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The Influence of Texting and Virtual Peers on Adolescent Alcohol Use

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I dedicate this dissertation to my family. First and foremost, I dedicate this work to my wife Tonya. She is the firm foundation of our family, whose support has always allowed me the opportunity to work, grow, and stretch for my dreams while serving as my moral compass. This work is also dedicated to my beautiful children Audrey and Amber who provide constant love, laughter, and motivation to succeed. To my best friend and brother Chris, who is always there for support…always. My parents, Connie and Steve have always encouraged me to dream and to achieve; and without them, I would not have had the opportunity or motivation to pursue this dream. I am especially grateful to my grandparents, who showed me the importance of family and hard work. I am thankful for my wife’s parents, Glen and Shirley, who have always supported me and my education. And, finally, to Nancy Bertuleit, a mentor, friend, and the only person in my life who told me, unequivocally, that I should pursue this journey of earning a doctoral degree.
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The Social Development Theory has guided substance abuse prevention planning and programming for the past two decades. One of the key risk factors cited in and targeted by Social Development Model strategies is that of the influence of peers on adolescent substance use. With the advent of modern cellular technology, the manner in which adolescents currently interact has shifted in preference from that of traditional face-to-face to interaction through text messaging. Recent research has suggested a link between the frequency of adolescent texting behavior and adolescent substance use. This shift in interaction may influence the mechanisms of peer influence and possibly could affect the efficacy of the Social Development Model as a foundational drug prevention theory.

This exploratory study was conducted to determine whether the new communication method of text messaging and its interaction with traditionally accepted risk factors has an effect on the likelihood of adolescent alcohol use. Data from the Save Our Kids Survey conducted within two regional school systems was analyzed using logistic regression analyses.

Data from the regression analyses indicated that the number of texts sent to and received from peers had a minimal effect on the likelihood of adolescent alcohol use. The likelihood of adolescent use of alcohol was most affected by text message-based
interaction with peers who use alcohol, as well as discussion of alcohol use through modern cellular technology. Text messaging is simply the manner in which most adolescents currently communicate. The most important finding was that it is not necessarily how adolescents communicate, but to whom they communicate and the message that is transferred. Consequently, the Social Development Model remains a salient foundational theory for current prevention practice.
CHAPTER I: INTRODUCTION

Modern mobile cellular (cell) phone technology now provides 24-hour access to information and communication through traditional voice usage, textual messaging (texting), as well as Internet website and Internet-based applications. Recently, the Pew Internet and American Life Research Project revealed that 75% of 12 to 17 year olds now own cell phones (Lenhart, Ling, Campbell, & Purcell, 2010). Cell technology, through the instant access of information and communication, is changing the way adolescents learn and interact. As long as adolescents have access to cell technology, they have access to an entire virtual world of information and communication options. Educational sessions are no longer limited to didactic classroom settings, as limitless online media and information can be accessed virtually through Internet-based sources. Likewise, the interaction of adolescents with their peers is no longer limited to traditional face-to-face opportunities, such as lunch time, recess, the trip home from school, or on weekends, but can occur at any and all hours of the day.

Prior to cell technology, the largest evolution in adolescent communication developed as a result of the Internet. By the turn of the 21st century, a large portion of adolescents was using Internet technology to communicate (Roberts, Foehr, Rideout, & Brodie, 1999). Internet-based communication technology began with email and progressed through the development of chat rooms, online forums, and instant messaging evolving into semi-permanent online presences that incorporate all of these forms of communication through websites such as MySpace and Facebook. While limited, research is available that relates to understanding the quality of the relationships developed through online technology (Lea & Spears, 1995; Turkle, 1995; Wolak,
Mitchell, & Finkelhor, 2003). Not only has it been established that the majority of adolescents use online forms of communication (Roberts et al., 1999; Rosenbaum et al., 2000), research indicates that adolescents use online sources to communicate with individuals they do not know on a face-to-face basis (Wolak, Mitchell, & Finkelhor, 2002). Although a relatively new form of peer interaction, online relationships have already been firmly integrated into the adolescent culture (Womak et al., 2003).

As cell phone technology has developed, the ability to engage in and sustain online relationships and communication has become a portable phenomenon. Adolescents are no longer required to sit at a desktop computer in order to use the Internet. Online communication among youth now primarily occurs through individualized online presences such as Facebook, as well as new online instant messaging applications such as Twitter. However, the newest form of instant messaging, Short Message Service (SMS) text messaging, is based on cell technology and bypasses the need for hard wired connections to the Internet. Not only are cell phones creating an evolution in communication technology, the way in which adolescents communicate continues to change as well. The Pew Internet and American Life Research Project further revealed that of the 75% of 12 to 17 year olds who own cell phones, 88% utilize text messaging capability. Furthermore, 67% of all youth surveyed reported that they would rather send a text message to a friend than call them. As a result of new technology, face-to-face interaction is no longer the most frequent form of interaction for adolescents with their peers (Lenhart et al., 2010). This shift in peer interaction may have profound effects on the means by which schools and many other organizations influence adolescent learning and behavior.
The concept of adolescent communication through cell phone and Internet technology as related to maladaptive adolescent drug use behavior, is relatively unexplored in the research community. Recently, one study that linked hyper-texting behavior (120 or more texts per day) to adolescent alcohol, tobacco, and illicit drug use has been introduced. Hyper-texting teens were reported to be 40% more likely to have tried cigarettes, two times more likely to have tried alcohol, 43% more likely to be binge drinkers, and 41% more likely to have used illicit drugs (Frank, Dahler, Santuri, & Knight, 2010). While the study exposed relationships between hyper-texting behavior and substance use among adolescents, the researchers did not suggest a causal relationship. Furthermore, in interviews, the lead researcher Scott Frank indicated that the most important factor related to hyper-texting and drug use may be with whom the adolescent is communicating (Huget, 2010). However, the research of Frank et al. (2010) defined hyper-texting based on the number of texts sent. An investigation of the potential for influence from drug using peers would require some measure of the number of texts received from peers, as well as the perceived drug using behavior of the peers of the individual. Finally, it may be prudent to also investigate whether adolescents have been involved in conversations through text messaging where drug use was the topic. As text messaging has become the preferred form of communication for adolescents with their peers, the mechanism for peer influence from drug using peers may be changing as well.

