONS: PD = peer delinquency; Subs. = substance

Table 5.02 List of Research Questions and Hypotheses

RQ1: How do youth use CMC to connect and interact with peers?
    RQ1a: Do youth favor online to offline communication?
    RQ1b: To what degree are online groups similar/distinct from offline peer groups?
    RQ1c: How does exposure to online peer delinquency compare to exposure to FTF peer delinquency?

RQ2: Does online peer influence affect delinquency independently of what is viewed as traditional peer influence?
    H1:   Online peer delinquency has a direct effect on self-reported delinquency
    H2:   Online peer delinquency directly influences personal delinquency independently of face-to-face peer delinquency.
    H3a: Online peer delinquency exacerbates the association between FTF peer delinquency and personal delinquency
    H3b: Online peer delinquency diminishes the association between FTF peer delinquency and personal delinquency.

CHAPTER SIX: RESULTS OF BIVARIATE ANALYSES

USE OF CMC

Feelings toward Online Communication

Although the entire sample is comprised of digital natives, this does not imply uniform acceptance of CMC as a primary way to interact with peers. Regardless of the ubiquity of electronic devices, youth still spend a large portion of their day exposed to FTF peers, and disentangling adolescents' willingness to use CMC to communicate and befriend others sets the stage for how peer influence processes operate within the cyber context. If youth are unlikely to turn to the cyber context to communicate with their peers, this in turn will reduce the likelihood they are exposed to online peer delinquency. Figure 6.01 (see page 93) presents the results of two questions that capture adolescents' feelings toward online communication. In order to easily compare respondents who disagree and agree with each statement, this figure combines the categories of strongly disagree and disagree along with the categories of strongly agree and agree.

The left side of this figure depicts respondents' preferences for communicating online. Recall that prior work has demonstrated that about one in three youth prefer online to offline communication (Schouten et al., 2007). This does not appear to be the case among respondents in the current sample, as only around one in eight (12%) preferred communicating online rather than in person. A sizable portion (33%) felt impartial, while most respondents (56%) do not prefer online communication. Results further diverge from expectations when differentiating between those who strongly agreed or disagreed with these items. Almost a quarter of respondents (24%) strongly

Figure 6.01: Feelings toward Online Communication (N=3,552)
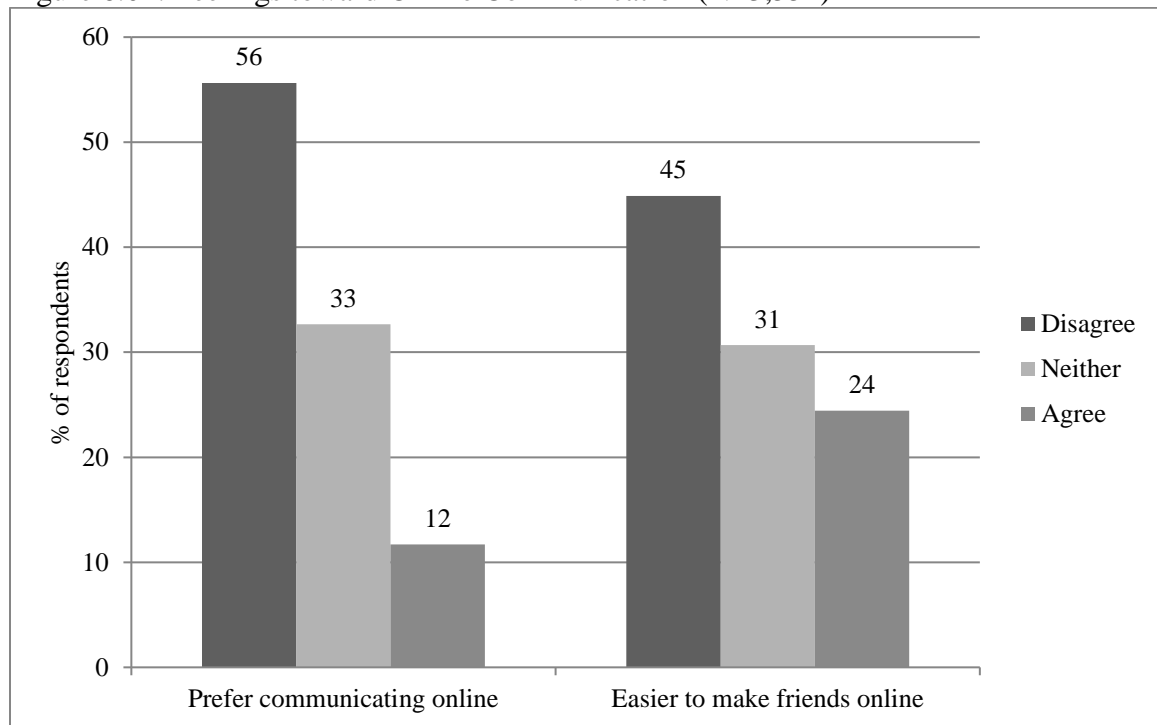
disagreed that they prefer communicating online, whereas only three percent strongly

agreed with this item. It appears the dominate preference for communication among

respondents is within traditional, offline contexts.

Moving beyond a general preference for CMC, the next item determines the

degree in which the cyber context enables friendship formation. Here, almost a quarter

(24%) of respondents indicated that going online has made it easier for them to make

friends, while 45 percent disagreed with this item.[22] As with before, almost one in three

(31%) did not feel one way or the other when responding to this question. It is unclear

whether going online makes it easier to befriend those peers within traditional contexts or

those who are distinct, online-only peers. For example, CMC could supplement

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[22] The survey question asks respondents how much they agree with the statement "going online has made it easier for you to make friends."

communication with those friends who are seen on a regular basis or it could aid in initiating a conversation with those who attend the same school or reside in the same neighborhood. Alternatively, it could lead to the development of new online friends that are completely distinct from those within traditional contexts.

Taking these items together, it appears that most respondents favor traditional contexts for communicating and friendship formation. The fact that a quarter of respondents report that going online has made it easier for them to make friends is perhaps the strongest evidence for how the cyber context influences the types of peers one befriends, although almost half of the sample disagreed that the cyber context helps them in this way. It is likely these findings vary across demographic characteristics, given there are gender, racial, and age-related differences in the use of online communication. In particular, the young age of the sample means that respondents may still be learning how to navigate CMC, especially since 20 percent are too young to use social media platforms like Facebook or Twitter. After exploring the composition of online and offline peer groups, additional analyses determine the level of variation among these different demographic characteristics.

Composition of Online and Offline Networks

Figure 6.02 (see page 95) presents two figures capturing different elements of overlap between online and offline friendship groups. The pie chart labeled "A" illustrates the proportion of in-person friends who are also online friends. Here we see that a vast majority of respondents reported some overlap, with 89 percent who indicated

Figure 6.02: Composition of Offline and Online Networks (N=3,552)

Proportion of In-person Friends who are Online Friends

None 11%
Few 18%
Half 14%
Most 36%
All 21%

A

Proportion of Online Friends Never Met in Person

All 7%
Most 9%
Half 8%
None 44%
Few 32%

B
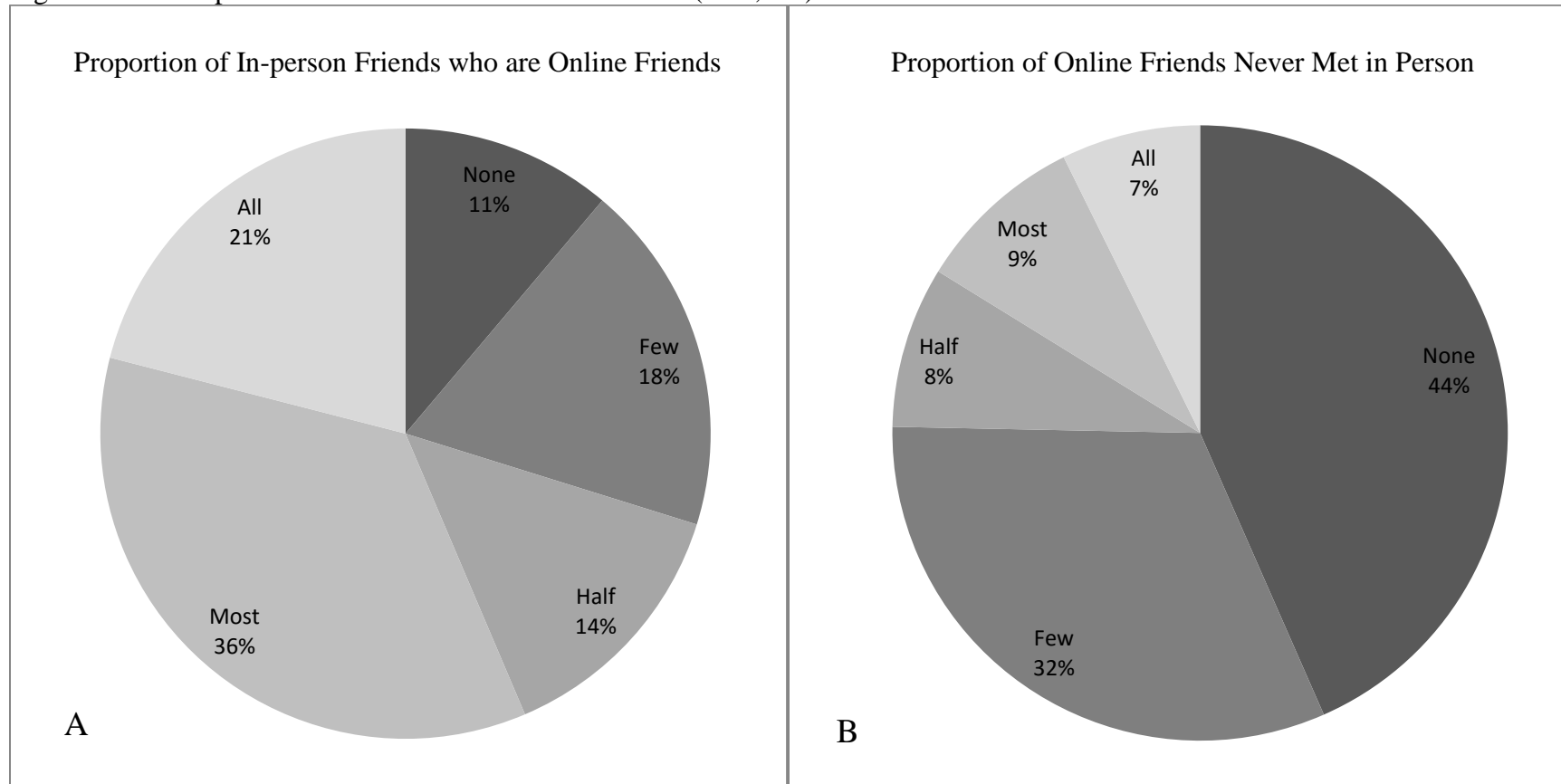
that some of their friends from traditional contexts are also friends within the cyber context, which further underscores the ubiquity of CMC. Over half of the sample (57%) reported that most or all of their FTF friends are also online friends, which demonstrates that most respondents experience context overlap where a large portion of in-person friends are also part of the cyber context. Around 21 percent reported complete overlap where all of one's FTF friends are communicated with online. Just 11 percent reported there is no overlap, meaning communication with their FTF friends only occurs in person.

The second pie chart, labeled "B," illustrates the proportion of online friends who have never been met in person. We see that over half of the sample (56%) reported having at least a few of these friends, with 16 percent who indicated that most or all of their online friends are online-only. A small minority of respondents reported that their entire online network is distinct from traditional contexts, with seven percent who reported that all of their online friends are online-only. An additional 40 percent reported that this was the case for a few or half of their online friends. In other words, most respondents do have online friends who have never been met in person, but very few have online networks comprised mostly of online-only friends. The cyber context appears to partially expand the social network of youth by allowing them to befriend distinct online peers, but among those who have these friends, most only have a few.

Chapter 1 included a conceptual model of traditional and online peer groups that was depicted Figure 1.01. This model presented a Venn diagram illustrating the separate and overlapping characteristic of online and offline peer groups. Using information from Figure 6.02, we could recreate the Venn diagram so that 11 percent of respondents' FTF

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friends are only friends within traditional contexts, and seven percent of respondents'

online friends are only friends within the cyber context, meaning 82 percent of the

sample falls within the middle. However, a single figure is perhaps an oversimplification

of how these peer groups are structured. For example, from Figure 6.02 we see that 21

percent of the sample report that all of their FTF friends are also online friends. A

crosstabulation of this measure with the online-only measure reveals that of this 21

percent, 54 percent report some online-only friends. In other words, among those whose

communicate online with all of their FTF peers, over half also have distinct online peers

who have not been met in person.

Furthermore, Figure 6.02 also demonstrates that 44 percent of the sample reported

having no distinct, online-only friends. Of this 43 percent, 81 percent reported having

some FTF friends who are online friends. This means that while just under half of the

sample have not befriended online-only friends, over four out of five of these respondents

communicate with some of their FTF friends through CMC. This finding, along with the

fact that 89 percent of the entire sample communicates with their FTF friends using

CMC, highlights that the cyber context appears to enhance communication between

individuals who have pre-established friendships that were formed outside of the cyber

context. While the conceptual model presented in Chapter 1 illustrates the basic overlap

between offline and online contexts, the blending of peer groups means multiple

diagrams would be necessary to illustrate the degrees of overlap among respondents who

have friends in both contexts. Future research focusing on the composition of peer groups

should continue to explore the nature of this overlap.

Demographic Differences Related to the Use of CMC

While the young age of respondents limits generalizability to other studies that include high school students, it provides an opportunity to explore demographic differences among those who grew up after electronic devices became ubiquitous. As the first research question aims to explore the degree to which youth use CMC for social interaction, additional analyses determine if there are differences in favoring CMC and the composition of online and offline networks across several demographic characteristics. Table 6.01 (see page 115) reports these differences across gender, race, and age.[23]

Drawing from Table 6.01, we see that relative to males, females are slightly more likely to agree that they prefer communicating online and are more likely to disagree that going online has made it easier for them to make friends. Females are also more likely to have FTF friends who are online friends and are more likely to not have any online-only friends. This means that males have less overlap between offline and online peers *and* are also more likely to have distinct, online-only friends. While most of these differences are relatively minor, gender does appear to influence preferences for CMC and the composition of online networks.

As for race, black respondents do not differ from white respondents regarding preferences for online communication, but they are less likely to agree that going online has made it easier for them to make friends. While there are no significant differences in

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[23] Comparisons were first made using a series of t-tests. However, this procedure assumes that the variable of interest is normally distributed in the two groups that are compared. All comparisons were replicated using the Wilcoxon-Mann-Whitney test, a non-parametric test that does not rely on distributional assumptions. Only one discrepancy was found and is noted in the text within Chapter 7.

the proportion of FTF friends who are online friends, black respondents are less likely to not have any online-only peers relative to white respondents. Findings slightly differ when considering those of other races. These respondents are more likely to prefer communicating online relative to whites, but do not differ in finding it easier to make friends online. Those of other races are less likely to report having no overlap between FTF and online peers, but like black respondents, they are less likely to not have any online-only peers relative to white respondents.

Finally, there also appears to be significant differences related to age. Younger respondents (i.e., the 702 respondents who are 12 years old and younger) are less likely to prefer communicating online, more likely to disagree that going online makes it easier to make friends, more likely to have no FTF peers who are online peers, less likely to have most or all of their FTF peers as online friends, and more likely to have no online-only peers compared to older respondents. Across all of these items, it is clear younger respondents do not prefer and use CMC as much as older respondents. Those who are older (i.e., the 1,157 who are 14 and older) are also significantly different across all of these items in the opposite direction, except for preferring online to offline communication. It appears as though when youth get older they become more open to communicating with friends online, more open to making friends online, have more substantial integration between offline and online contexts, and have more distinct, online-only peers.

These age-related findings may explain the overall lack of favoring the cyber context for communicating and befriending others. Due to the Children Online Privacy Protection Act, 20 percent of the sample cannot legally use some social media platforms

like Facebook and Twitter because they are 12 years old or younger. Experiences with

online communication are relatively limited for these respondents, and the 48 percent of

the sample who are 13 years old are only beginning to navigate the full cyber context.

Moreover, while these differences may simply be due to changing preferences as

adolescents age, it is also possible that other factors contribute to these findings, such as

the loosening of parental restrictions on electronic devices. Those who are 14 and older

are significantly less likely to have online parental monitoring ($\bar{x}$ = 2.34; full sample $\bar{x}$ =

3.14). As adolescents gain more online freedom as they age, their preferences for CMC

will likely increase.

As a whole, these findings suggest that online communication is commonly used

among respondents. Even among the youngest respondents who are the least likely to

have FTF friends who are online friends, 86 percent still have some of this friendship

overlap, meaning they communicate online with their FTF friends. However, most

respondents do not favor the cyber context, and there are demographic differences in the

preference and use of online communication. Those who prefer to communicate online

tend to be female, of other races, and older. Those who find it easier to make friends

online tend to be white, although females and those who are younger tend to be more

likely to disagree with this item. These same individuals are also more likely to report

that most or all of their FTF friends are online friends, whereas those of other races are

more likely to report than none of their FTF friends fit this criterion. There were no

significant differences among those with most or all of their online friends having never

been met in person, although females and younger respondents are more likely to report

none of their online friends fit within this category, whereas non-white respondents and

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those who are older are less likely to report this is the case for their online friends. Future work should continue to explore these demographic differences as partiality toward communicating online and the overall integration of online and offline peer groups could potentially moderate the peer-delinquency association within the cyber context.

EXPOSURE TO PEER DELINQUENCY

Although the preceding analyses utilized the full sample, redirecting focus toward peer delinquency requires the removal of a substantial number of respondents since the multivariate analyses focus on those who report having online friends who are not regularly seen in person. While this ignores the influence from close FTF friends who are communicated with online, this restriction enables the analyses to focus on online peer delinquency that should be distinct from what would be found in traditional contexts. Figure 6.03 illustrates the percentages of the 1,776 respondents who indicated they had been exposed to each type of peer delinquency both online and offline.

