International Journal of Criminology and Sociological Theory, Vol. 4, No. 2, December 2011, 756-769

Digitalizing Crime Prevention Theories: How Technology Affects Victim and Offender Behavior

Sheena Lewis[a]
Dan A Lewis[b]

Abstract

In the last thirty years, two main theoretical traditions in crime prevention literature have emerged: 1) the victimization perspective, which considers the victim, offender, and environment, and 2) the social control perspective, an alternative view that considers the role that community and family members play in informally influencing the moral values of potential offenders. Both of these theories have been used to inform crime prevention techniques by focusing on modifying the behavior of potential victims and the motivations of potential offenders. While both the social control and victimization perspectives have been used to discuss criminal behavior and crime prevention, neither acknowledge the role that technology plays in the lives of those that may commit crimes or be victimized. In this paper, we attempt to "digitalize" theories of crime prevention. By digitalize, we mean to understand how technology use influences the lives of both potential offenders and victims. We explore the theoretical foundations of both the victimization and social control perspectives and discuss their limitations as a result of not considering how technology influences information-seeking practices and communication routines. We argue that examining technology use is essential to crime theories that are used to help understand and predict criminal behavior, and we propose modifications to each framework to increase their effectiveness in predicting criminal behavior and practical application.

Introduction

In the past thirty years, crime prevention theories have focused on understanding the behavior of potential victims and the motivations of possible offenders (Bursik, 1988; Lewis & Salem, 1981; W.G. Skogan, 2007). Two prominent theories that have been used to predict criminal behavior are 1) the victimization perspective, which considers interactions between the victim, offender, and environment to produce crime, and 2) the social control perspective, an alternative view that focuses on the role that community and family members play in informally influencing the moral values of potential offenders. While influential in advancing criminology research surrounding prevention, these theories do not account for the massive increase in the use of information and communication technologies and how technology use affects crime (Meyrowitz, 1985).

Over the last two decades, computers have become pervasive. There has been a significant increase in the number of household computers over the past 10 years (Horrigan, 2009). People are increasingly using computers and other Internet-connected devices to receive information (Smith, 2010a). Roughly 60% of people report using the Internet to retrieve (non-social) information on a daily basis (e.g., reading the news, reviewing online classifieds) (Madden, 2010). Technology not only provides information, but also an opportunity for people to communicate and interact with others. In the past five years, the use of social media has exploded

[a]Technology and Social Behavior , Northwestern University, USA, sheena@u.northwestern.edu
[b]Institute for Policy Research, School of Education and Social Policy, Northwestern University, USA, dlewis@northwestern.edu

(Madden, 2010). Over a hundred million Americans (roughly a third of the US population) use social networking sites such as Facebook, Twitter, and MySpace (Aevermann, 2010). Social media allow people to communicate with those who may not be in close physical proximity (K. Hampton, 2007). For example, an online gamer may play games with people from around the world. By connecting with others who are not physically close, technology helps people expand their social network. This can affect the type of information to which people are exposed and with whom they communicate, which can influence their morals and values.

Though technology has changed the information and communication practices of society (Meyrowitz, 1985), crime prevention theories have not evolved to account for how technology use affects criminal behavior or victimization. Without considering the influence of prevalent technology use, traditional crime prevention theories are limited because of the inherent assumptions that both approaches make about how people communicate (i.e., that face-to-face interaction is the only influence on social behavior). This paper attempts to "digitalize" traditional crime prevention theories, specifically the victimization and social control perspectives, by describing how technology use influences victim and criminal behavior. Though most crime prevention theories converge around information transmission amongst local residents, they do not consider how technology has changed the type of information that is accessible. Furthermore, the victimization perspective does not consider how information access influences cognition amongst both victims and criminals, while the social control perspective does not consider how technology influences relationships through changes in communication practices. Social media websites like Twitter, for example, have changed how much people communicate. Specifically, people may receive hundreds of "microblog" messages (i.e., up to 140 characters) throughout the day of a tweeter's current location, activities, and other information. People use this type of social media to respond, which is different than traditional face-to-face interaction or even phone calls. We argue that crime prevention theories will be more predictive by acknowledging that technology changes how we receive information and communicate, which thereby influences victim and offender behavior. We focus on the victimization and social control perspectives, because they reflect two different ways to think about crime prevention and both have been heavily debated in criminology literature.

In the following section, we provide a review of the theoretical foundations of the victimization and social control perspectives as well as the growing body of literature regarding technology use in the United States. We then discuss how technology has reshaped information seeking practices and communication routines, which in turn affects cognition and relationships – the foundations of predicting victim and offender behavior. We argue that both the victimization and social control perspectives, two well-known crime prevention theories, are limited, because they do not properly account for the effects technology can have on victim and criminal behavior as well as the interactions between them.

Background Literature

Understanding social relationships in urban communities has been a foundational concept in theories that predict criminal behavior. From social disorganization theory (Shaw, 1929; Shaw & McKay, 1942), which examines the impact of informal self-regulation on communities, to social capital theory (Bourdieu, 1980/1985; Putnam, 1995, 2000; Wellman, Haase, Witte, & Hampton, 2001), which investigates the influence of strong and weak relationship ties (Granovetter, 1973), researchers have deemed interpersonal relationships essential to not only predicting crime rates in communities, but also identifying techniques to prevent crime. In this section, we discuss the history of crime prevention theories, the development of the victimization and social control perspectives, and the influence technology has on social behavior.