The next logical step is to investigate whether the hyper-texting behavior or virtual influence from drug using peers is more highly related to adolescent alcohol and other drug use. Furthermore, it is important to understand how the changing mechanism of peer influence relates to current drug prevention models.
The Social Development Model is a theory that integrates research related to predictive factors of maladaptive youth behaviors including substance abuse, violence, juvenile delinquency, and teen pregnancy. The only substance abuse prevention theory to achieve predictive theory status, the Social Development Model is a result of the culmination of three previous social theories - Control Theory, Social Learning Theory, and Differential Association Theory - and postulates that children learn behavior patterns through various socializing agents found within four distinct domains: family, school, community, and peers (Hogan, Gabrielsen, Luna, & Grothaus, 2003). The socialization occurs through a bonding process with a socializing agent that involves four constructs: (1) the perceived opportunity to be involved and interact with a particular group, (2) the extent of involvement and interaction, (3) having or developing the necessary skills to be involved or to interact, and (4) receiving reinforcement based on their performance in their involvement or interaction (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996; Hawkins, Catalano, & Arthur, 2002). Hawkins, Lishner, Catalano, and Howard (1985) most concisely described how bonds develop as:

Social bonds to peers, whether prosocial or delinquent, will develop to the extent that youths have opportunities for involvement with those peers, the skills to perform as expected by those peers and the rewards that are forthcoming from interaction with those peers. (p. 35)

Consequently, the behavior of adolescents, whether prosocial or antisocial, will reflect the norms, values, and behaviors of those to whom they have bonded (Catalano & Hawkins, 1996).
Based on the definition of bonding as ascribed by the Social Development Model, text messaging may provide a virtual landscape for adolescents to bond with their peers. The constant connectivity provided by text messaging allows increased opportunities for adolescents to interact with other adolescents for durations and timeframes no longer limited by the need for face-to-face contact. Reinforcement for involvement with their peers through text messaging may be two-fold - the traditional reinforcement and personal acceptance received from peers based on the interaction, and the potential that the novelty of interacting through cell technology may also be inherently rewarding (Wallis, Cole, Steptoe, & Dale, 2006). It appears that the mechanisms identified by the Social Development Model for bonding are well suited to the adoption of text messaging as another vehicle for adolescents to bond with their peers. Based on the expanded opportunities for interaction, the idea must be entertained that cell technology may increase either the speed at which bonding occurs or possibly may result in a more powerful bond to their peers. Increasing the speed of the bonding process could lead adolescents to more quickly assimilate the belief system of the peers to whom they are bonding. Increasing the power of the bond may lead to a more firm attachment to the belief systems of their peers.

The Social Development Model's proposition of the mechanism by which adolescents bond with, and therefore are influenced by, their peers is a direct result of the known influence of drug using peers on youth substance abuse. The association with drug using peers has been found to be one of the strongest predictors of drug and alcohol use during adolescence (Akers, 1977; Jalali, Jalali, Crocetti, & Turner, 1981; Hawkins et al., 1985). While it is unknown whether the association is due to drug using adolescents
seeking out similar peers or whether the direct influence of drug using peers is the issue, little argument exists that adolescents having drug using peers and the use of drugs by adolescents are linked (Monahan, Steinberg, & Cauffman, 2009). Furthermore, Elliott, Huizinga, and Ageton (1982) postulated that the bond to peers may be the only bond that has a direct influence on adolescent substance abuse with bonds to school and family having only indirect effects. Hawkins et al. (1985) discussed this was due to a time ordering of bonding associations. Bonds to family and school, both of which usually predate adolescence, influence the behavior of adolescents indirectly by influencing the selection of peers during adolescence who become the primary influencing agents. The importance of peer influence in relation to an adolescent's use of alcohol, tobacco, or illicit substances cannot be overstated and should be considered as a primary risk factor.