The most common type of peer delinquency is hitting someone with the idea of hurting them, with 39 percent of the sample exposed FTF while 27 percent were exposed online. The least common among both contexts is attacking someone with a weapon. Only seven percent were exposed FTF and eight percent were exposed online. These two types of violence exhibit different patterns across contexts, as the less severe form of hitting is more common among FTF friends, but the more severe form of attacking others with a weapon is about the same online compared to FTF. The second most common type of peer delinquency is theft. Similar to hitting, exposure to this form of peer delinquency exhibits clear differences across contexts. Around 25 percent were exposed FTF and just

Figure 6.03: Exposure to FTF and Online Peer Delinquency (n = 1,776)
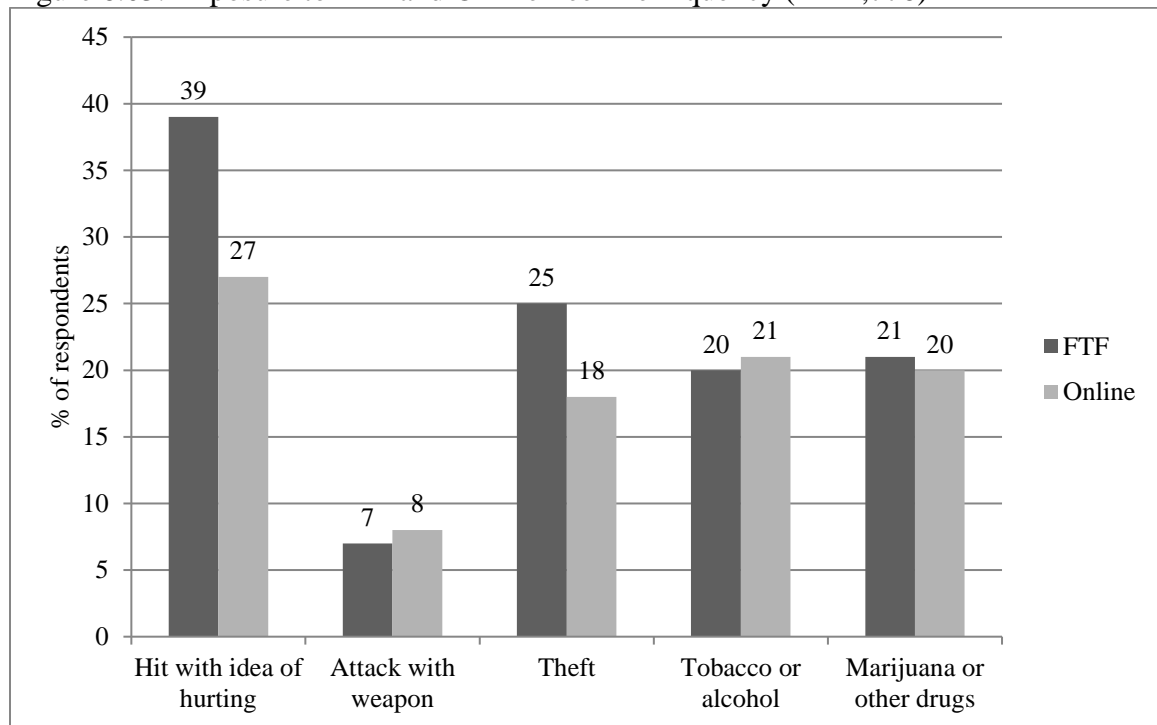
18 percent were exposed online. For substance use there appears to be minimal differences in exposure between contexts: around 21 percent were exposed to marijuana and other drugs FTF and 20 percent were exposed online. The opposite holds true for peer alcohol and tobacco use where online exposure is slightly higher.

Table 6.02 (see page 116) provides a correlation matrix of the FTF and online peer delinquency variables in order to examine the bivariate associations between peer delinquency from different contexts. Overall there are moderate to strong associations between each FTF peer delinquency item and its corresponding behavior in the cyber context, although the strongest associations are for substance use and theft. Correlations between specific items range from a low of 0.56 for peer hitting and a high of 0.67 for peer marijuana/other drugs (p < .05). A similar pattern emerges in both contexts between

substance use items that are highly correlated within the same context, both of which represent the largest correlations among all items. For example, FTF marijuana/other drug use is strongly correlated with FTF alcohol/tobacco use (0.75) and online marijuana/other drug use is strongly correlated with online alcohol/tobacco use (0.77). The corresponding correlations between contexts are 0.55 between online marijuana/other and FTF alcohol/tobacco and 0.54 among online alcohol/tobacco and FTF marijuana/other. The fact that all of the correlations in Table 6.02 are statistically significant suggests these items have the same underlying factor. The strongest correlations indicate that those who are exposed to FTF peer delinquency may likely be exposed to the same behaviors online, although further analyses are needed to explore the degree of overlap between measures.

Overlap of Exposure to Online and FTF Peer Delinquency

The correlations between FTF and online peer delinquency suggests that respondents are exposed to peer delinquency within one context are likely to be exposed to the same type of peer delinquency in the other context. In order to further explore these associations, the overlap of peer delinquency between contexts is examined to demonstrate the degree of uniqueness to each context. This overlap is first examined using a general measure of peer delinquency followed by crime-specific models.

Figure 6.04 (see page 104) focuses on the overlap between exposure to any FTF peer delinquency and any online peer delinquency. While Figure 6.03 illustrated the prevalence of exposure to individual, crime-specific forms of peer delinquency, here an aggregate measure is used reflecting those respondents exposed to any of the five types of

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Figure 6.04: Overlap of Exposure to Any Face-to-Face Peer Delinquency and Any Online Peer Delinquency (n=1,776)

Face-to-Face
Peer Delinquency
(53% of sample
exposed)

29%   63%   8.3%

Online
Peer Delinquency
(41% of sample
exposed)

(58% of sample exposed to either type of peer delinquency)
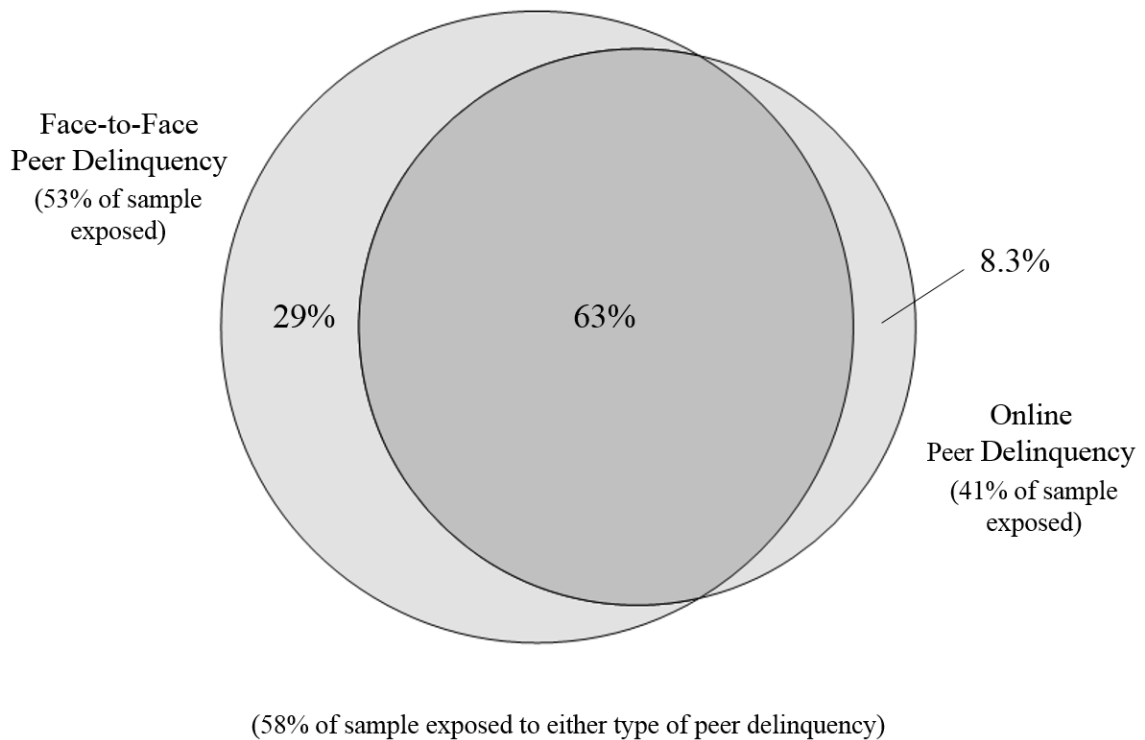
peer delinquency, meaning dichotomous measures are used for online and FTF peer delinquency. We see that 53 percent of the sample was exposed to any FTF peer delinquency and 41 percent of the sample was exposed to any online peer delinquency. Taken together, 58 percent of the sample was exposed to *either* FTF or online peer delinquency. Figure 6.04 illustrates the overlap among this portion of the sample.

Several important conclusions can be drawn from this figure, but perhaps most striking is the large overlap between contexts: just under two-thirds of those exposed to peer delinquency are exposed both face-to-face and online. Since the measure of online peer delinquency captures those peers not regularly seen in person, this overlap means

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that most respondents who were exposed to peer delinquency within traditional contexts were also exposed to additional peer delinquency from the cyber context. Fewer than one third of the 58 percent of respondents who were exposed to peer delinquency were only exposed to traditional, FTF peer delinquency. Additionally, 8.3 percent of these respondents were only exposed online. Using Bayes' theorem related to conditional probabilities, the probability someone was exposed to online peer delinquency given they were exposed to FTF peer delinquency is 0.69.[24] In other words, we can assume that about two out of three respondents who are exposed to peer delinquency within traditional contexts are also exposed online. Looking at this from the other context, the probability someone was exposed to FTF peer delinquency given they were exposed to online peer delinquency is 0.88.[25] This means those who are exposed to peer delinquency within the cyber context are more likely to have peer delinquency in both contexts compared to those who are exposed to FTF peer delinquency. As a whole, context overlap is much more common than unique exposure to peer delinquency within a specific context.

Figure 6.05 (see page 106) extends the findings from Figure 6.04 by looking at the degree of exposure to specific forms of peer delinquency. The first column provides the prevalence of exposure to each crime-specific type of peer delinquency among those exposed either FTF or online. In the second column, the numbers in parenthesis refer to the percentage of the total population who were exposed to that particular type of peer

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[24] Bayes theorem states that $p(A|B) = (p(B|A) * p(A)) / p(B)$. Here, A refers to online peer delinquency and B refers to FTF peer delinquency. Thus, the probability of online peer delinquency given FTF peer delinquency $= ((0.88 * 0.41) / 0.53) = 0.69$. Alternatively, $p(B|A) = (p(A|B) * p(B)) / p(A)$.
[25] Here, $p(B|A) = ((0.69 * 0.53) / 0.41) = 0.88$

Figure 6.05: Overlap of Exposure to Peer Delinquency across Crime Types (n=1,776)

Peer Hitting Others
(42% of sample exposed)

FTF PD (39%)

37%   54%   9.3%

Online PD (27%)

Peer Attack w/ Weapon
(11.5% of sample exposed)

FTF PD (7.4%)

28%   37%   35%

Online PD (8.3%)

Peer Theft
(30% of sample exposed)

FTF PD (25%)

40%   43%   17%

Online PD (18%)

Peer Alcohol/Tobacco
(27% of sample exposed)

FTF PD (20%)

21%   52%   27%

Online PD (21%)

Peer Marijuana/Other
(27% of sample exposed)

FTF PD (20%)

24%   55%   20%

Online PD (21%)
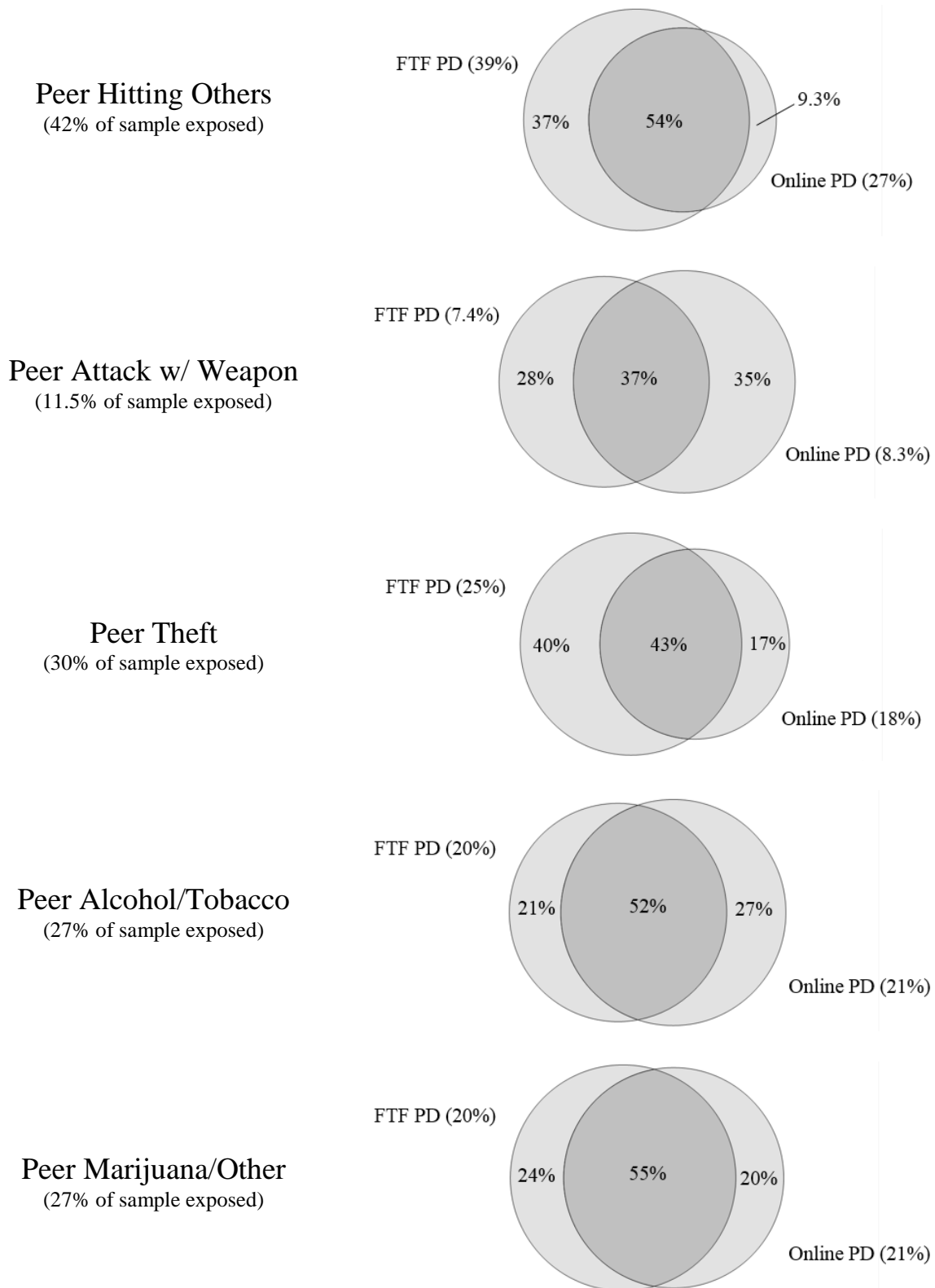
ABBREVIATIONS: PD = peer delinquency. *NOTES:* Percent in parentheses refer to percentage of total sample

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delinquency, and the Venn diagram refers again to the overlap between contexts among those exposed to either form. For example, around 42 percent of the sample were exposed to peers hitting others and as illustrated in Figure 6.03, 39 percent of the sample were exposed FTF and 27 percent were exposed online. Among the 42 percent exposed to peer hitting in general, 54 percent were exposed in both contexts, whereas a little over one-third were exposed only FTF. Similar to the general measure of peer delinquency, around 9 percent of those exposed to peer hitting were only exposed online. Once again, of those exposed to this type of peer delinquency, most respondents are exposed both offline and online, while a small minority experience distinct, online-only exposure. Somewhat similar findings emerge for peer theft, but the degree of unique online exposure is higher with about 17 percent of those exposed to peer theft only receiving exposure from online friends.

The overlap in peer delinquency between contexts is a bit less pronounced when focusing on attacking others and substance use. Among the 11.5 percent of the sample exposed to peers attacking others with weapons, only about 37 percent were exposed both FTF and online, with 35 percent only being exposed through online friends. In fact, more respondents were exposed online-only compared to FTF-only, as just 28 percent of those exposed were only exposed within traditional contexts. Using Bayes theorem, the probability someone is exposed to online peers attacking others given they have FTF peers who do the same is 0.57; however, the probability is 0.51 for FTF peers attacking others given someone was exposed to similar online peers.[26] This means it is slightly

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[26] Here, p(A|B) = ((0.51 * 0.083) / 0.074) = 0.57 and p(B|A) = ((0.57 * 0.074) / 0.083) = 0.51

more likely to be exposed to both types of peer violence if one is exposed to FTF peer violence, which is counter to what was observed for general peer delinquency, hitting, and theft. This same finding is reflected for peer alcohol and tobacco use, although the degree of overlap is more substantial as just over half of the 27 percent exposed to this form of peer delinquency were exposed in both contexts. Peer marijuana and other drug use exhibits a similar overlap trend, but the degree of unique exposure is more prominent FTF (24%) compared to online (20%). When considering the substance use items together, between one-fifth and one-fourth of those exposed to substance-using peers are only exposed online. The conditional probabilities are also similar across these items: the probability one is exposed to online peer alcohol/tobacco and marijuana/other drugs given they are exposed FTF is about 0.70 for both items, and the probability one is exposed FTF given they are exposed online is about 0.66 for alcohol/tobacco and about 0.73 for marijuana/other drugs.

Overall it appears that most respondents who are exposed to peer delinquency have friends both in person and online who endorse such acts. Even though it is more likely for respondents to be exposed to FTF peer delinquency, most of those who are exposed offline also receive additional peer delinquency online. This means that, for the most part, the cyber context does not enable exposure to new types of peer delinquency. Instead, it enhances the peer delinquency of those who have already been exposed offline. However, there is crime type variation where it appears that having friends who attack others with weapons and use illegal substances is just as common, if not more common, online compared to offline. Perhaps the disinhibition and increased opportunity of connecting with others associated with online communication allows for individuals to

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discuss these more sensitive topics, which have the lowest prevalence among the types of FTF peer delinquency. This has strong implications for criminological research since the cyber context disproportionally increases exposure to the more severe, and less common, types of peer delinquency.

Peer Online Self-Disclosure

So far the analysis of online peer delinquency has focused on the notion of cyberspace as a context that provides exposure to peer delinquency from a distinct group of peers who are not regularly seen in person. The cyber context also acts as a mechanism with the potential to alter the content of communication between those who use CMC. While these data are unable to disentangle factors contributing to online self-disclosure such as disinhibition or enhanced opportunities, it can explore the degree in which FTF friends initially disclose criminal behavior online rather than in person.