History of Crime Prevention Theories

For much of the early 20th century, an ecological approach has been used to study crime (Mazerolle, Wickes, & McBroom, 2010). Social disorganization theory (Shaw, 1929) focuses on the dynamics of local community as a

method to understand crime and delinquency. Social disorganization is defined as "the inability of local communities to realize the common values of their residents or solve commonly experienced problems" (Bursik, 1988). Resident mobility and heterogeneity were deemed likely reasons for disorganization within a community (Kornhauser, 1978). By the 1960's, social disorganization theory had become less prominent because of empirical and conceptual shortcomings (Bursik, 1988; McBride & McCoy, 1981). Instead, some researchers began to adopt theories that explore broader social structures, such as examining interpersonal relationships and conformity amongst community members, to discover causes of crime (Bursik, 1988). Consequently, many researchers began studying crime by examining the interactions of individuals, specifically potential victims and offenders (Brantingham & Brantingham, 1981; Cohen, Kluegel, & Land, 1981; Hirschi, 1969; Johnstone, 1978; Messner & Tardiff, 1985; Roncek, 1981). Such crime prevention techniques attempted to modify the behavior of victims and motivations of offenders as well as the environment. Lewis and Salem (1981) coined these views as the "victimization" perspective, because it focused on preventing crimes, mostly through modifying the behavior of the victim. While researchers used these individualistic theories (Bursik, 1988; Sampson, 2002), community-level theories were being challenged.

By the mid 1980's, a renewed interest in crime, place, and neighborhood dynamics had emerged (Sampson, 2002). However, it differed from the original social disorganization theories. Instead of viewing economic status, resident mobility, heterogeneity, and social ties as the major predictors of crime (Kornhauser, 1978), new theories began to emerge that focused on understanding the informal and formal social structures that were in place and the collective capacity for action as measures that could predict criminal behavior (Sampson, 1988; Sampson & Groves, 1989; W. Skogan, 1986; Wesley G. Skogan, 1989; W.G. Skogan, 1990). Sampson and colleagues argued that the traditional social disorganization theory was outdated and could not be applied to contemporary communities (Sampson, Raudenbush, & Earls, 1997; Wikstrom & Sampson, 2003). Eventually, Sampson and colleagues developed measures to empirically examine the "collective capacity for social action" (Morenoff, Sampson, & Raudenbush, 2001), which they termed "collective efficacy." Collective efficacy measures have been used to demonstrate that higher efficacy leads to improved health (Browning & Cagney, 2002; Franzini, Caughy, Spears, & Eugenia Fernandez Esquer, 2005), greater parental control (Rankin & Quane, 2002), and low rates of domestic violence (Browning, 2002). Collective efficacy is derived from the social control perspective (Mazerolle, et al., 2010).

Victimization and Social Control Perspectives

Two main crime prevention theories focus on understanding crime causation by examining relationships: victimization and social control (Lewis & Salem, 1981). The victimization perspective focuses on understanding crime as events that occur between a potential victim, offender, and the environment. The victimization perspective has been used to develop prevention techniques that minimize opportunity for victimization by considering potential victims and offenders as actors who play a role in the environment (i.e., space and time). The behavior that a potential victim and offender engage in during the occurrence determines the outcome – whether a crime is committed or not. An offender, for example, may conclude that there is less risk of getting caught mugging someone on a dark empty street than a well-lit busy street. Crime is thus viewed as an event in the victimization perspective rather than an act (as in the social control perspective) (Lewis & Salem, 1981). Therefore, crime prevention techniques have attempted to modify the behavior of potential victims (e.g., encourage them not to walk on dark streets) and offenders (e.g., addressing their motivation like lack of jobs) by increasing their knowledge of risk. Time and space play a major role in determining the likelihood of criminal behavior and also understanding the relationship – whether physical proximity or social status – of potential victims and offenders. In the victimization perspective, the environment and relationship between potential victims and offenders are used to prevent crime and inform crime prevention strategies.

The social control perspective does not focus on the crime as events, but instead focuses on understanding the social relationships that potential offenders have that may encourage or discourage

committing crime (e.g., parents' relationship with a child). Social control theory suggests that social interactions influence criminal acts through informal enforcement of social norms (Hirschi, 1969). The social control perspective suggests that the morals and values of the community are shaped by social norms and that they play a major role in determining criminal behavior. The social control theory, for instance, indicates that a teenager will be less likely to post graffiti on a neighbor's garage if their parents, influential adults, and peers have discouraged this type of behavior since the teen was a child. The social control perspective focuses on understanding the formal (e.g., parents' instruction and discipline) and informal (e.g., there is no graffiti currently in the neighborhood) social norms that surround the teen, and states that these norms thereby determine his or her behavior. Notions surrounding the social control perspective are not new and were in fact derived from Reckless's control and containment theories regarding delinquency (W.C. Reckless, 1961; W.C. Reckless & Dinitz, 1972; Walter C. Reckless, Simon, & Murray, 1956).

Concepts from social control theory have been used to develop measures of collective efficacy within a community, which is defined as "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson, et al., 1997). Sampson (1997) found that high collective efficacy is correlated with low crime rates. Questions surrounding collective efficacy focus on understanding whether people believe that their neighbors will help them during an emergency and/or if they believe that crimes will be committed in their neighborhood (Morenoff, et al., 2001; Sampson & Groves, 1989; Sampson, et al., 1997).

While the victimization and social control perspectives have informed the development of measures like collective efficacy, we argue that there are limitations to these theories, as they do not account for society's increase in technology use and how that might affect crime prevention. In the next section, we present literature regarding the increase in technology use and how that affects social behavior.