**Significance of the Problem**

Drug use affects everyone in society, either directly through personal use or the use of family and friends, or indirectly through crime, accidents, or the overall cost to society (Glantz & Pickens, 1992). For the adolescent, drug use can negatively affect learning, motivation, and mood stability and increases risk of accident-related injuries. Furthermore, adolescents who engage in alcohol use at an early age have an increased risk for substance abuse or dependence later in life (DeWit, Adlaf, Offord, & Ogborne, 2000; Gil, Wagner, & Tubman, 2004). For society, costs are related to substance abuse treatment, health care, crime, less educational attainment, and mental health (Hawkins, Catalano, & Miller, 1992). Although adolescent substance abuse peaked in the 1990s and has shown a slow decline since that time, use of alcohol, tobacco, and marijuana remain high. While there continues to be a variety of other illicit drugs that tend to come and go
in cycles, such as Ecstasy, Prescription Drugs, and most recently Synthetic Marijuana, the three traditional “gateway” drugs remain the most prevalent standards for measuring adolescent drug use. Based upon findings in the 2011 Monitoring the Future Survey, Johnston, O’Malley, Bachman, and Schulenberg (2012) reported that the declines in cigarette use that began in the mid 1990s ended with a slight increase for students in grades 8 and 10. Marijuana use was reported to continue to rise in 2011 as it had over the past three years. More specifically, daily marijuana use continued to rise for all three assessed grades (8, 10, and 12) after a statistically significant increase in 2010.

Although alcohol use by adolescents continued a downward trend in 2011, it remains the most pervasive form of substance use. Johnston et al. (2012) further reported that in 2011, 22% of 12th grade students report binge drinking (defined as having five or more drinks in a row), with nearly 7 out of 10 surveyed students reporting consumption of alcohol (more than a few sips) by the end of high school. The fact that the 18 to 20 age group has the highest prevalence of alcohol dependency of any age group speaks to the seriousness of alcohol use among adolescents (U.S. Department of Health and Human Services, 2007).

Adolescent substance abuse in the United States is one of the most rapidly changing phenomena related to youth and has remained a major concern for communities for the past 50 years (Johnston et al., 2012). Theories such as the Social Development Model, have integrated historical theories and research related to contributing risk and protective factors in an attempt to provide sound theoretical frameworks to guide substance abuse prevention efforts in schools and communities. While risk factors such as association with drug using peers has been identified as vital to understanding
adolescent use of various substances, the mechanisms by which these risk factors influence adolescent behavior continue to evolve at a frightening pace. Peer influence was once restricted to brief periods of face-to-face interactions with occasional contact through the family telephone. The explosion in cell phone technology has, not only put an independent phone line into the hands of most adolescents, but has provided almost limitless connection through mobile use of Internet and text messaging. The culture around the means by which adolescents communicate, and therefore how they influence or are influenced by others, has shifted. It is imperative to understand whether these shifts in communication have resulted in changes in the mechanism of peer influence and whether traditional theories that have guided substance abuse prevention efforts remain salient for modern society.

**Problem Statement**

The problem addressed in this study is that, despite research showing a strong relationship between adolescent drug use and associating with drug using peers, very little has been conducted to determine whether or how much these associations have been affected by changes in the way in which adolescents interact. It is believed that adolescents adopt the attitudes of other adolescents to whom they have bonded. This bond is a result of the perceived opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peers or sets of peers. Cellular technology, or more specifically texting, has become the primary means by which adolescents interact with their peers, creating a virtual world of peer interaction that did not exist when the Social
Development Model was created. It is important to determine whether the preexisting model remains salient for adolescents and their virtual peers.

**Significance of the Study**

Research indicates that associating with drug using peers is one of the strongest risk factors related to adolescent drug use (Hawkins et al., 1985; Catalano et al., 1996). Consequently, much of the work by substance abuse prevention professionals has focused on understanding the influence of these peers and either attempting to shield youth from maladaptive peer influence or encouraging the interaction of adolescents with peers who exhibit more pro-social attributes. New research suggests that the manner in which adolescents communicate has shifted from traditional face-to-face methods to text messaging through cell technology. Whereas peer interaction is no longer limited by time and space, but open to unlimited virtual interaction, it is important to understand how the effect of the influence of drug using peers translates through text messaging and what, if any, changes in community drug prevention approaches may be necessary to remain current with technology. Traditional individual-based prevention approaches to addressing peer influence have included didactic training in refusal or other life skills to help adolescents resist negative peer influences. Interventions related to parents and schools have focused on monitoring an adolescent’s peer relations and reducing the amount of exposure to maladaptive peers. If substance abuse prevention efforts are to remain current and relevant, it is important to understand the effect of cell phone technology on peer interaction and how the change in interaction may or may not affect the efficacy of current youth substance abuse theory. This study is significant in that it seeks to expand the limited reach of available research in relation to the interaction of
adolescents with peers through cell-based technology and its potential impact on adolescent substance abuse.

**Research Questions**

The research questions guiding this study are as follows:

**Research Question 1:** Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?

**Research Question 2:** Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?

**Research Question 3:** Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use?

**Research Question 4:** Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?
Operational Definitions

*Cellular Technology:* The technological capability of a cellular-based telephone.

Currently, cellular (cell) phones include the capability for voice communication, SMS text messaging (texting), and the use of Internet services.

*Peer Influence:* Generally understood to be either the direct or indirect influence of peers on an individual’s behavior.

*Text Messaging:* Text messaging, or texting, is a cell phone based communication method that allows users to send short messages to end users. This service uses the cellular phone data system as opposed to the Internet.