Figure 6.06 (see page 110) displays the proportion of respondents' FTF friends who "posted about illegal activities online that [were] not found out about in person." This figure illustrates that just over a quarter (26%) of respondents indicated they have at least some FTF friends who initially disclose illegal activities online. It is far less common to have half or more of one's friends who do this, as only eight percent report this proportion of friends who use online communication to divulge their criminal activity.

To be clear, in order to align with previous analyses related to peer delinquency, Figure 6.06 uses the analytic sample which is restricted to those who have at least a few

Figure 6.06: Proportion FTF Friends Who Initially Disclose Illegal Activities Online (n=1,776)
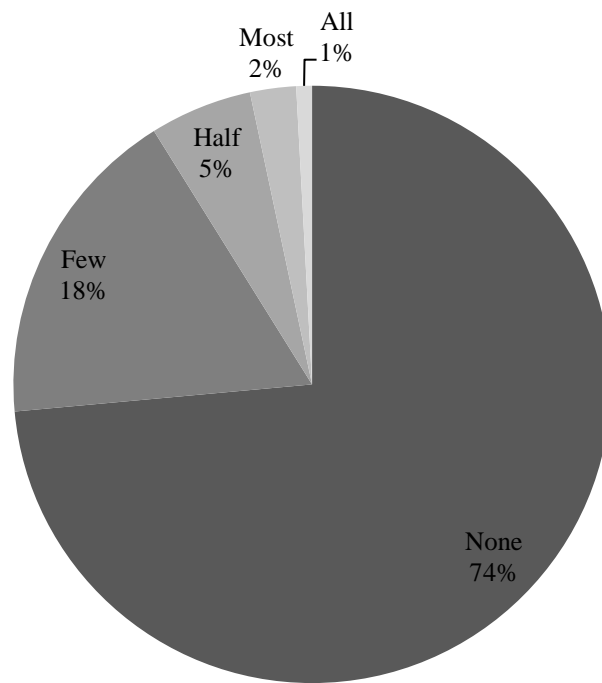
online peers who are not regularly seen in person. The findings are nearly identical when using the full sample, where 25 percent of all respondents reported having at least a few friends who initially disclose their delinquency using online communication. Additional research is needed to disentangle not only why youth chose to self-disclose, but how this influences perceptions of peer delinquency. For example, if a close FTF friend only discusses their substance use via CMC, would a respondent report that their FTF friend uses illegal substances, or would this be captured in a measure of online peer substance use? Would the same friend be reflected in both measures? It was for this reason the current study operationalized online peer delinquency to refer to those online friends who

are not regularly seen in person, which should be distinct from close, FTF friends. Future work will need to explore why one in four respondents have peers who use cyberspace as context to initially disclose their illegal activities and the discussion chapter offers recommendations to guide this research.

Demographic Differences Related to Peer Delinquency

Comparing peer delinquency across demographic characteristics further illustrates the similarities and differences in exposure to both online and offline contexts. As Table 6.03 demonstrates (see page 117), the only statistically significant difference between males and females is that females are more likely to have substance using friends. This finding holds true when looking at both FTF and online friends. Females are also marginally more likely to be exposed to any online peer delinquency using a general measure; however, when looking at theft and violence, they are less likely to be exposed. Across both contexts, males have higher rates of exposure to peers who attack others with weapons. Males are also marginally more likely to have FTF peers who endorse theft, a finding not supported when considering online peers who endorse the same behavior. While the gendered differences related to peer theft are not significant when considering online peers, males do have a higher prevalence of exposure to online peer theft. Overall it appears the same trends in differential exposure to peer delinquency across gender are the same online as they are offline.

Racial differences in exposure to peer delinquency are much more pronounced: across both contexts and all crime types, black respondents and those of other races have higher rates of peer delinquency compared to white respondents. The only difference that

was not statistically significant was among black respondents' FTF peer alcohol and tobacco use. While these racial differences are evident across all crime types, they are most pronounced for peer hitting, where the prevalence rate is 70 percent higher for blacks and 63 percent higher for those of other races when considering FTF friends. When looking at online friends, the rate of exposure to peer hitting is about twice as high among these respondents.

There are also significant age-related differences, where those who are younger (i.e., age 12 or younger) generally have lower prevalence rates of exposure to peer delinquency across both contexts, although there are more statistically significant differences within the cyber context. The starkest differences are for substance use, where those who are younger are significantly less likely across both contexts to have substance using peers. The only type of peer delinquency in which there are no age-related differences is for hitting. While this finding holds true for both contexts, the prevalence rates for FTF peers are nearly identical, whereas differences are more prominent within the cyber context even though they are not statistically significant.

Table 6.03 also looks at differences in respondents' peer online self-disclosure, that is, those who answered that some of their FTF friends posted online about illegal activities not found out about in person. Exposure to these types of friends does not appear to vary by gender, although there are racial and age-related differences. Black respondents and those of other races are more likely to have these FTF friends who disclose online, as about one out of three indicated some peer online self-disclosure but around 17 percent of white respondents reported the same. As for age, younger respondents were less likely to be exposed (22%), whereas older respondents were more

likely (31%) to have FTF peers who self-disclose online. These rather large differences across race and age provide some indication that respondents' friends differ in their willingness to initially share information about illegal activities when online, and future research should not only explore if this is a product of opportunity or disinhibition, but why there is variation across these demographic characteristics.

CONCLUSION

This chapter explored the degree to which respondents favor online communication, the composition of online and offline networks, and the level of exposure to peer delinquency within the traditional and cyber context. These findings indicate that while the use of CMC may be common, most respondents still rely heavily on traditional means of communication. One's online friends are typically the same friends found within traditional contexts, although most do have at least a few online-only friends who have not been met in person. Respondents are generally more likely to be exposed to peer delinquency from FTF friends, but a majority of those with FTF peer delinquency also have online peer delinquency. Preferences for online communication and friendship group composition vary by sex, race, and age, but the demographic differences related to peer delinquency are the mostly the same online as they are offline.

The analyses in this chapter sought to answer the overarching question of how youth use CMC to connect and interact with their peers. These results suggest that the cyber context mostly enhances social processes that take place within traditional contexts. While a non-trivial portion of the sample have entire online networks made up of online-only friends, it is more common for youth to have online networks comprised of FTF

friends. Likewise, few respondents experience online peer delinquency in the absence of

FTF exposure. Moreover, it appears the cyber context may amplify peer delinquency

among those who are exposed offline, as between one half and two-thirds of those who

have FTF peer delinquency are exposed to the same general and crime-specific types of

peer delinquency among online friends.

Table 6.01: Summary of CMC Use and Group Composition Findings across Demographic Characteristics

	Full Sample (n= 3,552)	Sex		Race/Ethnicity			Age		
		Female (n=1896)	Male (n=1656)	White (n=1332)	Black (n=1508)	Other (n=712)	12 or younger (n=702)	13 (n=1693)	14 or older (n=1157)
	%	%	%	%	%	%	%	%	%
Prefer CMC									
Disagree	56	56	55	57	56	54	58	55	55
Agree	12	13	10*	10	12	13*	9*	12	13
Make friends online									
Disagree	45	48	42*	44	48*	40	50*	46	40*
Agree	24	24	25	27	23*	23	22	26	24
FTF/Online Overlap									
No FTF are Online	11	12	10*	13	11	9*	14*	12	8*
Most/All FTF are Online	57	58	55*	55	58	55	48*	57	61*
Online-Only Friends									
No Online-Only	43	46	41*	49	40*	41*	48*	43	41*
Most/All Online-Only	16	15	17	16	16	16	17	16	17

NOTES: All demographic variables are dichotomous measures with female as the referent group for sex and white as the referent group for race/ethnicity. For age, those respondents whose ages are outside of the specified age group serve as the referent (e.g., for 12 and younger, those who are 13 and older are the referent group).

* refers to a mean value significantly different than the referent group at $p < .05$

Table 6.02: Correlation Matrix for FTF and Online Peer Delinquency (n=1,776)

	FTF theft	FTF attack w/ weapon	FTF hit	FTF alcohol/ tobacco	FTF marijuana/ other	Online theft	Online attack w/ weapon	Online hit	Online alcohol/ tobacco	Online marijuana /other
FTF theft	1.00	----	----	----	----	----	----	----	----	----
FTF attack w/ weapon	0.41	1.00	----	----	----	----	----	----	----	----
FTF hit	0.39	0.43	1.00	----	----	----	----	----	----	----
FTF alcohol/tobacco	0.36	0.41	0.40	1.00	----	----	----	----	----	----
FTF marijuana/other	0.40	0.43	0.39	0.75	1.00	----	----	----	----	----
Online theft	0.67	0.33	0.36	0.35	0.38	1.00	----	----	----	----
Online attack w/ weapon	0.40	0.62	0.42	0.41	0.43	0.49	1.00	----	----	----
Online hit	0.36	0.42	0.56	0.37	0.38	0.43	0.57	1.00	----	----
Online alcohol/tobacco	0.34	0.35	0.35	0.61	0.54	0.47	0.53	0.48	1.00	----
Online marijuana/other	0.33	0.34	0.37	0.55	0.67	0.50	0.53	0.45	0.77	1.00

NOTES: all correlations significant at $p < .05$

Table 6.03: Exposure to Peer Delinquency across Demographic Characteristics among the Analytic Sample

	Analytic Sample (n=1,776)	Sex		Race/Ethnicity			Age		
		Female (n=926)	Male (n=850)	White (n=668)	Black (n=752)	Other (n=356)	12 or younger (n=338)	13 (n=857)	14 or older (n=581)
	%	%	%	%	%	%	%	%	%
FTF Peer Delinq.									
Any	53	54	52	42	60*	60*	50	52	57*
Hit	39	38	39	27	46*	44*	39	38	39
Attack w/ weapon	7	6	9†	4	9*	10*	5†	7	9†
Theft	25	23	27†	18	28*	30*	23	23	28*
Alcohol or tobacco	20	23	16*	16	19	26*	13*	19	25*
Marijuana or other	21	24	19*	13	25*	29*	13*	20	28*
Online Peer Delinq.									
Any	41	43	39†	30	47*	49*	33*	42	45*
Hit	27	27	26	16	34*	31*	23	27	28
Attack w/ weapon	8	7	10†	4	11*	10*	4*	9	10*
Theft	18	17	19	13	21*	22*	14*	18	20†
Alcohol or tobacco	21	23	18*	17	21*	29*	14*	20	27*
Marijuana or other	20	22	18*	13	23*	29*	13*	19	26*
Peer Online Self-disclosure	26	27	26	17	33*	30*	22*	25	31*

ABBREVIATIONS: Delinq. = Delinquency
NOTES: All demographic variables are dichotomous measures with female as the referent group for sex and white as the referent group for race/ethnicity. For age, those respondents whose ages are outside of the specified age group serve as the referent (e.g., for 12 and younger, those who are 13 and older are the referent group).
* refers to a mean value significantly different than the referent group at $p < .05$ and † refers to $p < .10$

CHAPTER SEVEN: RESULTS OF MULTIVARIATE ANALYSES

This chapter looks at the consequences of exposure to online and FTF peer delinquency by empirically evaluating three hypotheses. Within each section, analyses first focus on peer and self-reported general delinquency followed by crime-specific models. After all three hypotheses have been tested, additional analyses tackle issues related to different modeling strategies and methods of addressing missing data. The implications of these findings are discussed in the final chapter.

HYPOTHESIS 1: DIRECT EFFECT OF ONLINE PEER DELINQUENCY

The first hypothesis predicts the direct effect of online peer delinquency on self-reported delinquency. Model 1 in Table 7.01 (see page 139) presents a baseline bivariate negative binomial regression of general delinquency on exposure to online general peer delinquency. Consistent with expectations, this model demonstrates a direct, statistically significant effect. Specifically, a one-unit increase in the online general peer delinquency scale is associated with a 206 percent increase, $(e^{1.12}-1) \times 100$, in the expected count of different delinquent acts.

Model 2 incorporates demographic control variables which attenuates the effect of online peers, reducing the magnitude of the log odds by just over six percent $((1.12-1.05/1.05) \times 100))$. Race emerges as a significant predictor of delinquency, as black respondents and those of other races report engaging in more delinquency acts. Of note, the inclusion of these control variables provides a significantly better fit to the data,

suggesting these factors explain variation in self-reported delinquency beyond exposure

to online peer delinquency (χ^2 = 33.4; df = 5).[27]

Model 3 adds to the previous analyses by controlling for other well-established

predictors of crime. Although the magnitude of the effect of online peer delinquency has

been reduced by just over 54 percent, this variable remains significant. Here, a one-unit

increase in general online peer delinquency is associated with a 97 percent increase in the

expected count of different delinquent acts (b = 0.68, p < .001). Race remains significant

while neighborhood disorder and temper emerge as predictors of delinquency.[28] Both

types of parental monitoring serve as protective factors that reduce the expected rate of

delinquency. The inclusion of online parental monitoring represents an additional form of

parental control largely unaccounted for in research examining offline crime. While a

one-unit increase in the traditional form of parental monitoring is associated with a 20

percent decrease in the expected number different delinquent acts, a one-unit increase in

online parental monitoring is associated with a 16 percent reduction, even when

controlling for the offline counterpart. A comparison of likelihood functions indicates

that including these risk factors provides a better fit to the data (χ^2 = 230.4; df = 7) and

multicollinearity does not appear to be an issue with these covariates as the average

variance inflation factor is 1.48 (maximum VIF is 2.25). As a whole, these findings

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[27] Model fit was calculated by subtracting the log likelihood of the restricted model from the full model and then multiplying by -2. The product conforms to a χ^2 distribution and the degrees of freedom are equal to the difference in the number of covariates between the full and restricted model. A significant χ^2 value indicates that the full model provides a better for than the restricted model.
[28] When temper is excluded from these models the effect of impulsivity is statistically significant. This is also the case for the following crime-specific analyses.

support the first hypothesis that online peer delinquency has a direct effect on self-reported delinquency.

Table 7.02 (see page 140) replicates Models 1 and 3 from Table 7.01 and focuses on the effects of exposure to online peer violence, theft, and substance use separately using logistic regressions. In each model the direct effect of crime-specific online peer delinquency remains significant, even after controlling for demographic characteristics and criminogenic risk factors. A one-unit increase in online peer violence is associated with a 235 percent increase in the odds of self-reported violence ($b = 1.21$, $p < .001$); a one-unit increase in online peer theft is associated with a 118 percent increase in the odds of self-reported acquisitive crime ($b = 0.78$, $p < .001$); and a one-unit increase in online peer substance use is associated with a 197 percent increase in the odds of self-reported substance use ($b = 1.09$, $p < .001$).

Diverging from the general delinquency models, these crime-specific outcomes are associated with a different set of demographic and risk factor variables. For example, none of the demographic characteristics are associated with self-reported violence and neighborhood disorder is only marginally significant. For acquisitive crime, those who are older and more impulsive are more likely to commit these acts while race is only marginally significant. The results of the substance use models are perhaps most distinct. Gender and age are both significant predictors of this outcome, whereby female and older respondents are more likely to use illegal substances, and race is again marginally significant. Living in a single-parent household and having poor grades are associated

with lower odds of substance use, a finding specific to this particular outcome.[29] The only

consistent findings when looking at risk factors across crime-specific models is that

temper and both forms of parental monitoring are significantly associated with

delinquency, whereby those who have higher levels of anger are more likely to be

delinquent and those with higher levels of offline and online parental monitoring are less

likely to be delinquent.

The results from Tables 7.01 and 7.02 demonstrate that online peer delinquency

has a direct effect on self-reported delinquency using both general and crime-specific

measures. The effect of peer violence appears strongest while the effect of peer theft

appears weakest across these models. It also appears that different demographic

characteristics and risk factors are associated with different types of crime, further

justifying the inclusion of crime-specific models that tease apart the different types of

delinquent peer influence.

HYPOTHESIS 2: EFFECT OF ONLINE AND FTF PEER DELINQUENCY

The second hypothesis addresses a limitation of prior work that does not control

for FTF peer delinquency when examining the effect of online peer delinquency. Chapter

6 revealed there is substantial overlap in peer delinquency between contexts and

including offline friends in analyses is necessary since individuals might befriend online

friends who resemble their offline friendship networks.[30] As others have pointed out,

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[29] These are the only two covariates not significantly correlated with substance use and neither are significant when other control variables are removed from the model.

[30] The assumption that the measure of online peer delinquency is distinct from FTF peer delinquency is contingent on respondents not including friends they rarely see as part of their current group of FTF friends.

studying online peers in isolation runs the risk of overestimating the effect of online peer influence (McCuddy and Vogel, 2015a; 2015b). Although analyses are unable to explicitly address selection, incorporating a measure of FTF peer delinquency in regression models is an important first step in determining if the effect of peer delinquency is driven by peers found within traditional, offline contexts.

Model 1 in Table 7.03 (see page 141) replicates the initial model demonstrating the direct effect of online general peer delinquency on self-reported delinquency, while Model 2 incorporates a measure of FTF peer delinquency. The effect of online peer delinquency is substantially attenuated; however, it remains statistically significant. This indicates that the association between online peer delinquency and self-reported delinquency is not spurious as it relates to FTF peer delinquency, meaning the effect of online peer delinquency cannot be solely attributed to the similarity between FTF and online peers. In this model, a one-unit increase in online peer delinquency is associated with a 79 percent increase in the expected count of different delinquent acts ($b = 0.58$, $p <$ .001). For the sake of comparison, Model 3 replicates earlier results illustrating the effect of online peer delinquency after controlling for demographic characteristics and risk factors. Whereas the inclusion of control variables reduced the size of the coefficient by about 39 percent ((.68-1.12)/1.12), just including FTF peer delinquency, without controls, reduced the size by about 47 percent ((.58-1.12)/1.12).

Model 4 represents the complete model which includes all control variables and all forms of peer delinquency. Both online and FTF peer delinquency remain statistically significant in this model. After accounting for FTF peer delinquency, demographic characteristics, and criminogenic risk factors, a one-unit increase in online peer

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delinquency is associated with a 45 percent increase in the expected count of different

delinquent acts ($b = 0.37$, $p < .001$). This is compared to a 55 percent increase for a one-

unit increase in FTF peer delinquency on the same outcome ($b = 0.44$, $p < .001$). The

ambiguity surrounding whether online peer delinquency captures attitudes or behaviors

means this item is not directly comparable to FTF peer delinquency, as this latter item

specifically focuses on behaviors. As such, significant differences between the

coefficients are not assessed. Similar to the main models presented in the first hypothesis,

race remains a significant predictor of delinquency along with neighborhood disorder and

temper, and both types of parental monitoring remain significant protective factors

against delinquency. Unlike the initial models, single-parent household also emerges as a

protective factor when controlling for FTF peer delinquency.[31]

Table 7.04 (see page 142) estimates models 2 and 4 from Table 7.03 except these

models use logistic regression and focus on specific types of peer and self-reported

delinquency. Once again, across all outcomes, support is found for the second hypothesis.