Technology's Influence on Social Behaviour

Technology[1] use has significantly increased over the past 10 years in the U.S. In 2010, 76% of households had computers (Smith, 2010b), with the majority of the growth being senior citizens, those who reside in rural areas, and low-income Americans (Horrigan, 2009). Such increases in technology ownership are not limited to adults. In fact, adolescents spend a significant amount of time using Internet-connected devices. Over 93% of teens use the Internet, with 63% going online daily (Lenhart, Purcell, Smith, & Zickuhr, 2010). Over three-quarters of teens in the US own mobile phones (2010). While socio-economic status has traditionally been the major factor in determining who has Internet access, recent studies have found a shift in who accesses the Internet. In fact, low-income Black and Latino teens now access the Internet using mobile devices more than higher income White teens (Smith, 2010b). While the largest and most direct influence on adolescents may still be parents and local support systems, teens are living a large part of their social lives and interactions online. Half of teens play online games while 73% use social networking sites like Facebook and MySpace (Lenhart, Purcell, et al., 2010).

With a significant increase in technology use amongst both adults and teens, academic researchers have begun to study a range of topics related to the use of social media, including individual identity construction (d boyd, 2001; danah boyd & Heer, 2006), building social capital (Ellison, Steinfield, & Lampe, 2007), and modifying offline behavior through online interactions (Yardi, 2009). Much of this research makes reference to Bandura's social learning theory, which describes how people observe external social forces and do things that they would not otherwise do by imitating others' behavior (Bandura, 1977). Online interactions seem to influence offline behavior, especially amongst adolescents (Yardi, 2009). A teen, for example, who observes online deviant behavior (e.g., theft) while playing online video games may imitate the behavior online or offline. This suggests that we need to modify crime prevention theories to account for the influence of technology. While researchers have focused on the use of technology to understand social behavior, with the exception of sporadic

[1]In this paper, we define "technology" as digital technologies that include but are not limited to computers, mobile phones, video games, and digital handheld devices.

attempts to study the influence of videogames, few have studied how technology use influences criminal or victim behavior, which is the problem that we hope to help solve.

Taken together, crime prevention theory predicts crime by measuring attitudes such as collective efficacy, but does not explicitly acknowledge the role that technology plays in shaping victim and offender behavior. By providing extensive information retrieval and communication capabilities, technology changes with whom and how we interact. These interactions can affect our behavior, specifically how we acquire knowledge and affect in our relationships. We argue that crime prevention theories such as the victimization and social control perspectives should be revised, because they do not consider how technology use affects cognition and social relationships. Technology transforms information-seeking practices and communication routines, and that transformation affects criminal and victim behavior.

This section provided an overview of crime theories – specifically victimization and social control – and described the availability of technology to youth, who are most often recognized as potential victims and/or offenders. In the following section, we describe limitations in the victimization and social control crime prevention theories. We argue they do not account for two behavior modifications caused by technology: 1) information-seeking practices, which have changed knowledge consumption and cognition – the key to the victimization perspective, and 2) communication routines, which influence affect and relationships, the keys to the social control perspective.

Crime Prevention Theories and Technology

Recent transformations of digital technology have altered traditional behaviors in society – specifically how we retrieve information and communicate with others. Youth behavior, in particular, has changed significantly (Lenhart, Purcell, et al., 2010; Madden, 2010). Though increased technology use has altered what people do on a daily basis, crime prevention theories do not account for the potential changes in victim and offender behavior. Information seeking practices have changed the information that is being processed about one's surroundings and in turn, the relationships between potential victim, offender, and environment. Technology has changed communication routines, which affects social norms and relationships. In this section, we describe how the victimization and social control perspectives are limited and how technology has impacted information seeking practices and communication routines.

Victimization Perspective and Information Seeking Practices

Crime prevention techniques based on the victimization perspective aim to understand and alter the type of information that is cognitively processed and used to evaluate risks by potential victims and offenders. For example, crime prevention techniques may teach potential victims to evaluate their risk of being victimized or make the risk higher for offenders to being caught (e.g., add cameras to streets of high crime areas). While the traditional victimization perspective focuses on victims and offenders internalizing and processing the information that is available (e.g., dark empty street means higher risk for victim and lower risk for offender), it does not account for the information that is provided by technology. Such information could include (but is not limited to) text messages warning a friend not to walk down a certain street, a camera phone that could increase the risk of an offender being caught, and "lookouts" who help offenders get information about police patrol locations. Similarly, crime maps are a form of technology that is used by the police that help them assess risk (i.e., where crime is most likely to occur based on past crime information). Though technology makes this type of information readily available, the current victimization perspective only considers the information about the victim, offender, and the environment that is being cognitively processed.

The information drawn from technology is a dimension that is not considered in the traditional victimization perspective. As information becomes more accessible, people have the ability to become more

informed about their surroundings in ways that were not available before current technological advances. In addition, people have begun looking for this information in digitalized ways. Therefore, the victimization perspective must acknowledge differences in how information is accessed. Furthermore, potential victims' and offenders' cognitive loads increase, as they not only process information about their immediate surroundings but also information received from technology. This could lead to an overload in information and cause potential victims to shut down, or it could help them better assess the risk of being victimized. What happens when potential offenders have access to more information? Perhaps it allows criminals to be better informed about risk of being caught or encourages them to engage in cyber crime? All of these questions demonstrate the importance of extending crime prevention theory to acknowledge the effect of technology.