*Virtual Peer Influence:* The proposition that the influence of peers translates through new electronic communication methods such as email, text messaging, and interaction on the Internet.
CHAPTER II: LITERATURE REVIEW

The problem addressed in this study is that, despite research showing a strong relationship between adolescent drug use and associating with drug using peers, very little has been conducted to determine if or how much these associations have been affected by changes in the way in which adolescents interact. It is believed that adolescents adopt the attitudes of other adolescents to whom they have bonded. As specified by the Social Development Model, this bond is a result of the perceived opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peers or sets of peers. Cellular technology, or more specifically texting, has become the primary means by which adolescents interact with their peers, creating a virtual world of peer interaction that did not exist when the Social Development Model was created. As the interaction of adolescents with their peers shifts from more in-person interaction to that based on mobile technology, it is vital that the substance abuse prevention community understands any potential changes in peer influence on adolescent use of drugs and potential necessary shifts in prevention planning and programming.

This study is significant in that it seeks to expand the limited reach of available research in relation to the interaction of adolescents with peers through cell-based technology and its potential impact on adolescent substance abuse. If the peer influence construct has dynamically changed due to adolescent changes in communication through mobile technology, then a shift is needed in the prevention planning paradigm. However, if mobile technology is found to be simply an extended opportunity for peer interaction,
current prevention theories remain salient and the need for a drastic overhaul in current practice may be unnecessary.

This study will be conducted through a survey of middle and high school students using an instrument that will measure the adolescents’ use of mobile technology, perception of peer drug use, and their own individual drug use behavior in order to answer the following research questions:

**Research Question 1:** Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?

**Research Question 2:** Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?

**Research Question 3:** Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use?

**Research Question 4:** Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?

A rationale for focusing on peer interaction during adolescence as it relates to substance abuse will be discussed within the framework of the Social Development Model. Additionally, the development of the Social Development Model will be explored, establishing an understanding of the evolution of the theory and its establishment as the foundational theory for the substance abuse prevention field. This chapter will also outline research related to the way in which mobile technology is
changing the way adolescents interact with their peers. Finally, the limitations of research related to mobile phone technology and adolescent substance abuse will be discussed.

**The Social Development Model**

Until the mid 1980s, the field of substance abuse prevention was devoid of a research-based theory to guide prevention efforts in relation to reducing substance abuse among youth. Prior to that time, very little evidence existed that adolescent delinquency and substance abuse could be prevented. However, the substance abuse prevention field has grown substantially since that time to include its own peer reviewed journals and professional societies (Hawkins, 2006). This is due, in large part, to the development of the Social Development Model (Hawkins et al., 1985) and its subsequent guidance of prevention research and program development. The extensive research base related to risk factors and the etiological pathways of substance abuse established through this body of research have been hailed as the catalyst that moved the field of prevention from an art to a science (Sloboda, Cottler, Hawkins & Pentz, 2009).

Hogan et al. (2003) proposed that the following five contributions are the mark of a good prevention theory:

1. The theory should identify the factors that predict substance abuse.
2. The theory should explain the mechanisms through which the tenets operate.
3. The theory should identify the internal and external variables that influence these mechanisms, including cultural factors.
4. The theory should predict points to interrupt the course leading to substance abuse.
5. The theory should specify the interventions to prevent onset of substance abuse.

Beyond fulfilling these five tenets, the Social Development Model is the only substance abuse prevention theory to achieve status as a predictive theory (Catalano et al., 1996; Hogan et al., 2003). The ability to predict future drug use and other delinquent behaviors provides opportunities for community interventions to prevent maladaptive behavior development.

**Theoretical Background**

The Social Development Model was created through the integration of components of Control Theory, Social Learning Theory, and Differential Association Theory in an effort to improve upon each theory’s ability to explain and predict behavior as it relates to drug use and delinquency (Catalano & Hawkins, 1996; Hawkins et al., 1985; Hawkins et al., 1992; Hogan et al., 2003). The theory also seeks to serve as a platform for prevention interventions (Hawkins et al., 1985) by identifying key points of development for intervention. The theory is built upon two key assumptions of human behavior that must be adopted for the integration of the theories. The first is that individuals are motivated by their own seeking of personal satisfaction and that their behavior is driven by fulfilling their own self interests. The second assumption is that underlying rules of society exist, of which the majority of the population are aware and understand these rules. This understanding of these basic rules allows society to function, helping to form the normative beliefs of society. However, it is not postulated that these rules are finite; rather, there is room for these normative beliefs to vary across different socializing units (Catalano & Hawkins, 1996).
The Social Development Model borrows the concept of identifying the risk factors associated with both substance abuse and delinquency among youth, as well as concepts related to the etiology of how youth behavior conforms to others from Control Theory (Catalano & Hawkins, 1996; Hirschi, 1969). Furthermore, components of Control Theory are used to explain the Social Development Model’s concept of the bonding of youths to socializing units, including the attachment to the unit, the maintenance of the attachment, and the assimilation of the values of the socializing unit. The contributions of Social Learning Theory (Akers, 1977; Bandura, 1977) are related to the inherently self-seeking nature of individuals and their motivation to engage in activities or relationships based on what they expect to receive in return. Much of the Social Development Model’s concept of the bonding of youth to socializing units is derived from Social Learning Theory. The ability of individuals to achieve their self seeking interest is largely determined by their own personal ability to engage in those activities, the opportunity to engage in those activities, and their resulting experience, whether reinforcing or not, with those activities (Catalano & Hawkins, 1996).