When examining models including all control variables, the effect of online peer

delinquency remains significant across outcomes: a one-unit increase in online peer

violence is associated with a 90 percent increase in the odds of violence ($b = 0.64$, $p <$

.001); a one-unit increase in online peer theft is associated with a 70 percent increase in

odds of acquisitive crime ($b = 0.53$, $p < .001$); and a one-unit increase in online peer

substance use is associated with a 99 percent increase in the odds of using illegal

substances ($b = 0.69$, $p < .001$). Importantly, all of these models control for FTF peer

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[31] This item is not significant in subsequent analyses (described on page 126). Here, $p = 0.044$.

delinquency, suggesting that online peer delinquency matters independently of this traditional measure. The effects of covariates within these models are largely similar to the preceding crime-specific analyses, with the exception of race and age. Black respondents are now more likely to engage in acquisitive crime and substance use, and age is only marginally associated with acquisitive crime.[32]

HYPOTHESIS 3: MODERATING EFFECT OF ONLINE PEER DELINQUENCY

Since the Venn diagrams revealed that most respondents who are exposed to peer delinquency are exposed in both the cyber and traditional contexts, it is especially important to see how these two criminogenic factors operate together to influence delinquency. The previous chapters provided two different explanations for how online peer delinquency could moderate the association between FTF peer delinquency and self-reported delinquency. Drawing from the principle of differential receptivity, online peers may tip the scales of associations by providing access to additional peers who offer additional definitions and reinforcement supportive of delinquency. If this is the case then online peers should strengthen the influence of FTF peers by exacerbating the association between FTF peer delinquency and self-reported delinquency (i.e., the interaction should be positive). Here we would expect individuals who are exposed to both FTF and online peer delinquency to have higher counts of self-reported delinquency relative to those who are only exposed to FTF peer delinquency.

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[32] For hypothesis 1, Black respondents were marginally more likely to engage in acquisitive crime and substance use ($p = 0.051$ for both models).

On the other hand, the cumulative effect of peer delinquency in both contexts may be redundant whereby online exposure will weaken the effect of FTF peer delinquency on self-reported delinquency (i.e., the interaction should be negative). Here, individuals who are exposed to online peer delinquency would have relatively stable self-reported delinquency regardless if they are exposed to FTF peer delinquency. These individuals may be inundated with peer delinquency from the cyber context, meaning the addition of being exposed to peer delinquency within traditional contexts does not increase self-reported delinquency.

In order to test these competing hypotheses, Table 7.05 (see page 143) estimates models examining the moderating effect of online peers across general and crime-specific measures of peer and self-reported delinquency. Within each outcome, the first model displays the results for the main effect of both online and FTF peer delinquency, and the second model adds a product term to the equation which tests for the interaction. A significant product term indicates that the effect of FTF peer delinquency is contingent on exposure to online peer delinquency. Diverging from previous analyses, models testing the third hypothesis use dichotomous measures of each peer delinquency variable. The peer delinquency scales are quite skewed as evident by the fact general peer delinquency ranges from 0 to 4 but the mean of online peer delinquency is 0.26 and the mean of FTF peer delinquency is 0.34. The influence of outliers is exacerbated when creating a product term as there will be very few cases for higher values of the interaction. For example, values for the general peer delinquency interaction range from 0 to 16, but 99 percent of the values are below 4. One option to address this limitation is to create dummy variables

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that differentiate between those who are exposed to any online or FTF peer delinquency.[33]

The results from Table 7.05 provide no support for the third hypothesis. Across all models the interactions are not significant, which suggests that online peer delinquency does not moderate the association between FTF peer delinquency and self-reported delinquency. Moreover, the sign of the product term is not consistent across models as it is negative for general delinquency, violence, and acquisitive crime, but positive for substance use. The switching signs could indicate that the moderating process is contingent on the specific type of crime under investigation, although further investigation is needed before inferring too much from this finding.

ITEM-SPECIFIC PEER DELINQUENCY

One limitation of using logistic regressions to predict crime-specific outcomes is that they mask all information on the seriousness and frequency of each type of offense. Sweeten (2012) argues that when using this type of regression, researchers should estimate additional models by removing the most frequently occurring (and usually the less serious) offense to see if the model is driven by the more common type of offending. Using the violence example, hitting others is much more common than attacking others with a weapon, meaning the violence models may simply capture hitting as opposed to general violence.

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[33] Analyses for the first two hypotheses were replicated using dichotomous measures of each peer delinquency variable and all substantive findings are identical to the main models.

In order to estimate models that address this limitation, additional analyses match each of the item-specific independent variables with its corresponding dependent variable (e.g., peer hitting is used to predict self-reported hitting). Each of the following three tables focus on one crime-specific outcome, meaning there are separate tables for violence, acquisitive crime, and substance use. Within each table, the first three columns replicate earlier findings from each of the three hypotheses (designated by H1, H2, and H3). The next set of columns focus on each specific item within that crime type, thus allowing for comparison across the main analyses presented earlier and the item-specific analysis of each crime type.

Table 7.06 (see page 144) compares the main violence models presented earlier with the two specific types of violence, hitting others with the idea of hurting them and attacking others with a weapon. Support is found for the first two hypothesis across types of violence, and no support is found for the third hypothesis. There is a rather noticeable deviation in the H2 model for attack with a weapon. Here, the FTF peer measure of attacking others is not significant when controlling for online peers attacking others. This is rather surprising given the robustness of the traditional measure of peer delinquency in past research. Recall from Chapter 6 that this type of peer delinquency was more prevalent within the cyber context and had the least amount of overlap with FTF peer delinquency. This is also the least common type of peer delinquency, meaning these results should be interpreted with caution given the limited number of respondents who have these types of peers and who also attacked others with a weapon. Other differences between the violence and attack models include the fact that race was significant for H1 and poor grades was significant across all hypotheses, meaning attacking others with a

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weapon is associated with slightly different risk factors. Also of note, online parental monitoring was significant in the main violence model but is not significant when looking at specific types of violence. These deviations may likely be a result of capturing two different types of violence, one being the most common type of peer delinquency (hitting) and the other the least common (attacking others).

Table 7.07 (see page 145) compares the main findings of the acquisitive crime model to a model focusing on theft below $50. Examining this individual type of acquisitive crime is especially important since it is the only peer measure of theft. Once again, support was only found for the first two hypotheses. The magnitude of the coefficients are mostly similar, although the associations between both types of peer delinquency and self-reported delinquency appears slightly stronger in the theft model. While age was significant for H1 and race for H2 in the main models, neither of these demographic characteristics were significant in the theft models. The significant effect of impulsivity and temper in the acquisitive crime model was also not evident in the theft model. These differences in coefficients between models suggest that the other types of acquisitive crime may be associated with these variables, meaning the more precise model may be the desirable way to test for the effect of peer theft.[34]

Finally, Table 7.08 (see page 146) presents the results of the substance use model along with item specific models, one focusing on alcohol and tobacco and the other on marijuana and other drugs. Consistent with previous analyses, the first two hypotheses

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[34] A total of 315 respondents reported involvement in acquisitive crime, but only 184 reported involvement in theft below $50. A crosstabulation of the items within the acquisitive crime scale reveals that among those who did not steal something less than $50, 117 reported avoiding paying for things, 11 reported theft over $50, and 12 reported going into a building to steal something.

are supported across types of substance use and no support was found for the moderating effect of online peer substance use. On the one hand, these results speak to the robustness of the first two hypotheses, which have been supported across all analyses. On the other hand, these item-specific analyses reveal additional discrepancies from the main model. Although males, black respondents, and those who live in single parent households were more likely to use illegal drugs in general, the gender-related findings appear to be related to alcohol and tobacco use, while race and living situation appear to be related to marijuana and other drugs. Furthermore, while the interaction between online and FTF peer substance use was not significant, the coefficient is negative for alcohol and tobacco but positive for marijuana and other drugs. Finally, the effect of online peer marijuana and other drug use appears to be stronger than that of online peer alcohol and tobacco use. A one-unit increase in online peer marijuana and other drug use is associated with a 90 percent increase in the odds of using the same drugs, whereas a one-unit increase in online peer tobacco and alcohol use is associated with a 52 percent increase in odds of using tobacco and alcohol.

As a whole, the item-specific analyses support the findings from the initial models: online peer delinquency has a statistically significant effect on self-reported delinquency that is independent of the effect of FTF peer delinquency; however, online peer delinquency does not moderate the effect of FTF peer delinquency. Given the deviations in the magnitude of coefficients and significant risk factors, these findings indicate that the item-specific measures matching each type of peer delinquency with its corresponding outcome may be the ideal approach when examining peer influence in

online and offline contexts. As such, the following analyses will also include additional

models focusing on these item-specific types of peer delinquency.

MISSING DATA

When taking the survey, respondents were instructed they could skip any

questions they did not feel comfortable answering, which resulted in some missing data.

Although 3,641 respondents completed the CSSI survey, the prior multivariate analyses

only focus on 1,776 respondents, meaning the conclusions presented within this chapter

are drawn from less than half of the sample. The following sections address this

limitation by using multiple techniques to incorporate respondents who were omitted

from prior analyses. A descriptive overview is first provided detailing differences

between the analytic sample and the full sample. Following this overview, the three

hypotheses are re-tested using samples incorporating additional respondents.

Exploring Missing Data

Chapter 5 explained how 1,046 respondents were removed from analyses due to

selecting NA on all of the online peer delinquency items. Since respondents were

instructed that could skip any questions they did not want to answer, there was

incomplete information on 819 additional respondents.[35] These respondents were also

excluded from the sample, bringing the analytic sample size to 1,776. Table 7.09 (see

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[35] Listwise deletion was applied to items used in the regression models detailed in this chapter, meaning respondents were excluded if they were missing data on one or more variables. Thus the 819 cases that are missing do not include missing data for Prefer CMC, Make Friends Online, FTF/Online Overlap, Online-only Friends, and Peer Online Self-disclosure.

page 147) provides information detailing the differences between the full sample, the analytic sample, and the two sets of respondents removed due to missing data.

Although there is missing data on over half of the sample, the full sample does not differ substantially from the analytic sample across most items. There are no statistically significant differences across all demographic characteristics, across all measures of FTF peer delinquency, and across self-reported general delinquency, violence, and acquisitive crime. For the control variables, the only significant differences are that those in the analytic sample have slightly higher levels of neighborhood disorder compared to those in the full sample. Although those in the analytic sample also have slightly higher levels of substance use, these differences are minor (0.15 versus 0.16) but they are statistically significant.

However, there are differences between the full and analytic sample across all items related to the cyber context. This seems rather intuitive given that over 1,000 respondents were removed due to not having online peers who are not regularly seen in person. As a result, those respondents who are part of the analytic sample are more likely to prefer communicating online, find it easier to make friends online, have a higher proportion of FTF friends who are online friends, have more online friends who have not been met in person, and have a higher proportion of FTF friends who self-disclose illegal activities online. Furthermore, these respondents have slightly lower rates of online peer delinquency across all items compared to the full sample. Since respondents who selected NA have already been excluded for the online peer delinquency items, this means these differences are unique to those removed through listwise deletion. As such, further investigating of the differences between the two sets of omitted respondents is warranted.

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The last two columns of Table 7.09 provide information on those removed due to selecting NA and those removed due to listwise deletion. Those who selected NA are more likely to be female, white, and report lower levels of FTF peer delinquency compared to the full sample. Unsurprisingly, these respondents are less likely to favor CMC and have lower levels of integration between offline and online contexts. These respondents also score lower on all risk factors and self-reported delinquency compared to the full sample. When looking at those removed due to listwise deletion, the opposite holds true across most measures, with the exception that there are no significant differences between preferring CMC and having FTF friends who are online friends.[36]

As a whole, while there are differences between the two groups of omitted respondents, the analytic and full sample are nearly identical across most items. It is for this reason that analyses within this chapter use the listwise deletion method of addressing missing data. However, there are some caveats with this approach. This method relies on the assumption that data are missing at random, which if true, means the analytic sample is simply a random sample of the full sample. While this should lead to unbiased estimates, standard errors will be larger when using a restricted sample since less information is utilized in analyses (Allison, 2002). Furthermore, when comparing the two types of respondents omitted from the analyses, there are clear differences between these groups suggesting that the data are in fact not missing at random. It is for these reasons that additional investigation is needed.

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[36] The difference in online general peer delinquency between the listwise deletion and full sample was not statistically significant using a t-test ($p = 0.08$). However, the Wilcoxon-Mann-Whitney test is significant, meaning the distributions of this item across samples is not equal.

Analyses Addressing Missing Data

One method of addressing missing data is to use a version of mean substitution where scales are created if respondents provided information on at least half of the items as opposed to if a respondent answered all items.[37] For example, if a respondent answered at least three items out of a six-item scale, the mean of those three items would be used as the scale mean. This method was applied to the 819 respondents who were excluded due to listwise deletion except for those missing on the peer and self-reported delinquency variables. The dependent and primary independent variables were not recoded to reduce potential bias introduced using this method. A total of 149 respondents were added back to the sample, bringing the new analytic sample size to 1,925. However, this method assumes that if a scale has high reliability, fewer items can capture the same dimension as using all the items. Chapter 5 discussed how several measures have low alphas, meaning this technique may be problematic as the bias introduced could outweigh the benefit of gaining the additional cases. Allison (2002) also cautions that this method, known as marginal mean imputation, can lead to biased estimates of variances. As such, another alternative to addressing missing data is employed.

A second set of analyses handles missing values through imputation using chained equations (Royston, 2005). Here, information from all control variables is used to impute values for missing data. Under the assumption that data are missing truly at random, this method should produce estimates that are consistent with listwise deletion (Allison, 2002). The imputation process is repeated across five data sets with results

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[37] This technique is commonly used in studies analyzing the GREAT data (e.g., Slocum et al., 2017; Wiley et al., 2013), from which the CSSI instrument was derived.

reflecting the average effects across data sets. As with before, the peer delinquency

variables were not imputed, nor were the dependent variables. This method resulted in

the addition of 206 respondents to the original analytic sample, bringing the sample size

to 1,982.

Table 7.10 (see page 148) compares models testing the three hypotheses across

the three different samples utilizing listwise deletion, mean substitution, and multiple

imputation. This table focuses on the main effects of the general and crime-specific types

of peer delinquency for each of the three hypotheses. It is rather clear that the method of

addressing missing data has little impact on the estimated effects of peer delinquency. For

all three hypotheses, results are nearly the same across samples, providing further support

for the first two hypotheses and no support for the third hypothesis.

Given the minor differences found earlier when considering item-specific

measures of peer delinquency, Table 7.11 (see page 149) focuses on the effects of these

measures across samples. Once again, the results are rather consistent with the main

analyses. For example, the unexpected finding that FTF peers attacking others with a

weapon is not significant for hypothesis 2 is consistent across samples. However, the

method of addressing missing data does seem to affect the finding related to peer theft for

hypothesis 3. Here the interaction between online and FTF peer theft is significant when

using mean substitution and marginally significant when using multiple imputation. The

negative product term suggests that the effect of FTF peer theft becomes redundant

among those exposed to online peer theft. However, this finding should be interpreted

with caution. The magnitude of the coefficient is nearly identical across samples;

however, the standard errors are smaller. While this could indicate a problem with

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missing data, simply increasing the sample size will reduce the standard errors, thus this finding is likely a product of gaining extra cases when using these larger samples.

As a whole, it appears that the method of addressing missing data does not appear to largely bias findings. Results were mostly consistent across the listwise deletion, mean substitution, and multiple imputation samples, and the only deviation was likely a product of increasing the sample size. While the techniques applied to missing data address limitations due to incomplete information on control variables, the fact that 29 percent of the sample was removed due to selecting NA means a substantial portion of the sample was not included in these analyses. While it is true these respondents are less likely to favor the cyber context, 83 percent still use CMC as evident by the fact they report that some of their FTF friends are also online friends. Future work should explore how the cyber context influences communication with FTF friends among these individuals.

Recoding Those Who Selected NA

One final issue related to missing data involves those who selected NA on the online peer delinquency measures. Respondents were instructed to select this option if they did not have any online friends who they did not regularly see in person. However, when looking at Table 7.09 we see that 32 percent of those who selected NA indicated they have some online friends they have *never* met in person, meaning they should not have selected NA for the online peer delinquency questions. It is possible that NA was selected instead of 0, or perhaps one of the questions was confusing and respondents misinterpreted their answer. In light of this finding, additional models are estimated that

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include the respondents by recoding them from missing on the peer delinquency variables to both the minimum and maximum values of these scales.

Table 7.12 (see page 150) compares the original main models using listwise deletion to those where some of the missing respondents were recoded. Of the 331 cases that could be added to the sample, there is additional missing data on 74 cases, bringing the new analytic sample size to 2,033. In the NA Recoded to Minimum model, these 257 cases were given a 0 on the online peer delinquency scale, whereas in the NA Recoded to Maximum model, these cases were assigned a 4. This strategy estimates the possible range of the effect of online peer delinquency among these respondents.

When these missing respondents are given the minimum value of peer delinquency, the results are quite similar to the main model where these respondents are removed. The first two hypothesis are supported across crime types, while no support was found for the third hypothesis. Support is also found for the first two hypothesis when recoding respondents to the maximum value, although the size of the online peer delinquency coefficients are substantially reduced in these models. This coincides with the earlier finding from Table 7.09 that those respondents who selected NA on the online peer delinquency items have lower levels of self-reported delinquency compared to the full, analytic and listwise deletion sample. In other words, assigning a maximum value of online peer delinquency to respondents who reported the lowest levels of self-reported delinquency reduced the effect of the peer-delinquency association. This is likely why the effect of online peer substance use is only marginally significant for hypothesis 2 and the interaction between online and FTF peer substance use is significant in hypothesis 3. Moreover, these models represent an extreme case where it is assumed that all of the 331

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respondents had online networks made up entirely of peers who endorse using illegal substances. When looking at the entire sample, only 13 respondents out of 2,419 (0.5%) reported the maximum value on this item.

Table 7.13 (see page 151) builds upon these findings by looking at item-specific types of peer delinquency. The results are largely consistent as the effect of online peer delinquency is partially reduced when NA is recoded to the minimum value, and there is a much larger reduction in the effect when these respondents are given the maximum value of peer delinquency. When separating out the types of substance use, support for hypothesis 2 is found in the maximum model when considering online peer alcohol and tobacco but not peer marijuana and other drugs. Support was also found for the third hypothesis related to peer theft when using the minimum model as well as for peer marijuana use when using the maximum model. Unlike the peer theft interaction, the peer marijuana/other drug interaction is positive, suggesting the effect of FTF peer marijuana/other drug use is stronger among those exposed to online peer marijuana/other drug use.