Abundance of Information

Technology provides access to a massive amount of information. People use the Internet to explore topics ranging from formal (e.g., academic references, neighborhood crime statistics) to personal (e.g., health, relationships, hair styles). With search engines to help easily and quickly traverse vast amounts of information on the Web, people have changed how they seek information (Marchionini, 1995). People may be more likely to go online to search for information rather than to ask those in close physical proximity (Marchionini, 1995). Twenty years ago, for example, a potential homebuyer may have walked around a neighborhood and asked local residents about crime, schools, and their overall experience living in the area to get a better understanding of the life and culture of the area. Nowadays, it is common to use search engines, virtual maps, and online forums to find information about life in a local neighborhood, which may be a major determining factor in one's decision to live in an area. Hence, many people utilize and trust online information to supply them with knowledge about a plethora of topics. Many times these topics contain information about local crime and real-time information that influences the decisions of potential victims and offenders.

In addition, technology increases opportunities to obtain large amounts of information from informal sources. For instance, Wikipedia, the 6th most visited website in the US ("Top Sites in United States," 2010), is populated with over 17 million articles written by volunteers from across the world as opposed to other encyclopedia sources where articles are written only by professional writers. Not only is there a massive amount of information on Wikipedia, but also the information is created using crowdsourcing, which allows different perspectives to emerge. Sites such as Wikipedia allow anyone to candidly share experiences as opposed to more formal outlets (e.g., newspapers, television news), which are typically more reserved in their commentary due to restrictions such as pressure to provide an unbiased opinion and adhering to underlying political agendas. In fact, Palen and colleagues found that Wikipedia has more accurate information during immediate disasters than formal news websites or television shows (Palen, Vieweg, Sutton, Liu, & Hughes, 2007). This demonstrates that not only does technology provide an outlet for people to receive large amounts of information from informal sources, but also people are able to post information about current events that are happening in their immediate vicinity.

Moreover, some information on the Web changes in a matter of seconds – unlike printed text. Dynamic information can prevent or assist crimes by influencing the behavior of potential victims and criminals. Potential victims, for example, avoid walking on particular streets based on crime alert information received from websites (Blom, et al., 2010). Potential offenders, on the other hand, can use dynamic information such as location updates on social networking sites (e.g., Twitter, Facebook) to determine someone's location in order to find the best time to burglarize a home. In both of the examples above, potential victims and criminals can gain knowledge from real time updates of the abundant amount of data available online. Hence, dynamic information about a vast number of topics on the Internet provides potential victims and offenders with an abundance of information that is cognitively processed and thereby, potentially influences subsequent behavior.

The victimization perspective does not explicitly consider how easily information can be accessed, how informal sources can share information with the world about their immediate environment, and how dynamic information can impact the behavior of potential victims and offenders. All of these factors (discussed in this

section) are about knowledge dissemination and processing. While the victimization perspective focuses on understanding the interaction between potential victims, offenders, and the environment, it does not carefully consider the knowledge that is provided through technology and that is processed by potential victims and offenders and affects their behavior. When people have additional information, their cognitive load may be increased, yet the information is processed and their behavior may change. The victimization perspective does not consider how the abundance of information now available through technology affects the relationships between actors in a criminal event. Technology has modified how people seek information about their physical and social environment and the amount of information that they have, which could modify the relationships in the victimization perspective. In the following section, we discuss how the increase in information access has the ability to change the relationship between potential victims, offenders, and the environment.

Information Accessibility

Technology has changed who, when, and how much information people access. The Internet makes information available that may otherwise be inaccessible. This changes the relationship between the actors in a crime event. For instance, there are websites that describe crime in local neighborhoods (e.g., EveryBlock.com). These types of websites not only provide demographic information about current residents, but also information about local crimes directly from police databases. Based on information from these types of websites, potential victims' behaviors may change (e.g., what time they arrive home, where they walk their dogs). Prior to extensive technology use, the police made crime statistics available to the public in paper format only occasionally (Solove, 2001). Local citizens often went to the police station to obtain the information. The Internet makes the same information instantly available as well as tools to easily consume the data (e.g., city maps). The same information was available before technology, but now potential victims can access the information quickly and from anywhere, which changes how the information is used. It is more likely to impact the very relationships that the traditional victimization perspective attempts to analyze. Information accessibility can also aid potential offenders. Online classifieds, for instance, have been used to target potential victims. Craig's List, the most popular classifieds website, has been used by criminals who pose as potential customers; they use the ad information to find out when people are home and violently attack them (Flectcher & McPhee, 2009; Neary, 2010). Online classifieds have clearly changed how potential offenders access information about potential victims. Thus, both potential victims and offenders have easy access to information that they would not readily have without new technology (e.g., EveryBlock crime stats, online ads). This makes our knowledge of the victimization experience qualitatively different.

In addition to potential victims and offenders having extensive access to information through the Internet, mobile devices allow people to receive "real time," or current, information about their current environment. ComfortZone, for instance, is a mobile application that allows community members to share a virtual map of safe areas in the neighborhood (Blom, et al., 2010). People can use ComfortZone to retrieve information about their current location using global positioning systems (GPS). Potential criminals, on the other hand, may use access to real-time information to modify their behavior. For example, a car thief may rethink hijacking a car with a tracking device, because authorities can access information regarding the vehicle's location, which may increase the risk of getting caught. Access to information through mobile devices provides vital information about one's environment and thereby affects people's behavior. Technology causes a change in cognitive processing because it modifies the relationship between the victim, offender, and environment. Specifically, technology used in the above scenarios causes people to assess the risk of being victimized or being caught in ways that expand the traditional victimization perspective.