Covered in more detail later in this writing is the issue of how one’s personal ability (skills), opportunities, and reinforcement in engaging in activities is related to bonding to social units. The influence of Differential Association Theory comes through the identification of two separate paths that can be either prosocial or antisocial based on whether the adolescent is bonding to prosocial or antisocial socializing units. Catalano and Hawkins (1996) described the bonding and socializing process to be relatively the same, whether prosocial or antisocial. Differential Association Theory also supports the assumption that an overall accepted normative view is held in society of what constitutes
appropriate behavior (Matsueda, 1988). Social Development Theory deviates slightly from Differential Association Theory, in that it postulates that an individual’s normative beliefs can vary in strength, whether the beliefs are prosocial or antisocial (Catalano & Hawkins, 1996).

**Overview of the Social Development Model**

The Social Development Model postulates that children learn behavior patterns through various socializing agents found within four distinct domains: family, school, community, and peers (Hogan et al., 2003). The socialization occurs through a bonding process with a socializing agent that involves four constructs: (1) the perceived opportunity to be involved and interact with a particular group, (2) the extent of involvement and interaction, (3) having or developing the necessary skills to be involved or to interact, and (4) receiving reinforcement based on their performance in their involvement or interaction (Catalano et al., 1996; Hawkins et al., 2002). Furthermore, once a bond has been established, the resulting adoption of the normative beliefs of the socializing unit is powerful enough to influence an adolescent’s behavior beyond the four processes and is a strong influence of future behaviors. It is important to differentiate that the norms, values, and beliefs of the bonded socializing unit guide an adolescent’s behavior rather than the bond itself. Hawkins et al. (1985) most concisely described the means by which bonds develop as:

Social bonds to peers, whether prosocial or delinquent, will develop to the extent that youths have opportunities for involvement with those peers, the skills to perform as expected by those peers and the rewards that are forthcoming from interaction with those peers. (p. 35)
Consequently, the behavior of adolescents, whether prosocial or antisocial, will reflect the norms, values, and behaviors of those to whom they have bonded. It is the desire to remain affiliated with a chosen socializing unit that will encourage or dissuade behaviors that reflect or conflict with the beliefs of the socializing agent. If adolescents engage in behavior that is not reflective of the normative beliefs of their socializing unit, the bond to the socializing unit could be damaged (Catalano & Hawkins, 1996).

Catalano and Hawkins (1996) proscribed that the Social Development Model assumes there are overarching normative beliefs in society that dictate what is considered to be acceptable behavior. However, they contended that, through adolescent bonding with antisocial socializing units, an antisocial belief system could be an equally viable choice. In order to discuss the adoption of maladaptive behavior, one must consider that the baseline for adaptive adolescent behavior is for an adolescent to bond to prosocial socializing units, therefore adopting the generally accepted positive norms of society that affect behavior. The adolescent’s behavior path is determined when the adolescent, due to a variety of factors, either adopts the prosocial norms of prosocial socializing units or the antisocial norms of antisocial socializing units. While the baseline behavioral norms may be prosocial, Catalano and Hawkins (1996) suggested three possible pathways for adolescents to develop antisocial behavior. The first occurs when an adolescent, whether through a lack of opportunities or skills, fails to receive reinforcement for prosocial actions, resulting in a weak bond to prosocial socializing units and their prosocial norms. This leads to a weak connection to prosocial beliefs, which, in turn, reduces internal constraints to engage in maladaptive behavior. The second pathway is based on an adolescent’s calculation of the risks and benefits of engagement of antisocial behavior.
Despite being bonded to prosocial individuals or groups, adolescents may choose to engage in antisocial behavior if they believe the result will fulfill a self-serving need and the risk of getting caught, and therefore receiving punishment from the prosocial units, is low. The third pathway occurs when adolescents, at an earlier developmental stage, bond to their immediate socializing units that hold antisocial beliefs. For example, a child may be born into a family that frequently uses drugs and has a family culture based on drug use. In this case, the familial culture of drug use or other maladaptive behaviors is the only belief system available to a child to assimilate.

**Developmentally specific model.**

The Social Development Model outlines four distinct developmental periods that influence youth during their development from birth through high school. Catalano and Hawkins (1996) postulated that, in each of these developmental periods, differences exist in the available or predominant socializing units as well as other external factors that may influence behavioral choices. The organization of the Social Development Model into developmental periods increases the viability of the theory to drive community or organizational efforts to intervene in youth substance abuse behavior by narrowing down key intervention points at each stage of development. In each stage, Catalano and Hawkins identified the socializing units with which youth have the opportunity to bond, as well as the risk factors more prevalent in that developmental stage. In order to understand the means by which bonding to socializing units and risk factors influence drug use, it is important to investigate each stage individually. The four identified stages are divided by educational transition periods and include the preschool, the elementary school, the middle/junior high school, and the high school periods. In examining these
developmental periods, it is important to understand the relationships between constructs as adolescents move from one period to the next. Developmental outcomes in one level influence the beginning of what Catalano and Hawkins referred to as the “causal chain” in the next period. Each stage of development is critical in establishing the foundation for future stages.