Taken together, while we are unsure why some respondents selected NA even though they have distinct online friends, we can assume that if they were indeed exposed to online peer delinquency, incorporating them into the analytic sample would not alter the findings focusing on the first and second hypotheses. The results are less conclusive for the third hypothesis. In the likely event that these respondents meant to select minimum value of online peer delinquency (i.e., they meant that none of their online friends had expressed support for each type of delinquency), the interaction between online and FTF peer theft below $50 was once again significant and negative. The only

other support for the third hypothesis was found for marijuana and other drugs, yet this is contingent on the very unlikely event that these respondents had friendship groups comprised entirely of friends who endorsed drug use.

CONCLUSION

In sum, the first and second hypotheses were consistently supported across analyses, suggesting that online peer delinquency has a direct effect on self-reported delinquency, and this association remains after controlling for FTF peer delinquency. Almost no support was found for the moderating effect of online peer delinquency. Additional analyses demonstrated some deviations when disaggregating by crime type, suggesting that differential exposure to different types of peer delinquency online compared to offline warrants a more precise analysis of peer influence within the cyber context. Moving forward, it is perhaps best to study these individual crime types separately, as findings differed when considering types of violence and types of substance use.

Finally, while a large portion of the sample was removed due to missing data, this removal does not appear to bias findings as results were largely consistent across methods of addressing missing data. While partial support was found for the moderating effect of online peer theft, this may likely be a product of increasing the sample size within these models. The following chapter discusses the implications of these findings and offer recommendations for criminological research focusing on peer delinquency.

Table 7.01: Negative Binomial Regression of Self-Reported General Delinquency on Online General Peer Delinquency (n=1,776)

	Model 1		Model 2		Model 3	
	b	SE	b	SE	b	SE
Peer Delinquency						
Online Peer Delinquency	1.12	0.11 ***	1.05	0.10 ***	0.68	0.06 ***
Demographic Characteristics						
Male	----	----	0.00	0.07	0.04	0.05
Black	----	----	0.43	0.14 **	0.23	0.11 *
Other Race	----	----	0.28	0.09 **	0.17	0.07 *
Age	----	----	0.04	0.05	-0.02	0.04
Single parent	----	----	0.00	0.06	-0.07	0.05
Risk Factors						
Poor Grades	----	----	----	----	0.01	0.04
School Disorder	----	----	----	----	-0.01	0.08
Neighborhood Disorder	----	----	----	----	0.19	0.05 ***
Impulsivity	----	----	----	----	0.06	0.04
Temper	----	----	----	----	0.32	0.03 ***
Offline Parent Monitoring	----	----	----	----	-0.22	0.04 ***
Online Parent Monitoring	----	----	----	----	-0.17	0.03 ***
Intercept	-0.02	0.09	-0.27	0.10 **	-0.28	0.07 ***
Log Likelihood	-2468.36		-2451.66***		-2336.44***	
$\chi^2(df)$	----		33.4 (5)		230.44 (7)	

ABBREVIATIONS: SE = standard error
NOTES: Estimated using robust standard errors. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.02: Logistic Regression of Self-Reported Delinquency on Online Peer Delinquency Across Crime Types (n=1,776)

	Violence				Acquisitive Crime				Substance Use			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency												
Online Peer Delinq.	1.65	0.15 ***	1.21	0.12 ***	1.05	0.17 ***	0.78	0.16 ***	1.37	0.18 ***	1.09	0.17 ***
Demographics												
Male	----	----	0.20	0.17	----	----	0.02	0.16	----	----	-0.44	0.11 ***
Black	----	----	0.10	0.21	----	----	0.37	0.19 †	----	----	0.20	0.10 †
Other Race	----	----	0.18	0.17	----	----	0.33	0.21	----	----	0.24	0.26
Age	----	----	-0.07	0.07	----	----	0.23	0.11 *	----	----	0.32	0.08 ***
Single parent	----	----	-0.15	0.10	----	----	-0.11	0.17	----	----	-0.47	0.12 ***
Risk Factors												
Poor Grades	----	----	-0.01	0.08	----	----	-0.03	0.08	----	----	-0.19	0.09 *
School Disorder	----	----	0.02	0.18	----	----	0.13	0.18	----	----	0.20	0.24
Nhbhd Disorder	----	----	0.27	0.15 †	----	----	0.16	0.17	----	----	0.07	0.15
Impulsivity	----	----	-0.03	0.09	----	----	0.26	0.08 **	----	----	0.14	0.08 †
Temper	----	----	0.63	0.08 ***	----	----	0.25	0.08 **	----	----	0.30	0.09 **
Offline Parent Monit.	----	----	-0.24	0.07 **	----	----	-0.34	0.06 ***	----	----	-0.39	0.08 ***
Online Parent Monit.	----	----	-0.17	0.07 *	----	----	-0.33	0.05 ***	----	----	-0.42	0.05 ***
Intercept	-1.07	0.11 ***	-1.37	0.20 ***	-1.63	0.10 ***	-2.02	0.16 ***	-1.85	0.09 ***	-1.89	0.13 ***

ABBREVIATIONS: SE = standard error; Delinq. = delinquency; Nhbhd = neighborhood; Monit. = monitoring
NOTES: Estimated using robust standard errors. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.03: Negative Binomial Regression of Self-Reported General Delinquency on Online and FTF General Peer Delinquency (n=1,776)

	Model 1		Model 2		Model 3		Model 4	
	b	SE	b	SE	b	SE	b	SE
Peer Delinquency								
Online Peer Delinquency	1.12	0.11***	0.58	0.11***	0.68	0.06***	0.37	0.08***
FTF Peer Delinquency	----	----	0.70	0.13***	----	----	0.44	0.08***
Demographic Characteristics								
Male	----	----	----	----	0.04	0.05	0.02	0.05
Black	----	----	----	----	0.23	0.11*	0.21	0.11*
Other Race	----	----	----	----	0.17	0.07*	0.15	0.07*
Age	----	----	----	----	-0.02	0.04	-0.03	0.05
Single parent	----	----	----	----	-0.07	0.05	-0.08	0.04*
Risk Factors								
Poor Grades	----	----	----	----	0.01	0.04	0.01	0.03
School Disorder	----	----	----	----	-0.01	0.08	-0.01	0.08
Neighborhood Disorder	----	----	----	----	0.19	0.05***	0.15	0.05**
Impulsivity	----	----	----	----	0.06	0.04	0.04	0.04
Temper	----	----	----	----	0.32	0.03***	0.30	0.04***
Offline Parent Monitoring	----	----	----	----	-0.22	0.04***	-0.19	0.04***
Online Parent Monitoring	----	----	----	----	-0.17	0.03***	-0.16	0.03***
Intercept	-0.02	0.09	-0.05	0.08	-0.28	0.07**	-0.27	0.07***
Log Likelihood	-2468.36		-2422.04***		-2336.44***		-2313.46***	
$\chi^2(df)$	----		92.6 (1)		171.2 (12)		45.9 (1)	

ABBREVIATIONS: SE = standard error.
NOTES: Estimated using robust standard errors. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.04: Logistic Regression of Self-Reported Delinquency on Online and FTF Peer Delinquency across Crime Types (n=1,776)

| | Violence | | | | Acquisitive Crime | | | | Substance Use | | | |
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | |
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency												
Online Peer Delinq.	0.84	0.17 ***	0.64	0.16 ***	0.70	0.18 ***	0.53	0.18 **	0.84	0.16 ***	0.69	0.16 ***
FTF Peer Delinq.	1.30	0.22 ***	0.98	0.17 ***	0.59	0.10 ***	0.44	0.09 ***	0.96	0.09 ***	0.77	0.07 ***
Demographics												
Male	----	----	0.16	0.17	----	----	-0.02	0.16	----	----	-0.42	0.11 ***
Black	----	----	0.04	0.20	----	----	0.35	0.18 *	----	----	0.19	0.08 *
Other Race	----	----	0.12	0.17	----	----	0.29	0.22	----	----	0.22	0.25
Age	----	----	-0.07	0.08	----	----	0.22	0.12 †	----	----	0.26	0.09 **
Single parent	----	----	-0.16	0.12	----	----	-0.10	0.16	----	----	-0.44	0.11 ***
Risk Factors												
Poor Grades	----	----	0.00	0.08	----	----	-0.02	0.07	----	----	-0.19	0.09 *
School Disorder	----	----	0.00	0.18	----	----	0.10	0.19	----	----	0.17	0.22
Nhbhd Disorder	----	----	0.22	0.16	----	----	0.13	0.17	----	----	0.06	0.16
Impulsivity	----	----	-0.06	0.08	----	----	0.25	0.07 **	----	----	0.14	0.08 †
Temper			0.60	0.08 ***			0.24	0.08 **			0.26	0.10 **
Offline Parent Monit.	----	----	-0.23	0.08 **	----	----	-0.30	0.06 ***	----	----	-0.36	0.08 ***
Online Parent Monit.	----	----	-0.14	0.07 *	----	----	-0.32	0.05 ***	----	----	-0.41	0.06 ***
Intercept	-1.09	0.09 ***	-1.31	0.20 ***	-1.66	0.09 ***	-2.00	0.15 ***	-1.90	0.10 ***	-1.92	0.12 ***

ABBREVIATIONS: SE = standard error; Delinq. = delinquency; Nhbhd = neighborhood; Monit. = monitoring

NOTES: Estimated using robust standard errors. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.05: Peer Delinquency Interactions on Self-Reported General Delinquency, Violence, Acquisitive Crime, and Substance Use (N=1,776)

	General Delinquency (Negative Binomial)				Violence (Logistic)				Acquisitive Crime (Logistic)				Substance Use (Logistic)			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency																
Online PD	0.57	0.08 ***	0.69	0.14 ***	0.81	0.13 ***	1.10	0.32 **	0.87	0.18 ***	1.19	0.31 ***	1.55	0.20 ***	1.30	0.31 ***
FTF PD	0.78	0.11 ***	0.83	0.10 ***	1.14	0.11 ***	1.23	0.13 ***	0.91	0.18 ***	1.09	0.23 ***	0.89	0.18 ***	0.55	0.24 *
Online x FTF PD	----	----	-0.15	0.13	----	----	-0.38	0.38	----	----	-0.54	0.41	----	----	0.58	0.37
Demographics																
Male	0.06	0.04	0.06	0.04	0.20	0.16	0.20	0.16	-0.01	0.16	-0.01	0.16	-0.40	0.11 ***	-0.41	0.11 ***
Black	0.13	0.12	0.13	0.12	0.02	0.23	0.02	0.23	0.32	0.17 †	0.31	0.16 †	0.25	0.15 †	0.27	0.14 *
Other Race	0.09	0.06	0.09	0.05 †	0.08	0.18	0.10	0.18	0.23	0.20	0.22	0.19	0.25	0.32	0.26	0.31
Age	0.01	0.04	0.01	0.04	-0.02	0.08	-0.02	0.08	0.22	0.13 †	0.22	0.13 †	0.23	0.11 *	0.24	0.11 *
Single parent	-0.04	0.05	-0.03	0.05	-0.13	0.11	-0.12	0.11	-0.08	0.17	-0.09	0.17	-0.46	0.14 **	-0.46	0.14 **
Risk Factors																
Poor Grades	0.04	0.04	0.04	0.04	0.03	0.08	0.03	0.08	-0.01	0.07	0.00	0.07	-0.13	0.10 *	-0.13	0.10
School Disorder	-0.10	0.07	-0.10	0.07	-0.04	0.20	-0.04	0.20	0.15	0.18	0.14	0.18	0.12	0.20	0.12	0.19
Nhbhd Disorder	0.29	0.04 ***	0.29	0.04 ***	0.32	0.16 *	0.33	0.16 *	0.12	0.17	0.13	0.17	0.14	0.13	0.15	0.14
Impulsivity	0.09	0.04 *	0.10	0.04 *	-0.02	0.10	-0.01	0.10	0.27	0.07 ***	0.27	0.07 ***	0.17	0.09 †	0.16	0.09 †
Temper	0.26	0.02 ***	0.26	0.02 ***	0.58	0.07 ***	0.57	0.07 ***	0.22	0.08 **	0.21	0.08 *	0.26	0.09 **	0.26	0.09 **
Offline Par. Monit.	-0.20	0.04 ***	-0.20	0.04 ***	-0.24	0.08 **	-0.23	0.08 **	-0.29	0.05 ***	-0.30	0.05 ***	-0.42	0.08 ***	-0.42	0.07 ***
Online Par. Monit.	-0.16	0.03 ***	-0.16	0.03 ***	-0.15	0.07 *	-0.15	0.07 *	-0.32	0.05 ***	-0.32	0.05 ***	-0.37	0.07 ***	-0.37	0.07 ***
Intercept	-0.91	0.10 ***	-0.93	0.10 *	-2.13	0.24 ***	-2.18	0.24 ***	-2.43	0.16 ***	-2.46	0.16 ***	-2.78	0.14 ***	-2.72	0.17 ***

ABBREVIATIONS: SE = standard error; PD = peer delinquency; Nhbhd = neighborhood; Monit. = monitoring
NOTES: Estimated using robust standard errors. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.06: Comparison of Results across Types of Violence (n=1,776)

	Violence (Main Model)						Types of Violence											
							Hit with Idea of Hurting						Attack with a Weapon					
	H1		H2		H3		H1		H2		H3		H1		H2		H3	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency																		
Online PD	1.21	0.12***	0.64	0.16***	1.10	0.32**	0.80	0.04***	0.39	0.09***	1.25	0.38**	1.32	0.21***	1.05	0.40**	1.93	1.10†
FTF PD	----	----	0.98	0.17***	1.23	0.13***	----	----	0.68	0.11***	1.71	0.18***	----	----	0.42	0.33	0.34	0.96
Online x FTF PD	----	----	----	----	-0.38	0.38	----	----	----	----	-0.52	0.46	----	----	----	----	1.15	1.43
Demographics																		
Male	0.20	0.17	0.16	0.17	0.20	0.16	0.09	0.16	0.04	0.17	0.06	0.15	0.60	0.45	0.52	0.41	0.64	0.43
Black	0.10	0.21	0.04	0.20	0.02	0.23	0.28	0.20	0.22	0.20	0.16	0.21	0.84	0.42*	0.88	0.47†	0.57	0.36
Other Race	0.18	0.17	0.12	0.17	0.10	0.18	0.07	0.19	0.01	0.21	-0.05	0.22	-0.23	0.35	-0.06	0.37	-0.29	0.35
Age	-0.07	0.07	-0.07	0.08	-0.02	0.08	-0.11	0.08	-0.11	0.09	-0.06	0.09	0.18	0.25	0.18	0.28	0.19	0.29
Single parent	-0.15	0.10	-0.16	0.12	-0.12	0.11	0.05	0.12	0.03	0.13	0.11	0.13	-0.31	0.38	-0.30	0.45	-0.24	0.33
Risk Factors																		
Poor Grades	-0.01	0.08	0.00	0.08	0.03	0.08	-0.16	0.09†	-0.15	0.09	-0.13	0.09	0.81	0.12***	0.83	0.11***	0.80	0.12***
School Disorder	0.02	0.18	0.00	0.18	-0.04	0.20	0.16	0.19	0.16	0.20	0.14	0.22	-0.05	0.47	0.02	0.49	0.36	0.48
Nhbhd Disorder	0.27	0.15†	0.22	0.16	0.33	0.16*	0.07	0.19	-0.01	0.19	0.10	0.22	0.46	0.37	0.33	0.36	0.21	0.42
Impulsivity	-0.03	0.09	-0.06	0.08	-0.01	0.10	-0.05	0.08	-0.09	0.08	-0.04	0.09	0.11	0.25	0.10	0.27	0.29	0.28
Temper	0.63	0.08***	0.60	0.08***	0.57	0.07***	0.64	0.09***	0.59	0.10***	0.57	0.09***	0.59	0.20**	0.58	0.21**	0.42	0.21*
Offline Par. Monit.	-0.24	0.07**	-0.23	0.08**	-0.23	0.08**	-0.26	0.09**	-0.25	0.09**	-0.25	0.09**	-0.36	0.16*	-0.30	0.16†	-0.36	0.22
Online Par. Monit.	-0.17	0.07*	-0.14	0.07*	-0.15	0.07*	-0.06	0.09	-0.02	0.08	-0.05	0.08	-0.21	0.19	-0.18	0.19	-0.17	0.22
Intercept	-1.37	0.20***	-1.31	0.20***	-2.18	0.24***	-2.07	0.19***	-2.05	0.19***	-3.15	0.21***	-6.17	0.53***	-6.17	0.52***	-6.50	0.67***

ABBREVIATIONS: SE = standard error; PD = peer delinquency; Nhbhd = neighborhood; Monit. = monitoring
NOTES: Estimated using robust standard errors. H3 models use dichotomous measures of peer delinquency.
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.07: Comparison of Results across Types of Acquisitive Crime (n=1,776)

| | Acquisitive Crime | | | | | | Theft Below $50 | | | | | |
| | H1 | | H2 | | H3 | | H1 | | H2 | | H3 | |
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency												
Online Peer Delinq.	0.78	0.16 ***	0.53	0.18 **	1.19	0.31 ***	0.91	0.10 ***	0.61	0.11 ***	1.53	0.36 ***
FTF Peer Delinq.	----	----	0.44	0.09 ***	1.09	0.23 ***	----	----	0.55	0.11 ***	1.53	0.22 ***
Online X FTF PD	----	----	----	----	-0.54	0.41	----	----	----	----	-0.67	0.41
Demographics												
Male	0.02	0.16	-0.02	0.16	-0.01	0.16	0.16	0.22	0.11	0.20	0.11	0.23
Black	0.37	0.19 †	0.35	0.18 *	0.31	0.16 †	0.27	0.20	0.25	0.21	0.20	0.19
Other Race	0.33	0.21	0.29	0.22	0.22	0.19	0.25	0.35	0.21	0.36	0.10	0.35
Age	0.23	0.11 *	0.22	0.12 †	0.22	0.13 †	0.11	0.18	0.08	0.18	0.08	0.20
Single parent	-0.11	0.17	-0.10	0.16	-0.09	0.17	0.00	0.24	0.02	0.22	0.04	0.22
Risk Factors												
Poor Grades	-0.03	0.08	-0.02	0.07	0.00	0.07	-0.05	0.10	-0.04	0.10	-0.01	0.09
School Disorder	0.13	0.18	0.10	0.19	0.14	0.18	0.00	0.35	-0.08	0.37	-0.02	0.32
Nhbhd Disorder	0.16	0.17	0.13	0.17	0.13	0.17	0.03	0.27	-0.01	0.26	-0.02	0.26
Impulsivity	0.26	0.08 **	0.25	0.07 **	0.27	0.07 ***	0.09	0.11	0.08	0.10	0.12	0.11
Temper	0.25	0.08 **	0.24	0.08 **	0.21	0.08 *	0.21	0.12 †	0.20	0.12	0.15	0.12
Offline Parent Monit.	-0.34	0.06 ***	-0.30	0.06 ***	-0.30	0.05 ***	-0.45	0.11 ***	-0.39	0.11 ***	-0.40	0.11 ***
Online Parent Monit.	-0.33	0.05 ***	-0.32	0.05 ***	-0.32	0.05 ***	-0.33	0.07 ***	-0.31	0.06 ***	-0.31	0.06 ***
Intercept	-2.02	0.16 ***	-2.00	0.15 ***	-2.46	0.16 ***	-2.76	0.19 ***	-2.76	0.17 ***	-3.48	0.23 ***