Another aspect of information access that we, as scholars, must consider is who has online information and if they have the ability to interpret it appropriately. While technology has become pervasive in the United States, access and skill to understand online information is affected by socio-economic status (DiMaggio, Hargittai, Neuman, & Robinson, 2001; Hargittai & Hinnant, 2008). As potential victims and offenders change their behavior based on information provided through technology use, access to information may impact who

becomes a victim or offender. For example, someone of high socio-economic status may have better access and skill to interpret online information than someone of low socio-economic status, which could decrease the likelihood of being victimized. Furthermore, skill in navigating the Internet may impact who is successfully able to evaluate the validity of online information due to education level or training. Thus, online information may not be correctly interpreted or even accessed by those with minimum skill. Socio-economic factors may determine who accesses what information, which can ultimately affect one's behavior or the likelihood of being victimized. Those with higher education levels, socio-economic statuses, and skills have a better opportunity to gain access to and interpret the information received. This could decrease their risk of being victimized. While technology could make some less likely to become victimized, it could also cause others to become more vulnerable.

Proposed Changes to the Victimization Perspective

The traditional victimization perspective should be extended to consider how changes in information-seeking practices due to technology can alter relationships between actors in a criminal event. The victimization perspective assumes that a victim would gather information about a potential offender and the environment. He or she would then assess the risk of being victimized and would behave a certain way based on the assessment. Consider a woman, for example, walking on a busy street in the middle of the day, who sees a man wearing a business suit walking towards her. The traditional victimization perspective says that she would consider the environment (a busy street in broad daylight) and the potential offender (a man in a business suit) and conclude that she is not in danger of being harmed. However, we must consider how access to an abundance of information through technology could influence the behavior of a potential victim. Reconsider the above scenario with a slight twist; the woman has just received a text message from a friend saying that men in business suits are raping young woman. The same young woman, equipped with this additional information, may conclude that she is in danger and actually change her walking path based on the text message received from a friend (Blom, et al., 2010). Gang members, in the same way, could use mobile phones to communicate about the location of law enforcement in order to shift criminal activities to locations where they are less likely to be caught. This additional information means that they would make a decision to commit a criminal act not just based on the information that is physically available to them but also with the information that is being readily provided to them through the technology. Information retrieved from technology use can alter the behavior of a potential victim and offender – e.g., changing one's walking route and avoiding the police. Therefore, we propose an expansion of the victimization perspective where technology is included in the theoretical framework. Whereas the traditional victimization perspective has been used to suggest different crime prevention techniques – e.g., how extra lights placed on certain streets could deter offenders – an extended version of the victimization perspective that recognizes the role that technology plays in changing the cognitive load of potential victims and offenders by providing increased information will better inform scholars and researchers on crime as events.

Social Control Theory and Communication Routines

The social control perspective focuses on the transmission of values and the regulation of behavior through local interactions. More specifically, social control theorists suggest that adults shape adolescents' morals and behavior by setting and enforcing standards, typically through face-to-face interactions. Sampson and Groves (1989) stated that an adolescent's behavior "is not simply dependent on one child's family, but on a network of collective family control." This suggests that there are many sources of social control in a community. The affect that results from the relationship between children and parents and other local adults informs the child's motivation to adhere to or reject the morals and standards of the community. However, what happens when

standards and values are set through interactions that occur on the Internet? How does this affect the community?

Online interactions have largely changed communication routines and thereby influence social behavior, especially amongst youth, because their value systems are still developing. Technology affords communication with an array of people, even with those that do not share the values and beliefs of adults in the local environment. Therefore, technology expands and allows people to become exposed to a larger variety of norms that may be internalized and acted upon in the offline setting. While the traditional social control perspective focuses on relationships that are physically in the same location, it does not consider the pressure that youth (and others) may feel while engaging in an online setting as a results of developing online relationships. In the following section, we discuss the influence that technology has on communication routines, which impacts the affect required to develop and sustain online relationships.

Technology Influence on Communication Routines

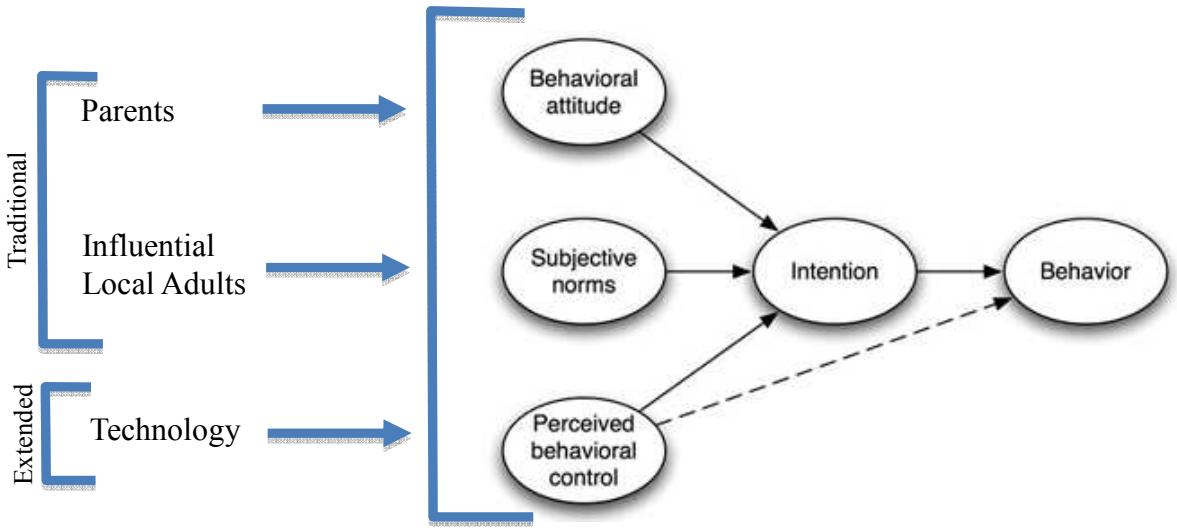
Technology has changed how people communicate, with whom people communicate, and where people are when they communicate. While traditionally face-to-face interactions have been the standard, technology allows people to share photos through social networking sites, video chat using Voice-Over Internet Protocol (VOIP) software (e.g., Skype), and send text messages on mobile phones. Additionally, the pervasiveness of mobile phones makes it easy to interact with others at almost anytime, anyplace.