The preschool period. During the preschool developmental period, Catalano and Hawkins (1996) described the child’s world as being more centered on the bonding to, and the resulting socialization by, the family and, if applicable, child care professionals. While the development of the bond is critical at this stage, the researchers did not believe that the child is yet capable of assimilating the belief system of the parents. However, the establishment of the bond is critical for the youth to adopt the belief system as they reach future developmental milestones. Biological factors such as birth and delivery issues, such as a pre-term birth, low birth weight, or in utero drug exposure, can inhibit cognitive and social development, making the bonding to parents more difficult. Other constitutional factors that affect bonding in the post-birth period include the child’s temperament and social orientation. If the child’s temperament and social orientation are positive, the likelihood of bonding to the family unit is higher. Conversely, if the child has a difficult temperament or a negative social orientation, bonding to the parent is hindered. Similarly, if the parents are cold, lack emotional attachment, or engage in maladaptive activities such as drug use, criminal activity, or violence in the home, the inability for a bond to form may be due to the parents’ condition. External factors are categorized by family management practices, such as the setting of clear expectations and the appropriate application of reinforcement and moderate punishment as is reasonable
for the child’s behavior. If the child establishes a strong bond with prosocial parents and is guided through appropriate behavioral development, the child is more likely to adopt a more prosocial orientation. This prosocial path opens the door for appropriate bonding to schools and peers in the next development path, making the transition to prosocial behavior easier in the next developmental period. However, if a poor bond is established to positively oriented parents, or a strong bond developed with antisocial parents, the child may be more predisposed to adopt a negative social orientation; and early indicators of risk, such as aggressive behaviors or conduct disorders, begin to appear. This will increase the likelihood that the child will bond to more antisocial groups at the next level.

The elementary school period. During this period, Catalano and Hawkins (1996) described how children begin to adopt the social norms of the socializing units to those with whom they have bonded. The development of either a prosocial or antisocial orientation in the previous developmental period will affect how they begin to interact with their new classroom peers and teachers who become important socializing units. The new prosocial or antisocial views held by the new socializing units of school and peers may align with or contradict the beliefs of the family socializing unit, creating potential conflicts in internalized beliefs. Much like family management, management practices in the school relating to the setting of clear expectations and the appropriate application of reinforcement and moderate punishment as is reasonable for the child’s behavior are important. Schools also present the child with opportunities to engage in prosocial peer-related activities, such as sports teams or clubs, and hopefully the recognition (reinforcement) of their prosocial activity. Social and academic development
are critical during this period, as academic failure and peer rejection are related to risk of drug use initiation during this stage and drug use in future stages (Hawkins et al., 1992). While the importance of peer influence begins to increase in the latter stages of this developmental period, parents and teachers remain the primary socializing influences (Catalano & Hawkins, 1996). However, the increase in peer influence in this period is indicative of an inevitable transition in the next developmental period.

**The middle/junior high school period.** Catalano and Hawkins (1996) describe this period as one in which the primary socializing unit for youth, who are now considered adolescents, transitions from the family and school to their peers. This is believed to be due to the adolescents’ motivation to establish themselves as an individual and separating themselves from their family. While family and school norms are important in guiding the behavior of the adolescent, the effect is believed to be indirect through shaping the adolescents’ choice in peers and the formation of peer relationships (Elliott et al., 1982). Beyond the influence of peers, the external constraints of society’s laws begin to have an effect during this stage. However, the adolescents’ path, whether prosocial or antisocial, will be determined by the peer groups with which they feel an opportunity to associate, the groups with which they possess the skills to interact, and how much reinforcement they receive from groups based on their participation. If adolescents have the opportunity to bond to prosocial youths through these mechanisms, they are more likely to follow the prosocial path of development and avoid drug use. However, bonding to antisocial youth and the adoption of the group’s norms that are more accepting of drug use will increase the adolescent’s risk for use.
The high school period. When adolescents enter the last developmental period outlined by the Social Development Model, many of the considered opportunities to bond with socializing units and exposure to risk factors have already been encountered. Consequently, this period is seen as guided by the maintenance of previous prosocial or antisocial orientation through the influence of peers, school, family, and community. Although familial influence continues to decline during this period, it remains an important socializing unit for adolescents (Catalano & Hawkins, 1996).

Critical to understanding the Social Development Model and how it describes the mechanisms related to adolescent drug use is that the bonding to socializing units and accompanying factors that increase risk of use evolve through the development of the adolescent as a social being. Adolescents are shaped by the relationships that are formed and their move toward adopting either the prosocial or antisocial views of those around them. Depending upon the selection of a prosocial or antisocial path, a variety of risk and protective factors may encourage or impede their prosocial or antisocial development. As the mechanisms of bonding to socializing units and the development of the social adolescent have been discussed, it is imperative to gain an understanding of the relevant risk factors identified by the Social Development Model.

Risk Factors

One of the culminating achievements of the Social Development Model was the integration into one model the existing research related to various risk factors associated with adolescent drug use and other maladaptive behaviors. Much of the research extant to the Social Development Model focused on a limited number of factors. The Social Development Model considers a broader range of potential risk factors and integrates
them into one predictive model. Researchers believe that the best way to intervene and, therefore, work to prevent adolescent substance abuse is to disrupt the effect of risk factors at developmentally appropriate intervals (Hawkins et al., 1992). Just as the potential socializing units change as the youth transitions through the four developmental stages, so do the potential risk factors that contribute to adolescent behaviors. The Social Development Model indicates appropriate risk factor interventions based on the developmental stage of the target audience. Before determining what factors are more salient at each developmental stage, it is pertinent to identify the risk factors identified for inclusion in the model.