ABBREVIATIONS: SE = standard error; Delinq. = delinquency; PD = peer delinquency; Nhbhd = neighborhood; Monit. = monitoring
NOTES: Estimated using robust standard errors. H3 models use dichotomous measures of peer delinquency.
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.08: Comparison of Results across Types of Substance Use (n=1,776)

	Substance Use (Main Model)						Types of Substance Use											
							Alcohol and Tobacco						Marijuana and Other Drugs					
	H1		H2		H3		H1		H2		H3		H1		H2		H3	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Delinquency																		
Online PD	1.09	0.17***	0.69	0.16***	1.30	0.31***	0.90	0.12***	0.42	0.14**	1.08	0.49*	0.89	0.10***	0.64	0.11***	1.43	0.34***
FTF PD	----	----	0.77	0.07***	0.55	0.24*	----	----	1.02	0.12***	1.83	0.37***	----	----	0.44	0.09***	0.59	0.32†
Online x FTF PD	----	----	----	----	0.58	0.37	----	----	----	----	-0.02	0.62	----	----	----	----	0.20	0.38
Demographics																		
Male	-0.44	0.11***	-0.42	0.11***	-0.41	0.11***	-0.63	0.14***	-0.63	0.13***	-0.52	0.14***	-0.23	0.13†	-0.24	0.13†	-0.23	0.14
Black	0.20	0.10†	0.19	0.08*	0.27	0.14*	-0.21	0.13	-0.24	0.16	-0.09	0.20	0.35	0.16*	0.34	0.15*	0.33	0.20
Other Race	0.24	0.26	0.22	0.25	0.26	0.31	-0.01	0.26	-0.04	0.25	0.09	0.31	0.22	0.29	0.20	0.29	0.23	0.31
Age	0.32	0.08***	0.26	0.09**	0.24	0.11*	0.40	0.13**	0.31	0.13*	0.30	0.16†	0.33	0.10**	0.29	0.10**	0.27	0.12*
Single parent	-0.47	0.12***	-0.44	0.11***	-0.46	0.14**	-0.45	0.20*	-0.31	0.19	-0.34	0.22	-0.35	0.12**	-0.35	0.12**	-0.35	0.13**
Risk Factors																		
Poor Grades	-0.19	0.09*	-0.19	0.09*	-0.13	0.10	-0.10	0.11	-0.10	0.12	-0.02	0.14	-0.18	0.11†	-0.19	0.11†	-0.14	0.12
School Disorder	0.20	0.24	0.17	0.22	0.12	0.19	0.16	0.26	0.19	0.26	0.08	0.23	0.19	0.25	0.15	0.24	0.14	0.23
Nhbhd Disorder	0.07	0.15	0.06	0.16	0.15	0.14	-0.17	0.15	-0.32	0.20	-0.16	0.20	0.15	0.12	0.15	0.12	0.18	0.10†
Impulsivity	0.14	0.08†	0.14	0.08†	0.16	0.09†	0.03	0.09	0.03	0.08	0.00	0.11	0.18	0.13	0.18	0.14	0.22	0.12†
Temper	0.30	0.09**	0.26	0.10**	0.26	0.09**	0.43	0.10***	0.39	0.11**	0.37	0.10***	0.23	0.11*	0.21	0.11*	0.20	0.10*
Offline Par. Monit.	-0.39	0.08***	-0.36	0.08***	-0.42	0.07***	-0.40	0.08***	-0.33	0.10**	-0.37	0.09***	-0.44	0.11***	-0.41	0.11***	-0.44	0.11***
Online Par. Monit.	-0.42	0.05***	-0.41	0.06***	-0.37	0.07***	-0.52	0.07***	-0.51	0.09***	-0.48	0.07***	-0.33	0.07***	-0.32	0.08***	-0.30	0.08***
Intercept	-1.89	0.13***	-1.92	0.12***	-2.72	0.17***	-2.37	0.13***	-2.50	0.11***	-3.45	0.18***	-2.48	0.23***	-2.48	0.21***	-3.07	0.20***

ABBREVIATIONS: SE = standard error; PD = peer delinquency; Nhbhd = neighborhood; Monit. = monitoring
NOTES: Estimated using robust standard errors. H3 models use dichotomous measures of peer delinquency.
† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.09: Differences Among Those Removed from Sample

	Full Sample (N=3,641)	Analytic Sample (n=1,776)	Omitted Sample	
			Selected NA for OPD (n=1,046)	Listwise Deletion (n=819)
	%/mean	%/mean	%/mean	%/mean
Male	47%	48%	42%*	49%
White	38%	38%	48%*	25%*
Black	42%	42%	33%*	54%*
Other Race	20%	20%	19%	22%
Single-parent Household	25%	26%	19%*	30%*
Age	2.13	2.14	2.11	2.13
Prefer CMC [a]	12%	14%*	7%*	14%
Make Friends Online [a]	24%	29%*	13%*	28%*
FTF/Online Overlap [b]	89%	92%*	83%*	90%
Online-only Friends [b]	57%	67%*	32%*	66%*
Peer Online Self-Disclosure [b]	25%	26%*	14%*	35%*
FTF General Peer Delinquency	.34	.34	.22*	.48*
FTF Peer Violence	.34	.34	.22*	.49*
FTF Peer Theft	.34	.35	.22*	.46*
FTF Peer Substance Use	.28	.28	.20*	.39*
Online General Peer Delinquency	.27	.26	----	.30
Online Peer Violence	.29	.26*	----	.35*
Online Peer Theft	.26	.25*	----	.32*
Online Peer Substance Use	.34	.30*	----	.45*
Poor Grades	1.97	1.97	1.80*	2.17*
School Disorder	1.71	1.72	1.64*	1.79*
Neighborhood Disorder	1.54	1.57*	1.43*	1.63*
Impulsivity	2.83	2.86	2.72*	2.94*
Temper	2.94	2.93	2.74*	3.21*
Offline Parent Monitoring	4.42	4.41	4.52*	4.30*
Online Parent Monitoring	3.14	3.14	3.23*	3.03*
General Delinquency	1.12	1.19	.77*	1.51*
Violence	.26	.27	.21*	.34*
Theft	.17	.18	.12*	.24*
Substance Use	.15	.16*	.11*	.17*

ABBREVIATIONS: OPD = online peer delinquency

NOTES: "Selected NA for OPD" refers to those who reported NA across all peer delinquency items, meaning these respondents do not have online friends who are not regularly seen in person

* = significant difference compared to full sample

[a] = percent of those who agree/strongly agree with each item

[b] = percent of those who have any peers who fall within this category

Table 7.10: Comparison of the Main Effect of General and Crime-Specific Peer Delinquency across Techniques for Addressing Missing Data

	Hypothesis 1						Hypothesis 2						Hypothesis 3					
	Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)		Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)		Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
General Peer Delinq.																		
Online PD	0.68	0.06 ***	0.68	0.06 ***	0.69	0.06 ***	0.37	0.08 ***	0.37	0.08 ***	0.37	0.07 ***	0.69	0.14 ***	0.74	0.16 ***	0.78	0.15 ***
FTF PD	----	----	----	----	----	----	0.44	0.08 ***	0.46	0.07 ***	0.47	0.06 ***	0.83	0.10 ***	0.85	0.09 ***	0.84	0.08 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.15	0.13	-0.23	0.15	-0.26	0.14
Peer Violence																		
Online PD	1.21	0.12 ***	1.25	0.12 ***	1.23	0.11 ***	0.64	0.16 ***	0.68	0.16 ***	0.65	0.15 ***	1.10	0.32 **	1.11	0.31 ***	1.19	0.29 ***
FTF PD	----	----	----	----	----	----	0.98	0.17 ***	1.01	0.15 ***	1.02	0.14 ***	1.23	0.13 ***	1.24	0.13 ***	1.26	0.12 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.38	0.38	-0.37	0.38	-0.46	0.37
Peer Theft																		
Online PD	0.78	0.16 ***	0.73	0.15 ***	0.74	0.15 ***	0.53	0.18 **	0.46	0.16 **	0.46	0.15 **	1.19	0.31 ***	1.04	0.27 ***	1.03	0.27 ***
FTF PD	----	----	----	----	----	----	0.44	0.09 ***	0.49	0.08 ***	0.51	0.08 ***	1.09	0.23 ***	1.15	0.19 ***	1.18	0.17 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.54	0.41	-0.51	0.32	-0.49	0.30
Peer Substance Use																		
Online PD	1.09	0.17 ***	1.05	0.16 ***	1.07	0.16 ***	0.69	0.16 ***	0.64	0.14 ***	0.65	0.14 ***	1.30	0.31 ***	1.18	0.29 ***	1.20	0.28 ***
FTF PD	----	----	----	----	----	----	0.77	0.07 ***	0.77	0.07 ***	0.78	0.07 ***	0.55	0.24 *	0.69	0.24 **	0.67	0.24 **
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	0.58	0.37	0.51	0.36	0.48	0.36

ABBREVIATIONS: SE = standard error; Delinq. = delinquency; PD = peer delinquency

NOTES: Estimated using robust standard errors. Models control for demographic characteristics and risk factor variables. H3 models use dichotomous measures of peer delinquency. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.11: Comparison of the Main Effect of Item-Specific Peer Delinquency across Techniques for Addressing Missing Data

	Hypothesis 1						Hypothesis 2						Hypothesis 3					
	Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)		Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)		Listwise Deletion (n=1,776)		Mean Substitution (n=1,925)		Multiple Imputation (n=1,982)	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Hitting																		
Online PD	0.80	0.04 ***	0.84	0.04 ***	0.82	0.03 ***	0.39	0.09 ***	0.44	0.08 ***	0.40	0.08 ***	1.25	0.38 **	1.28	0.34 **	1.30	0.34 ***
FTF PD	----	----	----	----	----	----	0.68	0.11 ***	0.67	0.11 ***	0.69	0.10 ***	1.71	0.18 ***	1.67	0.18 **	1.70	0.17 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.52	0.46	-0.48	0.40	-0.52	0.41
Peer Attack w/ Weapon																		
Online PD	1.32	0.21 ***	1.34	0.21 ***	1.29	0.23 ***	1.05	0.40 **	1.08	0.37 **	0.99	0.40 *	1.93	1.10 †	1.86	1.13	1.86	1.13
FTF PD	----	----	----	----	----	----	0.42	0.33	0.41	0.31	0.49	0.33	0.34	0.96	0.43	0.99	1.12	0.77
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	1.15	1.43	1.04	1.44	0.33	1.46
Peer Theft < $50																		
Online PD	0.91	0.10 ***	0.82	0.07 ***	0.83	0.08 ***	0.61	0.11 ***	0.52	0.10 ***	0.52	0.10 ***	1.53	0.36 ***	1.38	0.34 ***	1.37	0.34 **
FTF PD	----	----	----	----	----	----	0.55	0.11 ***	0.57	0.11 ***	0.60	0.10 ***	1.53	0.22 ***	1.57	0.21 ***	1.58	0.19 **
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.67	0.41	-0.68	0.34 *	-0.66	0.35 †
Peer Alcohol/Tobacco																		
Online PD	0.90	0.12 ***	0.90	0.11 ***	0.91	0.12 ***	0.42	0.14 **	0.40	0.12 **	0.41	0.12 **	1.08	0.49 *	0.87	0.46 †	0.84	0.46 †
FTF PD	----	----	----	----	----	----	1.02	0.12 ***	1.01	0.12 ***	1.02	0.12 ***	1.83	0.37 ***	1.80	0.39 ***	1.78	0.39 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.02	0.62	0.18	0.60	0.23	0.60
Peer Marijuana/Other																		
Online PD	0.89	0.10 ***	0.86	0.11 ***	0.86	0.11 ***	0.64	0.11 ***	0.62	0.12 ***	0.61	0.12 ***	1.43	0.34 ***	1.32	0.31 ***	1.28	0.30 ***
FTF PD	----	----	----	----	----	----	0.44	0.09 ***	0.44	0.08 ***	0.43	0.08 ***	0.59	0.32 †	0.51	0.30 †	0.45	0.30 *
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	0.20	0.38	0.33	0.33	0.38	0.32

ABBREVIATIONS: SE = standard error; PD = peer delinquency

NOTES: Estimated using robust standard errors. Models control for demographic characteristics and risk factor variables. H3 models use dichotomous measures of peer delinquency. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.12: Comparison of Different Methods of Recoding NA for General and Crime-Specific Online Peer Delinquency

	Hypothesis 1						Hypothesis 2						Hypothesis 3					
	Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)		Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)		Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
General Peer Delinq.																		
Online PD	0.68	0.06 ***	0.61	0.05 ***	0.12	0.02 ***	0.37	0.08 ***	0.30	0.07 ***	0.05	0.02 *	0.69	0.14 ***	0.60	0.15 ***	0.54	0.09 ***
FTF PD	----	----	----	----	----	----	0.44	0.08 ***	0.48	0.07 ***	0.63	0.05 ***	0.83	0.10 ***	0.84	0.09 ***	0.82	0.10 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.15	0.13	-0.17	0.16	-0.04	0.07
Peer Violence																		
Online PD	1.21	0.12 ***	1.11	0.12 ***	0.20	0.03 ***	0.64	0.16 ***	0.55	0.17 **	0.13	0.03 ***	1.10	0.32 **	0.98	0.32 **	0.84	0.14 ***
FTF PD	----	----	----	----	----	----	0.98	0.17 ***	1.02	0.19 ***	1.25	0.14 ***	1.23	0.13 ***	1.22	0.14 ***	1.24	0.13 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.38	0.38	-0.38	0.40	-0.17	0.19
Peer Theft																		
Online PD	0.78	0.16 ***	0.76	0.16 ***	0.15	0.03 ***	0.53	0.18 ***	0.47	0.17 **	0.08	0.04 *	1.19	0.31 ***	1.19	0.31 ***	0.47	0.17 **
FTF PD	----	----	----	----	----	----	0.44	0.09 ***	0.55	0.09 ***	0.68	0.09 ***	1.09	0.23 ***	1.09	0.23 ***	1.09	0.23 ***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.54	0.41	-0.54	0.41	0.20	0.30
Peer Substance Use																		
Online PD	1.09	0.17 ***	1.04	0.16 ***	0.26	0.06 ***	0.69	0.16 ***	0.62	0.15 ***	0.13	0.07 †	1.30	0.31 ***	1.28	0.31 ***	0.77	0.24 **
FTF PD	----	----	----	----	----	----	0.77	0.07 ***	0.88	0.09 ***	1.14	0.11 ***	0.55	0.24 *	1.21	0.18 ***	0.54	0.24 *
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	0.58	0.37	-0.07	0.38	1.10	0.32 **

ABBREVIATIONS SE = standard error; Delinq. = delinquency; PD = peer delinquency

NOTES: Estimated using robust standard errors. Models control for demographic characteristics and risk factor variables. H3 models use dichotomous measures of peer delinquency. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7.13: Comparison of Different Methods of Recoding NA for Item-Specific Types of Online Peer Delinquency

	Hypothesis 1						Hypothesis 2						Hypothesis 3					
	Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)		Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)		Listwise Deletion (n=1,776)		NA Recoded to Minimum (n=2,033)		NA Recoded to Maximum (n=2,033)	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Peer Hitting																		
Online PD	0.80	0.04***	0.72	0.04***	0.31	0.03***	0.39	0.09***	0.30	0.09**	0.19	0.04***	1.25	0.38**	1.01	0.37**	1.17	0.21***
FTF PD	----	----	----	----	----	----	0.68	0.11***	0.73	0.11***	0.80	0.08***	1.71	0.18***	1.63	0.18***	1.72	0.18***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.52	0.46	-0.44	0.47	-0.46	0.27†
Peer Attack w/ Weapon																		
Online PD	1.23	0.23***	1.32	0.21***	0.42	0.10***	1.05	0.40**	0.94	0.40**	0.31	0.09***	1.93	1.10†	1.71	1.05	1.34	0.82
FTF PD	----	----	----	----	----	----	0.42	0.33	0.48	0.29†	0.89	0.15***	0.34	0.96	0.90	0.46*	0.23	0.88
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	1.15	1.43	0.62	0.89	1.66	1.21
Peer Theft < $50																		
Online PD	0.91	0.10***	0.86	0.10***	0.22	0.03***	0.61	0.11***	0.51	0.11***	0.13	0.04**	1.53	0.36***	1.54	0.39***	0.75	0.19***
FTF PD	----	----	----	----	----	----	0.55	0.11***	0.68	0.10***	0.81	0.09***	1.53	0.22***	1.76	0.15***	1.52	0.22***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.67	0.41	-0.91	0.42*	0.10	0.30
Peer Alcohol/Tobacco																		
Online PD	0.90	0.12***	0.86	0.11***	0.28	0.05***	0.42	0.14**	0.39	0.13**	0.14	0.06*	1.08	0.49*	0.99	0.44*	0.81	0.41*
FTF PD	----	----	----	----	----	----	1.02	0.12***	1.04	0.11**	1.17	0.10***	1.83	0.37***	2.02	0.27***	1.84	0.38***
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	-0.02	0.62	-0.22	0.52	0.22	0.56
Peer Marijuana/Other																		
Online PD	0.22	0.29***	0.87	0.10***	0.18	0.05***	0.64	0.11***	0.59	0.11***	0.07	0.05	1.43	0.34***	1.45	0.35***	0.66	0.20**
FTF PD	----	----	----	----	----	----	0.44	0.09***	0.53	0.08***	0.82	0.10***	0.59	0.32†	1.05	0.24***	0.56	0.32†
Online x FTF PD	----	----	----	----	----	----	----	----	----	----	----	----	0.20	0.38	-0.27	0.36	0.93	0.33**

ABBREVIATIONS: SE = standard error; PD = peer delinquency
NOTES: Estimated using robust standard errors. Models control for demographic characteristics and risk factor variables. H3 models use dichotomous measures of peer delinquency. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

CHAPTER EIGHT: DISCUSSION

Computer-mediated communication creates ample opportunity to socialize with friends, and researchers have spent the last two decades grappling with how the cyber context influences the social lives of adolescents. When Warr (2002: 87) first described the virtual peer group, he said that "the internet offers round-the-clock communication with friends and strangers" and these online peers provide a "group with which [youth] can identify socially and psychologically." Like many of the criminologists who subsequently studied online peer influence, Warr viewed cyberspace primarily as a source of influence. This dissertation utilized a similar framework to test for the offline consequences of online socialization by examining the influence of online peers who are not regularly seen in person, thus representing a distinct group of individuals whose peer delinquency should be independent of what is typically found within traditional contexts. This dissertation also acknowledged that CMC is a different method of communication with the potential to alter how one corresponds with their friends by facilitating the self-disclosure of personal information. While this later possibility was only partially explored, findings as a whole can help scholars determine how to best move forward with incorporating the cyber context into the study of crime.