With technology, people have the ability to easily communicate with those who do not live in their local community as well as those that do. Previous theories suggest that technology is decreasing social interaction in general (Putnam, 1995, 2000); yet, Hampton (K. N. Hampton & Wellman, 2002) found that frequent social interaction is indeed occurring – just with non-locals. Therefore, technology provides an opportunity for people to interact with those who reside farther away, which may dilute the influence of informal local norms that regulate criminal behavior. It is essential that we understand how changes in communication routines affect the transfer of social norms. Traditional theories of social control suggest that informal reinforcement of social norms influence behavior that originates locally. However, this suggests that it is important to investigate how communication from non-local sources sway morals, values, and social norms.

Youth communication practices have also drastically changed in recent years. 73% of online American teenagers use social networking sites on a daily basis and those from lower income households (less than $30,000) are more likely to use social networking sites than those from wealthier households (Lenhart, Purcell, et al., 2010). Furthermore, over 50% of teenagers admit to talking to strangers online (Lenhart, Lewis, & Rainie, 2001). Changes in the communication practices of youth are important, because youth's value systems are influenced by these practices. Online interactions, thus, have the opportunity to greatly influence the social behavior of young people, because what they believe to be morally correct has not yet been fully established. Furthermore, youth may feel additional pressure to adhere to online social norms because their behavior on social networking sites is publically available to their peers (danah boyd, 2007). Scholars speculate that interactions via social media affect offline behavior, though the extent of the influence is still being investigated (Yardi, 2009).

Computer-mediated communication affects behavior by influencing moral values that may or may not be contrary to the social norms of the local environment. Traditional social control theory focuses on understanding how social norms influence the motivations of potential offenders. Social interactions that do not originate locally can influence the morals and values of technology users. While little research investigates how computer-mediated technology shapes value systems, there has been evidence that technology use may influence thought processes and moral stances (danah boyd, 2007). Hence, social control theories should be modified to consider how computer-mediated communication shapes the morals, especially of youth, and potentially affects their social and criminal behavior. In the following section, we propose an extended version of the social control perspective that recognizes impact that technology has on relationships as a result of modifications to communication routines.

Figure 2: Extended version of the social control perspective. Traditionally, parents and other adults were viewed as the sources of social norms. We propose that technology be added (at the bottom left). (This diagram is adapted from Armitage & Christian. 2004. *Planned behavior: The relationship between human thought and action*.



Proposed Changes to the Social Control Perspective

We propose an extended version of the social control perspective that accounts for how changes in communication routines affect relationships. Those relationships provide insight into different belief systems, and they are then internalized and either accepted or rejected. The traditional social control perspective acknowledges that beliefs and the social norms were transferred; however, the literature suggests that this transfer typically occurs during face-to-face communication, typically between youth and parental figures. We propose an extension to the original perspective by suggesting that with the increase in the amount of time that youth spend on technology, there may certainly be a greater effect on youth's value systems that are a direct result of increased technology use. This modified perspective implies that exposure to thoughts, beliefs, and values that may be contrary to how the local community affects morals and that the internalization of such morals could directly impact the motivations of potential offenders.

There are varying levels of influence and perhaps face-to-face interactions are the strongest influence on social norms (Daft & Lengel, 1986). As people spend more time and energy communicating online with those who do and do not live in their local communities, crime prevention theories should account for how online communication shapes value systems. Though face-to-face communication may be a method for relationship building within the community, the relationships that result due to modifications in communication routines impact victim and criminal behavior. The social control theorists will be more accurate at predicting crime if

they recognize the massive impact that technology – particularly social media – has on relationships. Specifically, technology facilitates communication, which has changed who people talk to, what they discuss, and how often they talk. These relationships impact socialization by shaping social norms and beliefs and thereby, affecting potential victim and criminal behavior.

Future Work and Conclusions

As for future research, there is opportunity to redesign measures that predict criminal behavior (e.g., collective efficacy) based on the extended versions of the victimization and social control theories that we describe in this paper. Evolving our measures to include questions about technology use would operationalize crime prevention theories in a way that makes them more successful at predicting criminal behavior.

Furthermore, future research would benefit from exploration of the different motivations for committing online vs. offline crime. Online crimes (e.g., identity theft, cyberbulling) have increased significantly while violent crime has decreased all over the US. As criminology researchers, we must consider how technology provides a different forum for crime to occur. Most crime prevention theories focus on examining why people become involved in physical crime, but we should begin exploring what leads people to engage in physical and/or cyber crime.