Hawkins et al. (1992) initially divided the identified risk factors into two categories. The first was termed “contextual factors” and includes broader cultural and societal factors that provide the larger, normative expectations for behavior. These factors are often associated with the youth’s environment outside of the home and include, not only the physical environment, but also the laws and cultures of the inclusive society. The second category was related to more interpersonal influences such as the child’s school, family, and peers. With the release of the Communities That Care program, which is a Social Development Model-based prevention program designed to assist communities in the assessment of local risk factors and potential intervention, the risk factors are most commonly divided into one of four domains: Community, Family, School, and Peer/Individual (Hawkins & Catalano, 2003). For the sake of order, the discussion of risk factors will follow these four categories.

**Community factors.** The community factors domain includes what Hawkins and Catalano (1992) termed “contextual factors” in their earlier work. An expansion of the
early model, the contextual factors were included to account for the influence of the social context in which adolescents function (Fagan, Van Horn, Hawkins, & Arthur, 2007). Availability of drugs, community laws and norms favorable toward drug use, transitions and mobility, low neighborhood attachment and community disorganization, and extreme economic deprivation comprise the community factors included in the current Social Development Model (Hawkins & Catalano, 2003). Current prevention strategies focus heavily on influencing community factors through policy implementation or environmental strategies. Community-level interventions have resulted in significant reductions in adolescent substance use (Hawkins & Catalano, 2003; U.S. Department of Health and Human Services, 2003). The following section will briefly describe the community risk factors outlined by the Social Development Model.

**Availability.** Not only is the actual availability of drugs in the community related to adolescent drug use, but the higher the perception of availability, the more likely adolescents are to engage in drug use (Fagan et al., 2007; Hogan et al., 2003; Maddahian, Newcomb, & Bentler, 1998). Maddahian et al. (1998) found the relationship between availability and adolescent substance use to exist for a variety of substances such as alcohol, tobacco, marijuana, and other illicit drugs. While availability of substances can be influenced by community laws, it is considered a separate risk factor.

**Community laws and norms favorable toward drug use.** Community laws can act to reduce the availability of alcohol to adolescents. This is often achieved through the taxation of legal drugs such as alcohol and tobacco, laws restricting who may purchase these substances, and laws regulating how these items are sold (Hawkins et al., 1992; Levy & Sheflin, 1985). Hawkins et al. (1992) proposed two possible explanations for the
means by which community laws and norms affect use. The first is that use is a reflection of the social norms of the community, and the laws of that community reflect the guiding social norms. The second is that laws and norms affect the use of drugs from supply and demand perspectives. If social norms are less accepting toward adolescent use, the results will be less demand from community youth and less social availability from adults. Conversely, if social norms toward adolescent substance use are lenient, youth demand will be higher, as will social availability. If local laws restrict availability, reductions in supply should be reflected in a reduction of adolescent use.

Transitions and mobility. Normal transition between certain grades, such as the transition from elementary to middle school, can result in increased risk for substance abuse for youth (Hogan et al., 2003). This may be due to exposure to a wider variety of peers or a shift in primary socializing units, such as a shift from parental to peer influence (Catalano & Hawkins, 1996).

Low neighborhood attachment and community disorganization. As residents of a neighborhood or community feel less connected to their local community, including being connected to local schools, the more likely that community is to suffer from delinquency and substance abuse. Often, the lack of attachment occurs due to the majority of local leaders, teachers, merchants, and public servants living outside the particular geographic area. A community that contains a variety of segregated cultures can also possess a disparity of attachment for each culture. While a lack of attachment can lead to a community’s lack of organization to address issues related to substance abuse, a connected community can suffer from a disorganized effort due to a lack of leadership or ignorance of effective strategies (Hogan et al., 2003).
**Extreme economic deprivation.** While economic deprivation has been shown to be related to adolescent delinquency, there is little evidence that economic deprivation is directly linked to adolescent substance abuse (Hawkins et al., 1992). Hawkins et al. (1992) suggest that extreme economic deprivation co-occurring with childhood behavior issues can lead to substance abuse issues later in life. It is possible, however, that extreme economic deprivation may indirectly influence adolescent substance abuse by reducing the actual or perceived opportunities and skills to engage in prosocial bonding activities (Catalano & Hawkins, 1996).

**Family Factors.** The family is generally the first, and at least for the first two to three years of their life maybe the only, socializing unit with which a child has the opportunity to bond. The initial orientation of the child, whether prosocial or antisocial, will depend upon how well the child bonds to the family socializing unit and whether the beliefs of the family are assimilated. If the surrounding family influence is based on a culture of acceptance of drug use, the child is more likely to pursue that path of behavior. However, if a youth successfully bonds to a family that has consistent, healthy beliefs concerning avoidance of drug issues, the youth is more likely to begin down the prosocial path and avoid negative influences in future developmental periods (Catalano & Hawkins, 1996). Beyond the beliefs of the family system, some of the risk factors are related to behavior issues within the family. The four risk factors found within the family domain include a family history of drug use, family management problems, family conflict, and parents with favorable attitudes toward involvement in drug use (Hawkins & Catalano, 2003).
Family history of the problem behavior. A plethora of research exists that produces consistent correlations between adolescent substance abuse and parental substance abuse (Brook, Brook, Gordon, Whiteman, & Cohen, 1990; Johnson, Schoutz, & Locke, 1984). While research is available that supports both viewpoints, the field diverges on whether this is due to the modeling of the behavior by parents and/or whether there may be a genetic link where children of drug users may be more predisposed to substance use (Hawkins et al., 1985). Whether the link is genetic, a function of learning theory, or both, adolescents raised in a home with drug using parents are more likely to engage in drug using behavior.