Results from Chapter 6 demonstrated that while CMC was favored by a small minority of respondents, most adolescents prefer in-person communication and do not find it easier to make friends online compared to offline. However, these findings vary across sex, race/ethnicity, and age. There was considerable overlap between offline and online friends, as more than half of respondents reported that most or all of their FTF friends are also online friends. More than half also reported having at least a few online

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friends who have never been met in person. Taken together, there is significant

integration between the cyber and traditional contexts, yet a small but non-trivial portion

of the sample has a proclivity toward online communication. While 89 percent of the

sample reported having some online communication with their FTF friends, most

respondents prefer to communicate in person.

At first blush these findings may seem counterintuitive. Chapter 3 delved into the

social world of digital natives and presented the growing evidence for how adolescents

turn to the cyber context to socialize with their friends. While results of this dissertation

indicate that youth communicate online, respondents in the sample mostly communicate

with their existing FTF friends. Only 16 percent report that most or all of their online

friends have never been met in person and only 12 percent prefer communicating online.

Nevertheless, the average respondent is only 13 years old and 20 percent of the sample is

12 years old or younger. CMC, and especially social media, is predominantly used by

teenagers and most social media platforms do not allow those under the age of 13 to use

their services. Thus, most of the sample is just beginning to navigate the cyber context.

Significant differences were found between older and younger respondents regarding all

measures related to online communication. Moreover, older respondents were less likely

to report online parental monitoring, meaning the parents of younger respondents were

more likely to place restrictions on accessing electronic devices and know what their

child was doing when using these devices. In other words, younger respondents have less

freedom to connect and interact with their friends within the cyber context. This

monitoring could explain why so many respondents use CMC but do not prefer this as

their primary way to communicate. The fact that some findings do not align with prior research is likely due to the young age of the sample.

In order to examine how adolescents are exposed to peer delinquency, this dissertation utilized the traditional measure of peer delinquency in addition to measures focusing on online friends who are not regularly seen in person. The operationalization of online peer delinquency was intentional given the emphasis on the cyber context as a source of influence, meaning we are able to look at exposure from online friends that should be unique from what is found in traditional contexts. Unfortunately, this means that analyses omit a rather large part of online peer groups since most respondents reported communicating online with their FTF friends. Although there is no measure of peer delinquency data from these close FTF friends, the peer online self-disclosure measure captures the proportion of FTF friends who initially disclose illegal activities online. Using the full sample, 25 percent of respondents reported finding out about illegal activities from their FTF friends online rather than in person. While we do not know if this disclosure is a product of opportunity or online disinhibition, the fact that a quarter of all respondents receive their first exposure to the illegal activities of their FTF friends within the cyber context means that CMC may play a significant role in the learning and reinforcement of definitions favorable toward crime. If subsequent research finds that this exposure is related to opportunity, this may influence the modality of priority since adolescents may learn about their friend's delinquency sooner than what would occur in traditional contexts. If research finds that disinhibition is related to this exposure, this may indicate that the certain behaviors may be learned and reinforced online and not in

person, thereby introducing new definitions and reinforcement that would not exist within traditional contexts.

Most respondents who were exposed to peer delinquency were exposed in both contexts; however, those exposed to online peer delinquency are more likely to have peer delinquency in both contexts compared to those who are exposed to FTF peer delinquency. Specifically, the probability of online peer delinquency given FTF peer delinquency was 0.69, but the probability of FTF peer delinquency given online peer delinquency was 0.88. Whether or not initial online exposure leads to subsequent FTF exposure will need to be explored in future research, as the current data are unable to disentangle this temporal process. The fact that online peer delinquency refers to friends not regularly seen in person, coupled with the finding that over two-thirds of those who have FTF peer delinquency also have online peer delinquency, means that the cyber context provides ample opportunity to receive reinforcement favorable toward crime. Thus, the cyber context mostly enhances the peer delinquency of those who would already be exposed offline.

The prevalence of exposure to crime-specific peer delinquency was similar between contexts, although peer hitting and peer theft were more common offline compared to online. Less than half of those exposed to friends who attack others with weapons and who steal had friends in both contexts, but over half of those who were exposed to peer hitting and substance using peers were exposed both online and offline. The only behavior in which unique online exposure was more prevalent was for having friends who attack others with a weapon: 35 percent of those who had these friends were exposed online versus the 28 percent who were exposed offline. While not as prominent,

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unique online exposure to substance using friends was more prevalent compared to theft and hitting, as between 20 and 27 percent of those exposed to substance using peers were exposed only online. It appears that the cyber context disproportionally increase exposure to friends who espouse support for the more severe, and less common, types of delinquency.

In Chapter 7, support was found for the first two hypotheses: not only does online peer delinquency exhibit a strong effect on self-reported delinquency, this association remains when controlling for the traditional measure of FTF peer delinquency. Moreover, these findings were supported when looking across types of crime and when using aggregate and item-specific measures. No matter the method for measuring peer delinquency, the type of risk factors controlled for, or the method of handling missing data, the effect of online peer delinquency remained significant and positive across all analyses.

While the effect of online peer delinquency cannot be directly compared to FTF peer delinquency given the ambiguity concerning whether these constructs capture peer behaviors or attitudes, these models demonstrate that the association between online peer delinquency and personal delinquency is not completely confounded by FTF peer delinquency. Prior work examining online peer influence has largely been unable to control for traditional measures of peer delinquency, which is problematic since it is possible that individuals project their FTF peer delinquency onto their online peer delinquency, or the similarity in friendship groups could mean these measures are capturing the same friends. While this dissertation has not completely ruled out these

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possibilities, it takes a step in demonstrating the independent effect that online peer delinquency may have on self-reported delinquency.

Almost no support was found for the final hypothesis, which focused on those respondents who are exposed to peer delinquency in both contexts. Two possibilities were presented where online peers moderate the association between FTF peer delinquency and self-reported delinquency, either by exacerbating this association through differential receptivity or diminishing the association through redundant peer delinquency. In fact, neither process was evident as the interactions were not significant across most models. The one exception was for peer theft below $50. In analyses where additional respondents who had missing data were added back to the sample, the interaction between online and FTF peer theft was significant and negative, although this finding could be due to gaining extra cases within these models. Collectively, findings related to the third hypothesis tend to suggest that, as a source of influence, the cyber context does not moderate the effect of peer delinquency within traditional contexts.

These findings represent a small step toward understanding the influence of online peer delinquency. The complexity of separate and overlapping peer groups along with the disinhibition associated with online communication means that future research will need to expand upon these findings in order to gain a better understanding of how the cyber context enhances socialization into delinquency. Importantly, it is perhaps best to study individual crime types separately, as findings involving violence and substance use differed when considering item-specific measures of each crime type. In light of the findings presented in this dissertation, the following sections explore issues criminologists will need to consider along with directions for future research.

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WHAT IS ONLINE PEER DELINQUENCY?

Asking a teenager "what is a friend" may produce a different answer today than in the past. They may naturally reflect on those friends they see in person on a regular basis, thus describing friends from the traditional contexts of the school and neighborhood. They may also include those online-only friends with whom they have established an intimate relationship that rivals those of FTF friends. Given the findings related to preferences for using CMC, this sample may likely offer an answer similar to the first example; however, the minority who prefer communicating online and find it easier to make friends in the cyber context may include online friends when answering questions related to their friends in general. When researchers ask respondents to report the proportion of their friends who engage in or support a particular behavior, it is unclear to what extent they refer to one context or the other. If both contexts provide a collective peer group, does this distinction even matter?

Although the first research question demonstrated considerable overlap between the FTF and online measures of peer delinquency, additional analyses reveal these findings to be specific to the type of crime being analyzed. Perhaps more importantly, this high degree of overlap illustrates that few respondents are *only* exposed to peer delinquency the way it is traditionally operationalized. For example, for each type of crime analyzed, almost half of all respondents exposed to FTF peer delinquency were also exposed to online peer delinquency. It appears the cyber context provides additional associations supportive of crime to those who already have such FTF associations, and to a much lesser degree, it also provides unique, crime-supporting friends who would otherwise not be part of one's social network.

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Selection

The strong degree of similarity between exposure to online and FTF peer delinquency may be a product of several underlying processes. First, it is possible that individuals select the same online friends as those who belong to traditional contexts. In this study, 70 percent of respondents reported that half or more of their in-person friends are also online friends. At first glance it may seem reasonable that it is simply the same set of delinquent friends. However, the way that online peer delinquency is operationalized means this measure should capture either online friends who have never been met in person, or FTF friends who use CMC but have limited opportunity to hang out in person. Moreover, the second hypothesis controlled for FTF peer delinquency. While the inclusion of this measure reduced the effect of online peer delinquency, it remained a strong, independent predictor of self-reported delinquency.

Second, it is possible that individuals select online peers as a result of pre-established friendships within traditional contexts. Similar to the "birds of a feather flock together" argument, individuals may befriend online peers who are similar to their FTF friends. This challenges the notion of how cyberspace provides access to a seemingly limitless pool of peers. Respondents in this study were more likely to communicate online with their FTF friends, meaning traditional contexts largely determine one's online friends. Although this dissertation has argued that the cyber context should be studied alongside traditional contexts, the opposite is also true: researchers cannot study online social processes without acknowledging how traditional contexts affect the formation of online friendships.

Assuming that offline friendships affect online selection, there are additional implications for how this process can affect individual behavior. For example, this selection process would mean that, among those with delinquent FTF friends, online delinquent friends can provide additional reinforcement supportive of crime. Drawing from differential association, this should increase the likelihood and degree of involvement in crime, especially since this could enhance the frequency, duration, and intensity of contact with delinquent associates. This is especially pertinent given the findings related to the second and third hypotheses. Since online peer delinquency is an independent predictor of delinquency that does not moderate the effect of FTF peer delinquency, it appears that reinforcement may be unique and not redundant with what is experienced within traditional contexts. Future research should continue to explore how CMC can reinforce delinquent behavior, and the following section explores issues related to this process.

DISCUSSING ATTITUDES AND BEHAVIORS IN THE CYBER CONTEXT

Cyberspace as a Source of Influence

The finding that online peer delinquency from friends who are not regularly seen in person is independently associated with self-reported delinquency suggests that criminologists should consider broadening their view of social contexts to include the cyber context. As such, careful consideration should be given to how online reinforcement is similar and different compared to offline reinforcement. CMC, especially as it pertains to social media, incorporates multiple ways to show how one supports the content shared with others. Using the example provided in Chapter 5, one

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could witness a fight in person, record the altercation using a cell phone, and then upload the fight to one of many social media platforms. Simply sharing the fight with others could be interpreted as support since it was shared so others could benefit from seeing it, or it could be interpreted as opposition if the poster was a nonviolent person who possibly shared this to raise awareness to the potential consequences associated with fighting. Similarly, someone who 'likes' the post could have the same array of thoughts, or perhaps they are indifferent and are simply shocked. Although simply liking a status may not seem that meaningful, this could mimic social cues that take place in face-to-face encounters such as nodding or smiling (große Deters et al., 2016), which are sufficient ways to convey agreement, sympathy, friendliness, and involvement (Siegman and Feldstein, 1987).

Brake (2014) mentions that the ease in showing support for content on social media creates ample opportunity for things to be taken out of context. Of course, the poster of the fight could add in a comment clarifying his or her stance, but in the absence of such clues it may be difficult to decipher the intention of sharing negative content. Some CMC may be more straightforward as they combine pictures, videos, and text in one message. For instance, Snapchat reduces miscommunication by allowing one to caption videos and provide images that can help convey emotion tied to the content that is being sent (Vaterlous et al., 2016). However, these additional elements are not required when posting content, and a video or picture may still be shared without any context clues.

It is for these reasons that this dissertation measures online peer delinquency by asking respondents how many of their online friends expressed support for different types

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of delinquent acts. This measure thus relies on respondents to interpret behaviors or attitudes from their online friends. For example, reporting that a few of one's online friends expressed support for using marijuana or other illegal drugs could mean that a respondent viewed a picture of their friends using drugs, their friends could have made comments supporting drug use, or their friends could have shared content from other people who were using or providing support for drug use. This latter scenario raises additional concerns over conflating attitudes and behaviors attributed to a particular friend. If friend A mentions something online in support of acquaintance B's drug use, a respondent in the current study would likely include friend A in the measure of online peer substance use (i.e., the measure asking if online friends expressed support for drug use). However, if acquaintance B is not considered a friend and posts something online about friend A's drug use, this might not be captured in the measure of online peer delinquency and could in fact be included in the traditional measure of peer delinquency (i.e., the measure asking how many of your close friends used drugs) as well as in the measure related to initially finding out about illegal activities from FTF friends through the cyber context as opposed to in person. Future work should aim to disentangle how online peers express support as this is critical to understanding how delinquent definitions and reinforcement are transmitted within the cyber context.

Cyberspace as a Mechanism of Communication

Theories of normative influence rely on the assumption that individuals communicate with one another and are willing to share their thoughts, beliefs, and behaviors. Within traditional contexts, this sharing is often private, whether it be behind

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closed doors or simply in the presence of a few, select individuals. CMC can likewise follow this pattern by limiting access to specific peers, but the public nature of online communication means that youth will often tell the whole world what they are doing, thinking, and feeling. Unfortunately, this dissertation cannot disentangle the degree of public versus private online correspondence, thus it is unable to determine how respondents learn about online peer delinquency. However, recent research examining generational shifts in how privacy is viewed can offer insight into why youth may talk about crimes they have committed or why they may provide support for illegal activities when communicating within the cyber context. After all, one in four respondents in the current study reported they initially found out about illegal activities from their FTF friends online rather than in person.

In their book *Born Digital*, Palfrey and Gasser (2008) discuss how the current generation represents a more relaxed culture where a common form of self-expression occurs within the public eye of online networks. They argue that this generation does not view privacy the same way that past generations did. Part of this shift may be attributed to lack of knowledge rather than a lack of concern. For example, work by van Deursen et al., (2011) found that while those who are older (over the age of 40) are less tech savvy, they are more knowledgeable of the risk associated with sharing information online compared to those who are between the ages of 18-24. Thus, it may appear that younger individuals are less concerned about what they share, but this might be attributed to a lack of risk awareness. Indeed, Nosko et al., 2010) found that self-disclosure of personal information on Facebook declines with age.

However, many scholars attribute the differential concern for privacy as a byproduct of changing attitudes among the current generation of adolescents. Brake (2014) argues that the cyber context often conceals the potential consequences of disclosing risky behaviors. For example, he identifies seven macro-level influences explaining why youth reveal personal information online: (1) CMC is easy to use and popular; (2) it is awkward not to use CMC; (3) it is inexpensive and ubiquitous; (4) there is the automation of sharing content; (5) there is a general media interest in self-disclosure (e.g., talk shows and celebrity gossip); (6) there is a constant nudging to share information (i.e., prompting within CMC platforms to post one's opinions and physical location); and (7) an ideology of online "openness" has developed among digital natives. Many of these factors have been discussed in prior chapters, but a few deserve additional attention.

Mark Zuckerberg, the founder of Facebook, has stated that the goal of his social media platform is to "build a web where the default is social" and to "make the world more open and transparent, which we believe will create greater understanding and connection" (Shiels, 2010) It is for this reason that social media platforms will often prompt users to post updates when they arrive at a particular location or event. Wang et al., (2011) discuss how users often post this content out of habit, without thinking through the potential implications of sharing very detailed information about daily habits. In fact, this same study found that almost a quarter of respondents indicated they regretted sharing content through Facebook. They give an example where one of the study's subjects almost absent-mindedly shared pictures after attending a party where alcohol was visibly present. Upon reflection, this respondent did not think through the

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fact that his profile was public and others, including his employer, would be privy to his alcohol indulgence. The implications of this "habit" are far reaching, as many employers and college admission counselors use social media as a vetting tool when considering applications. Nevertheless, there seems to be a disconnect between not wanting employers to see information and the likelihood seeing such information will have negative consequences. According to Peluchette and Karl (2009), about one in five college students acknowledge they have information on their social media profile they do not want their employers to view, but they do not think their employer would weigh the information heavily.

Part of this phenomenon was explained in Chapter 2 when discussing Goffman's notion of audience segregation. Recall that individuals will present certain aspects of their identity depending upon those present in a given context. When online, this can sometimes result in "context collapse" which occurs when one set of interactions reaches multiple audiences in multiple contexts (Hogan, 2010; Marwick & boyd, 2011; Vitak, 2012). For example, when communicating online, it can be difficult to craft messages for future audiences that may read a message at a later time. Issues may arise when individuals focus on the primary reception of their messages (i.e., viewing the content of a message at the approximate time it is released) while ignoring or overlooking the secondary reception of their messages (i.e., viewing the content of the message long after it is originally released). Brake (2014) refers to this as the "temporal panopticon" of the cyber context. One never knows exactly who will read an online message or when it will be read. The issue stems from the fact that individuals will often make posts on social media while only focusing on the lowest common denominator of what is considered

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acceptable. If a teenager makes a public post on social media, his or her parent may not be the intended audience, but the post is made in light of the fact that a parent might see it. If individuals would take into consideration not only what is normatively acceptable to the intended audience, but one's entire audience, then these same individuals might reveal less personal (and incriminating) material where everyone can see it.