Modifying crime prevention theories is a first step to understanding offline criminal behavior; a second step would be to tackle questions about cyber crime. Researchers have begun to study the effect of cyberbullying and possible causes (Hinduja & Patchin, 2008; Patchin & Hinduja, 2010a, 2010b) but few have considered modifying victimization and social control theories to begin to address causes of online crime.

Cognition and risk assessment are the key factors in the victimization perspective. The premise is that potential victims and offenders process information about their surroundings and then assess their risk of being victimized or caught. We extend current victimization perspective to include the information received by technology, because it has changed how and where we receive information as well as the type of information that we receive. We also argue that the social control perspective should be modified to account for technology's influence on communication. Technology affects with whom people communicate, how they communicate, and what they communicate about. The traditional victimization and social control perspectives should be reconsidered to improve their ability to successfully predict crime and inform crime prevention solutions.

References

Aevermann, K. (2010). The American Population vs. The American Facebook Population. Retrieved March 14 2010, from http://www.ieplexus.com

Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs: Prentice Hall.

Blom, J., Viswanathan, D., Go, J., Spasojecvic, M., Acharya, K., & Ahonius, R. 2010. *Fear and the City - Role of Mobile Services in Harnessing Safety and Security in Urban Use Contexts*. Paper presented at the ACM Conference on Computer-Human Interaction (CHI 2010), Atlanta, Georgia, April 10-15.

Bourdieu, P. (1980/1985). Le capital social. Notes provisaires (Social capital: Provisional notes.). *Actes de la Recherche en Sciences Sociales, 3*.

boyd, d. (2001). *Sexing the Internet: Reflections on the role of identification in online communities*. Paper presented at the Sexualities, Medias, Technologies.

boyd, d. (2007). Why Youth (Heart) Social Network Sites: The Role of Networked Publics in Teenage Social Life. In D. Buckingham (Ed.), *MacArthur Foundation Series on Digital Learning - Youth, Identity, and Digital Media Volume* (pp. 119- 142). Cambridge: MIT Press.

boyd, d., & Heer, J. (2006). *Profiles as Conversation: Networked Identity Performance on Friendster*. Paper presented at the Hawaii International Conference on System Sciences.

Brantingham, P. J., & Brantingham, P. L. (1981). *Environmental Criminology*. Beverly Hills: Sage Publications.
Browning, C. R. (2002). The Span of Collective Efficacy: Extending Social Disorganization Theory to Partner Violence. *Journal of Marriage and Family, 64*(4), 833-850.
Browning, C. R., & Cagney, K. A. (2002). Neighborhood Structural Disadvantage, Collective Efficacy, and Self-Rated Physical Health in an Urban Setting. *Journal of Health and Social Behavior, 43*(4), 383-399.
Bursik, R. J. (1988). Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects. *Criminology, 26*(4), 519-552.
Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social Inequality and Predatory Criminal Victimization: An Exposition and Test of a Formal Theory. *American Sociological Review, 46*(5), 505-524.
Daft, R. L., & Lengel, R. H. (1986). Organizational Information Requirements, Media Richness and Structural Design. *Management Science, 32*(5), 554-571.
DiMaggio, P., Hargittai, E., Neuman, W. R., & Robinson, J. P. (2001). Social Implications of the Internet. [Article]. *Annual Review of Sociology, 27*(1), 307.
Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The Benefits of Facebook ,"Friends:" Social Capital and College Students' Use of Online Social Network Sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168.
Flectcher, L., & McPhee, M. (Producer). (2009, March 15 2011) Police in Craigslist Attacks Release New Pictures of Suspect. retrieved from http://abcnews.go.com/GMA/story?id=7376641&page=1
Franzini, L., Caughy, M., Spears, W., & Eugenia Fernandez Esquer, M. (2005). Neighborhood economic conditions, social processes, and self-rated health in low-income neighborhoods in Texas: A multilevel latent variables model. *Social Science & Medicine, 61*(6), 1135-1150.
Granovetter, M. S. (1973). The Strength of Weak Ties. *The American Journal of Sociology, 78*(6), 1360- 1380.
Hampton, K. (2007). Neighborhoods in the network society: the e-Neighbors Study. *Information, Communication and Society, 10*(5), 714-748.
Hampton, K. N., & Wellman, B. (2002). *The not so Global Village of Netville*: Blackwell Publishers.
Hargittai, E., & Hinnant, A. (2008). Digital Inequality: Differences in Young Adults' Use of the Internet. *Communication Research, 35*(5), 602-621.
Hinduja, S., & Patchin, J. (2008). Cyberbullying: An Exploratory Analysis of Factors Related to Offending and Victimization. *Deviant Behavior, 29*(2), 129-156.
Hirschi, T. (1969). *Causes of Delinquency*. Berkeley: University of California Press.
Horrigan, J. (2009). *Home broadband adoption*. Washington, D.C.
Johnstone, J. W. C. (1978). Social Class, Social Areas and Delinquency. *Sociology and Social Research, 63*(1), 49-77.
Kornhauser, R. R. (1978). *Social Sources of Delinquency: An appraisal of analytic models*. Chicago: University of Chicago Press.
Lenhart, A., Lewis, O., & Rainie, L. (2001). *Teenage Life Online*. Washington D.C.: Pew Internet and American Life Project.
Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (2010). *Teens and Mobile Phones*. Washington D.C.: Pew Internet and American Life Project.
Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). *Social Media and Young Adults*. Washington D.C.: Pew Internet and American Life Project.
Lewis, D. A., & Salem, G. (1981). Community Crime Prevention: An Analysis of a Developing Strategy. *Crime & Delinquency, 27*(3), 405-421.
Madden, M. (2010). *Older Adults and Social Media*: Pew Research Center.
Marchionini, G. (1995). *Information seeking in electronic environments*: Cambridge Universit Press.
Mazerolle, L., Wickes, R., & McBroom, J. (2010). Community Variations in Violence: The Role of Social Ties and Collective Efficacy in Comparative Context. *Journal of Research in Crime and Delinquency, 47*(1), 3-30.

McBride, D. C., & McCoy, C. B. (1981). Crime and Drug-using Behavior - an Areal Analysis. *Criminology, 19*(2), 281-302.
Messner, S. F., & Tardiff, K. (1985). The Social Ecology of Urban Homicide: An Application of the "Routine Activities" Approach. *Criminology, 23*(2), 241-267.
Meyrowitz, J. (1985). *No Sense of Place: The Impact of Electronic Media on Social Behavior*. New York: Oxford University Press.
Morenoff, J. D., Sampson, R. J., & Raudenbush, S. W. (2001). Neighborhood Inequality, Collective Efficacy, and the Spatial Dynamics of Urban Violence. *Criminology, 39*(3), 517-558.
Neary, B. (Producer). (2010, March 17 2011) Judge gives man 60 years in Craigslist rape case. retrieved from http://www.omaha.com/article/20100206/AP09/302069954
Palen, L., Vieweg, S., Sutton, J., Liu, S. B., & Hughes, A. L. (2007). *Crisis Informatics: Studying Crisis in a Networked World*. Paper presented at the Third International Conference on e-Social Science. Retrieved from http://ess.si.umich.edu/papers/paper172.pdf
Patchin, J. W., & Hinduja, S. (2010a). Traditional and Nontraditional Bullying Among Youth: A Test of General Strain Theory. *Youth & Society*.
Patchin, J. W., & Hinduja, S. (2010b). Trends in online social networking: adolescent use of MySpace over time. *New Media & Society, 12*(2), 197-216.
Putnam, R. (1995). Bowling alone: America's declining social capital. *Journal of democracy, 6*, 65-78.
Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.
Rankin, B., & Quane, J. (2002). Social Contexts and Urban Adolescent Outcomes: The Interrelated Effects of Neighborhoods, Families, and Peers on African-American Youth. *Social Problems, 49*(1), 79-100.
Reckless, W. C. (1961). A New Theory of Deliquency and Crime. *Federal Probation, 25*, 42-46.
Reckless, W. C., & Dinitz, S. (1972). *The Prevention of Juvenile Delinquency*. Columbus: Ohio State University Press.
Reckless, W. C., Simon, D., & Murray, E. (1956). Self Concept as an Insulator Against Delinquency. *American Sociological Review, 21*(6), 744-746.
Roncek, D. W. (1981). Dangerous places: Crime and Residential Environment. *Social Forces, 60*(1), 74-96.
Sampson, R. J. (1988). Local Friendship Ties and Community Attachment in Mass Society: A Multilevel Systemic Model. *American Sociological Review, 53*(5), 766-779.
Sampson, R. J. (2002). Trascending Tradition: New Directions in Community Research, Chicago Style. *Criminology, 40*(2), 213-230.
Sampson, R. J., & Groves, W. B. (1989). Community Structure and Crime: Testing Social-Disorganization Theory. *The American Journal of Sociology, 94*(4), 774-802.
Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy. *Science, 277*(5328), 918-924.
Shaw, Clifford R., Zorbaugh, Harvey, McKay, Henry D. & Cottrell, Leonard S. (1929). *Delinquency Areas*. Chicago: University of Chicago Press.
Shaw, C., & McKay, H. (1942). Juvenile Delinquency and Urban Areas: University of Chicago Press, Chicago.
Skogan, W. (1986). Fear of Crime and Neighborhood Change. *Crime and Justice, 8:*203-229.
Skogan, W. G. (1989). Communities, Crime, and Neighborhood Organization. *Crime & Delinquency,35*(3), 437-457.
Skogan, W. G. (1990). *Disorder and decline: Crime and the spiral of decay in American neighborhoods*. Berkeley: University of California Press.
Skogan, W. G. (2007). Survey assessments of police performance. *Surveying Crime in the 21st Century: Commemorating the 25th Anniversary of the British Crime Survey*.
Smith, A. (2010a). *Americans and their gadgets*: Pew Research Center's Internet and American Life Project.
Smith, A. (2010b). *Moble Access 2010*. Washington D.C.: Pew Internet And American Life Project.

Solove, D. J. (2001). Access and Aggregation: Public Records, Privacy and the Constitution. *Minnesota Review, 86*, 1137.

Top Sites in United States. (2010). Retrieved March 16 2011, from http://www.alexa.com/topsites/countries/US

Wellman, B., Haase, A. Q., Witte, J., & Hampton, K. (2001). Does the Internet increase, decrease, or supplement social capital. *American behavioral scientist, 45*(3), 436-455.

Wikstrom, P. O., & Sampson, R. J. (2003). Social Mechanisms of Community Influences on Crime and Pathways in Criminality. In B. B. Lahey, T. E. Moffitt & A. Caspi (Eds.), *The Causes of Conduct Disorder and Serious Juvenile Delinquency* (pp. 118-148). New York: Guilford Press.

Yardi, S. (2009). Social learning and technical capital on the social web. *Crossroads, 16*(2), 9-11.