Taken together, online communication offers multiple ways to share information related to one's delinquent attitudes and behaviors, and a generational shift in revealing personal information may affect the degree in which this information is shared. There is also a myriad of ways to show support for what is shared online, thus there is more opportunity to reinforce the attitudes and behaviors from friends. While this dissertation is unable to disentangle whether online peer delinquency is a product of peer attitudes and behaviors, it can be assumed that both factors play a role in how respondents perceived their friends' support for each type of crime, but this assumption needs to be empirically tested.

FUTURE WORK

Enduring Friendships: Broader Implications for Criminological Theory

This dissertation has presented several arguments for how our view of context should be expanded as a result of the adoption and use of CMC. While emphasis has been placed on theories of normative influence, there are broader implications for other social processes related to criminal behavior. For example, negative neighborhood and school-level factors have strong correlations with delinquency, yet it has been argued that socialization occurs beyond these traditional contexts. Does this mean that the well-

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established correlates of crime are no longer as influential? While this might be true for a small, subset of individuals, offline contexts will still prove instrumental in shaping social experiences and must be studied in tandem with online processes.

Online communication is, at its core, an adolescent and adult phenomenon. Not only are there limitations to the types online platforms that children can access, results of this dissertation reveal that most respondents do not prefer online communication and there are age-related differences in these preferences. As such, traditional contexts will likely remain the primary context for social interaction until adolescence. Factors such as poverty, weak social bonds, parental neglect, and peer influence from school friends and siblings will still have a large impact on behavior and will prove instrumental in shaping one's trajectory during formative years. However, there are ways that the cyber context may enhance socialization during adolescence that could endure into adulthood.

Although the role of peers in the life course is relatively unexplored in criminology, the importance placed on friendships in adolescence merits some consideration for how changing relationships affect one's criminal trajectory. Sampson and Laub's (1993) theory of age-graded informal social control posits bonding with social institutions, such as marriage and employment, may account for the oft-observed age-crime distribution. Warr (1998) takes a different approach to explain why social bonds lead to desistance and finds evidence that peer influence mediates the effect of marriage on crime. Warr claims that marriage dissolves association with peers, and this changing peer group is what leads to desistance. He also found that exposure to peer delinquency completely attenuated the association between age and delinquency (Warr, 1993). Two peer related factors may contribute to desistance, both of which are affected

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by the cyber context. First, in addition to forming social bonds, changes in residence, school, neighborhood, or employment can knife off peers. If a portion of one's peers are delinquent, this process can reduce reinforcement for criminal behavior. Second, as adolescents age into adulthood, they spend less time with peers, thus reducing the opportunity to learn and receive reinforcement (Warr, 1993). CMC circumvents spatial and temporal barriers, thereby enhancing the effect of these peer-related processes since the cyber contact can extend the duration of friendships. These friendships in adolescence were traditionally fluid and lasted relatively short periods of time. CMC has undoubtedly affected this process, but to what degree remains to be seen. As a result, life-course criminologists may be well served to adopt a cyber-contextual model.

A similar implication is related to the effects of residential mobility. Prior work has established a link between mobility and involvement in delinquency since moving disrupts social ties and strains relationships (Haynie and South, 2005). In particular, it has been suggested that hypermobility (i.e., frequent moves in a short amount of time) exacerbates delinquency by preventing the development of friendships or pro-social attachments (Vogel, Porter, and McCuddy, 2017). These findings suggest that peer-related processes may enhance the negative effects of mobility, effects that may be exacerbated through retaining peer relationships within the cyber context.

One often cited reason that residential mobility is a risk factor for adolescents is that they have difficulty breaking into new peer groups once they find themselves in a new location. Deviant peer groups are often more welcoming of new members, thus kids who move might find these groups especially attractive (Haynie et al., 2006; Rebellon, 2006). If youth retain delinquent networks online after moving to a new location, this

may increase the total proportion of delinquent friends within a social network. Furthermore, the association between moving frequency and delinquency was found to be curvilinear (Vogel et al., 2017), suggesting those who are hypermobile may not be able to form any peer relationship due to constant residential changes. For these adolescents, the cyber context may be the only stable environment in which they can form friendships, whether they are delinquent or pro-social. Future research examining the consequences of residential mobility should include how the cyber context affects these processes.

Moderators of Online Peer Delinquency

While the label digital native implies a uniform understanding and experience with technology, individuals differ in their comfort and general usage of CMC (Suler, 2016). While part of their social lives may be embedded within the cyber context, online peer influence may be minimal for youth who have cursory involvement and desire to communicate with others when online. That is, while CMC use may be ubiquitous among adolescents, this does not mean everyone places equal value on this method of communication. The findings from Chapter 6 support this assumption given that only 12 percent of the sample prefers communicating online and only 24 percent find it easier to make friends online. These two characteristics may have different effects on two types of online peer delinquency. For those who have FTF friends who are also online friends, a preference for online communication may strengthen the effect of their delinquency. These friends are communicated with in both offline and online contexts, but a preference for online communication may enhance the effect of behaviors discussed and displayed within this particular context. For those who have online-only peers, the ability to more

easily make friends in the cyber context may likewise increase the effect of exposure to delinquency from these peers. Adolescents may place greater emphasis on behavior and attitudes from those within which they find it easier to connect with and socialize. As such, both of these factors may strengthen the association between online peer delinquency and personal delinquency.

Chapter 6 also explored demographic differences related to the partiality toward online communication as well as differences in exposure to the different types of peer delinquency. Females were more likely to prefer communicating online and were more likely to be exposed to peer substance use in both contexts. As such, it is likely they might have differential susceptibility to online peer delinquency. Black respondents were less likely to report they find it easier to make friends online but were more likely to be exposed to all types of peer delinquency, both on- and offline. Disentangling CMC use across these different demographic characteristics will be important in research moving forward, as online peer influence may differ across gender and race.

Moreover, there are strong age-related differences that should be explored in greater detail. Younger respondents were less likely to prefer communicating online, had less integration between FTF and online networks, and were more likely not to have any online-only friends. While they were less likely to be exposed to peer substance use across contexts, they were only less likely to be exposed to peer theft and attacking others with a weapon when considering online peers. However, incorporating age into the study of online socialization is met with its own set of unique issues. According to COPPA, children under the age of 13 have special protections whereby websites are restricted in what information can be collected from these individuals (Federal Trade Commission,

2017). As a result, many social media platforms, such as Facebook, require users to be at least 13 years old to use their services. Unlike neighborhoods which provide continual access to peers throughout early developmental years and schools which typically introduce children to a new peer group around the age of five, the cyber context is mostly a context for teenagers and adults.

Despite the limitations of COPPA, there is evidence that children under the age of 13 access the cyber context and begin socializing with online peers before they are legally able to do so. For example, one pan-European study found that almost one in five children between the ages of nine and 12 had provided a false age in order to access Facebook (Livingstone et al., 2011). Other studies reveal that while over two-thirds of teenagers have a smartphone, almost a quarter of tweens (i.e., those between the ages of 10 and 12) also have a smartphone (Rideout, 2015). In addition to illegally accessing social media, these tweens can use other forms of CMC to connect with one another, although the use of social media appears to be growing among this age group. Overall it does appear that the online communication increases with age; however, younger populations are continuing to access the cyber context and the implications for this access has yet to be realized.

LIMITATIONS

Temporal Ordering

The cross-sectional nature of the data used in this dissertation means that causal conclusions cannot be made regarding the association between online peers and self-reported delinquency, thus analyses are unable to disentangle if this association is a

product of learning or selection. This is problematic given that control theorists often assume the association between peer and self-reported delinquency is spurious since those with a propensity toward crime often select delinquent friends. While these analyses expand upon prior work examining the association between online peers and crime, the complexities of how peer group socialization traverses offline and online contexts means there is considerable work to be done in order to understand how and why online peers influence offline behavior.

Although the models cannot control for prior delinquency and substance use, they do control for several criminogenic predictors of crime that helps isolate alternative effects that could be attributed to selection. To be sure, causal conclusions still cannot be made and findings must be interpreted with a degree of caution, but the inclusion of these variables extends beyond most other cross-sectional studies examining online and offline peer influence by considering other elements that could explain the association between peer delinquency and self-reported delinquency. Even if future research reveals that the association is indeed a product of selective forces, the cyber context represents an additional avenue to receive reinforcement, meaning it could increase the delinquency of those who are already delinquent. Peer influence itself is a product of both learning and selection, and future research should utilize longitudinal data to uncover how the cyber context affects these processes.

The fact that the third hypothesis was not supported could be a product of using cross-sectional data. Cressey (1964) argues that differential receptivity operates within differential association through various response patterns that take place in the learning process. Sutherland held that prior associations determine the effect that current

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associations have on behavior. In this view, forming criminal definitions at an early age means one is receptive of subsequent criminal definitions. Within the cyber context, existing associations who disclose behaviors online may alter the receptivity process by changing what is perceived as socially acceptable behavior. This means that, even if one's online peer group was comprised of the same individuals as one's FTF group, adolescents may be more receptive of additional FTF peer delinquency if their existing peers provide definitions and reinforcement favorable toward crime through the cyber context. Differential receptivity might then be viewed as an on-going process, thus requiring the use of longitudinal data.

Similarly, the idea that the effect of FTF peer delinquency becomes redundant due to exposure to online peer delinquency may be better tested using longitudinal data, especially given the alternative explanation: it could be that the effect of online peer delinquency becomes redundant due to exposure to FTF peer delinquency. Since youth likely select their online friends based on experiences with FTF friends in traditional contexts, it will be important to control for prior exposure to both types of peer delinquency. While not supported in the current study, future research should continue to explore the possibility that online peer delinquency could moderate the effect of FTF peer delinquency.

Measures of Peer Delinquency

As mentioned in Chapter 5, the measure of FTF peer delinquency in this study does not use the term "face-to-face" within the survey. Instead, FTF peer delinquency was operationalized how it is typically measured in criminological research. Given the

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ubiquity of CMC, it is possible that respondents may already refer to their online friends when answering questions about their "current friends." The structure of the survey should reduce this likelihood since questions preceding the FTF peer delinquency questions referred to friends in schools and the first reference to online peers appeared after this section. Moreover, online peer delinquency remains significant when controlling for the FTF measure. In other words, the fact that the traditional measure of peer delinquency was used in this study, and the online measure remained a robust predictor of self-reported delinquency, suggests that the cyber context does introduce a unique risk factor for delinquency that has been largely omitted from the current body of work on peer influence.

Moving forward, it might be necessary to specifically inquire about peer delinquency from FTF friends. Survey questions could also be included that ask about how FTF friends use CMC, and how these friends discuss illegal activities and deviant attitudes online. It would then be necessary to also include items referring to distinct, online-only peers who have *never* been met in person, as well as distinct FTF-only friends who do not use CMC. This means there are four ways of viewing online peer delinquency, and perhaps all four should be included in subsequent research. As a first step it might be necessary to simply identify who respondents are referring to when answering the traditional peer questions referring to "current friends." If findings reveal that they do not consider online friends when responding, then the existing wording may prove sufficient. If respondents consider all friends (i.e., both online and offline), then future research will need to be clear who the reference group is when asking questions related to peer influence.

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This dissertation found that that just over a quarter of the sample reported finding out about illegal activities from their FTF friends online rather than in person. If prompted, it is unclear if respondents would refer to these peers as FTF or online friends. That is, if one learns about the delinquency from a close FTF friend from school through CMC, is this peer viewed as a FTF or online peer? If there is in-person follow up to learning about such activities, then a respondent might view this as FTF peer delinquency. If, however, all correspondence takes via CMC, then this might be viewed as online peer delinquency. Perhaps this is one area where qualitative research might be particularly helpful. Scholars need to gain a better understanding of how digital natives view their peer groups in general, and this might be the next step before fully incorporating a cyber-contextual model into the study of delinquent peer influence.

Finally, it is unclear what the proportion of online peer delinquency really means, and alternative strategies may need to be incorporated in subsequent work. For example, do respondents account for *all* online friends when referring to the proportion of one's online friends who provide support for a particular act, or are they referring to their *closest* online friends with whom they communicate most often? If someone has 1,000 online friends and they report half of their friends expressed support for theft, it is unclear if they really mean 500 of these friends or simply half of the few friends who are communicated with most often. For more serious crimes such as attacking someone with a weapon, it is possible individuals may overestimate the proportion of online friends who endorse such acts. Recall in Chapter 6 it was more common for respondents to be exposed to unique online peers who provided support for attacking others with a weapon compared to unique FTF peer exposure. These are issues that may again be better

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addressed in interviews as opposed to surveys. Once we gain a more solid understanding of how youth view their online social world, we can then design survey questions to better understand how this context influences behavior.

Omitted Respondents

The multivariate analyses within this dissertation focused on how the cyber context is a unique source of influence by only considering online peer delinquency from friends who are not regularly seen in person. Since almost a third of the sample did not have these types of friends, analyses were restricted to those respondents who are more likely to use CMC and prefer communicating online. This omission potentially overestimates the effect of this unique type of online peer delinquency. Since most individuals communicate online with those from traditional contexts, this also overlooks a major source of online influence – there are no measures of online support for delinquency from one's closest and most intimate FTF friends. This dissertation has argued how cyberspace is a mechanism of communication that can affect reinforcement by increasing the modalities of association as well as allowing some individuals to say things online that would not be said in person. The inability to test for these processes is a major limitation, especially in light of the fact that a quarter of respondents initially found out about illegal activities from their FTF friends within the cyber context.

An additional issue is related to how the online peer delinquency questions were worded. As mentioned in Chapter 5 and explored in Chapter 7, a third of respondents selected NA to indicate they had no online friends who are not regular seen in person. Of these respondents, almost a third reported having online peers they *had never met* in

person, meaning these respondents probably should have selected "none" on the online

peer delinquency questions. One solution to this issue would be to use a filter question

that first specifically asks about the type of online peers one has befriended. Using this

approach, the issue of conflating NA with none would be reduced by the fact that only

those with online peers would be able to answer the questions related to peer

delinquency.

However, part of this limitation might be explained when considering the age of

the sample. Since 20 percent of the sample is 12 or younger, it would be unlikely for

these respondents to use social media with friends who are rarely seen in person.

Although these respondents could use other forms of CMC, the lack of social media use

would likely reduce the potential of forming friendships with online-only friends. While

not statistically significant, those who were omitted were slightly younger than the

analytic sample but they were significantly more likely to experience online parental

monitoring. Although there is evidence that preteens will often provide false information

to create a social media profile, it is very likely that an older sample would not have quite

as much missing data as a result of lacking these types of online associations.

CONCLUSION

Criminologists were initially concerned with how the cyber context provided new

opportunities to be exposed to delinquent role models, yet this dissertation found that

those who are exposed to online peer delinquency are the ones likely to be exposed to

FTF peer delinquency. However, online peer delinquency remains a significant,

independent predictor of self-reported delinquency. The view that cyberspace is a source

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of influence is valid, although this source mostly enhances peer delinquency by allowing more friends to endorse the same behaviors online that are endorsed offline. Moving forward, it is important for researchers to continue to study how the cyber context provides new associations and experience that take place online, but careful attention should be given to how online communication reinforces and extends experiences with FTF friends.

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APPENDIX: SCALE DESCRIPTIONS

FTF Peer Delinquency ($\alpha = 0.64$) **and Substance Use** ($\alpha = 0.85$): During the last year, how many of your current friends have done the following?
1. Stolen something worth less than $50?
2. Attacked someone with a weapon?
3. Used tobacco or alcohol products?
4. Used marijuana or other illegal drugs?
5. Hit someone with the idea of hurting him/her?

Response Categories: None of them, Few of them, Half of them, Most of them, All of them

Online Peer Delinquency ($\alpha = 0.71$) **and Substance Use** ($\alpha = 0.87$): If you have online friends that you do not regularly see in person, how many have expressed support for each of the following in the past year?
1. Stealing something worth less than $50?
2. Attacking someone with a weapon?
3. Using tobacco or alcohol products?
4. Using marijuana or other illegal drugs?
5. Hitting someone with the idea of hurting him/her?

Response Categories: None of them, Few of them, Half of them, Most of them, All of them, N.A.

School Disorder ($\alpha = 0.81$): Indicate how much of a problem each of the following is in your school or neighborhood.
1. Kids bullying or teasing other children at your school
2. Students beating up or threatening other students at your school
3. Kids of different racial or cultural groups at your school not getting along with each other
4. Students bringing guns to school
5. Having things stolen at school
6. Gangs in your school

Response Categories: Not a problem, Somewhat of a problem, A big problem

Neighborhood Disorder ($\alpha = 0.84$): Indicate how much of a problem each of the following is in your school or neighborhood.
1. Run-down or poorly kept buildings in your neighborhood
2. Groups of people hanging out in public places causing trouble in your neighborhood
3. Hearing gunshots in your neighborhood
4. Cars traveling too fast throughout the streets of your neighborhood
5. Gangs in your neighborhood

Response Categories: Not a problem, Somewhat of a problem, A big problem

Offline Parental Monitoring (α = 0.72): How much do you agree or disagree with each statement?
1. My parents know where I am when I am not at home or at school.
2. I know how to get in touch with my parents if they are not at home.
3. My parents know who I am with if I am not at home
Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree

Online Parental Monitoring (α = 0.50): How much do you agree or disagree with each statement?
1. My parents know what I am doing when I am using electronic devices such as computers, tablets, and cellphones.
2. My parents limit the amount of time I spend using electronic devices.
Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree

Impulsivity (α = 0.44): How much do you agree or disagree with each statement?
1. I often act without stopping to think.
2. I don't devote much thought and effort to preparing for the future.
3. I often do whatever brings me pleasure here and now.
Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree

Temper (α = 0.79): How much do you agree or disagree with each statement?
1. I lose my temper pretty easily
2. Often when I'm angry at people, I feel more like hurting them than talking to them about why I am angry
3. When I'm really angry, other people better stay away from me.
Response categories: Strongly disagree, Disagree, Neither agree nor disagree, Agree, and Strongly agree

Delinquency (α = 0.79): How many times in the last 6 months have you . . .
1. Skipped classes without an excuse?
2. Lied about your age to get into some place or to buy something?
3. Avoided paying for things such as movies or bus/metro rides?
4. Purposely damaged or destroyed property that did not belong to you?
5. Carried a hidden weapon for protection?
6. Stolen or tried to steal something worth less than $50?
7. Stolen or tried to steal something worth more than $50?
8. Gone into or tried to go into a building to steal something?
9. Hit someone with the idea of hurting him/her?
10. Attacked someone with a weapon?
11. Used a weapon or force to get money or things from people?
12. Been involved in gang fights?
13. Sold marijuana or other illegal drugs?
Response categories: 0   1   2   3   4   5   6   7   8   9   10   more than 1