Family management problems. One identified family management issue includes parents either failing to send to their child a consistent anti-drug message or sending inconsistent messages related to using drugs. All too often, adolescents understand silence by parents to equate to consent. A parental failure to instill anti-drug beliefs in their child can leave the issue open to interpretation when the child is later faced with other socializing units. Furthermore, parents who send an inconsistent message leave the adolescent unsure of appropriate behavior related to drug use. Parental failure to set behavioral limits, unrealistic expectations by parents of their children, and poor parental communication patterns have been associated with adolescent drug use (Reilly, 1979). This failure to set clear expectations for behavior may make it more difficult for adolescents to avoid adopting the beliefs of future maladaptive socializing units, such as peers, in current or future development periods (Hogan et al., 2003). Hawkins et al. (1992) continued to categorize poor family management as a failure of
parents to monitor their children’s behavior and providing inconsistent or overly severe punishment for misbehavior.

*Family conflict.* While much attention has been paid to the effect of broken homes on children, the family structure appears to be a less important factor in relation to adolescent substance abuse than conflict within the family (Hogan et al., 2003). Children who come from homes with increased levels of conflict between caregivers or between caregivers and children are at higher risk of substance abuse (Hawkins et al., 1992).

*Favorable parental attitudes and involvement in drug use.* If children successfully bond to their families, they will assimilate the beliefs and standards of the family unit. If parental attitudes are accepting or supportive of drug use, the likelihood of adolescent substance abuse increases (Brook, Gordon, Whiteman, & Cohen, 1986). Furthermore, parents who include their children in their drug using practices increase the risk that their children will engage in drug using behavior as adolescents (Hogan et al., 2003).

*School factors.* Schools are often the first socializing unit to influence a child outside of the family and the social mechanism that introduces youth to the influence of peers. While the bonding of children to the beliefs and norms of their school can lead to either prosocial or antisocial pathways based on the cultural stance of the school, additional school-based risk factors exist that research has indicated to increase an adolescent’s likelihood to use drugs. These risk factors are academic failure beginning in late elementary school and lack of commitment to school.

*Academic failure beginning in late elementary school.* Children who fail academically beginning in late elementary school are at increased risk for substance
abuse (Jessor, 1976). While an inverse relationship exists between intelligence and delinquency, little reported research suggests a similar relationship between intelligence and drug use (Hawkins et al., 1992). It is proposed that it may be the experience of the failure, rather than the inability to perform, that may increase the risk for problem behaviors (Hogan et al., 2003). Academic failure may be a cause of isolation from prosocial peers just as youth are entering adolescence and the transition to peers as the predominant socializing unit. It appears that this period of social adjustment may be more critical toward adolescent onset of drug use than academic performance (Hawkins et al., 1992).

**Lack of commitment to school.** Adolescents who are more committed to the process of education, believing in the necessity of education for their future success and that educational instruction is relevant, are less likely to engage in drug using behavior. In the July issue of Clinical Notes of the National Institute on Drug Abuse (as cited in Hawkins et al., 1992), Friedman reported a negative relationship between the perception of the relevance of coursework and time spent on studying with adolescent substance abuse. As schools tend to have a more prosocial view of acceptable behavior, adolescents who are more bonded to their school, and therefore more accepting of the beliefs and standards of that school, should adhere more to a prosocial path of behavior. Conversely, students who are not bonded to their school and the inherent prosocial belief system may be more subject to other antisocial influences from maladaptive peers or community systems.

**Peer and individual factors.** This domain consists of factors related to the individual characteristics of the adolescent, as well as factors related to peer interactions.
During adolescence, youth begin the process of building their own identity independent of their role as dependent children within the family structure. As this unfolds, the increasing interaction with peers results in increased influence from peers as a socializing unit; and the adolescents have to either adopt, reject, or blend the belief systems of their peers from their family’s standards of behaviors (Catalano & Hawkins, 1996; Elliott, Huizinga, & Ageton, 1985). Risk factors associated with the individual characteristics of the adolescent include early and persistent antisocial behavior, rebelliousness, favorable attitudes toward drug use, early initiation of drug use, and what the researchers identify as “constitutional factors” (Hawkins et al., 2003). Gang involvement and friends who engage in the problem behavior are the remaining risk factors most associated with peers.

**Early and persistent antisocial behavior.** Youth who engage in antisocial behavior on a consistent basis in early elementary school through early adolescence are at increased risk of substance abuse (Brook et al., 1990; Hogan et al., 2003; Loeber, 1991). The aggressive behaviors that present in early childhood, particularly if they continue to early adolescence, may inhibit the bonding of adolescents to prosocial youth leaving the adolescent to seek peers with similar dispositions. As the development of relationships with antisocial peers continues, the journey down the path of antisocial behavior also continues.

**Rebelliousness.** While research has identified a variety of personality factors related to youth maladaptive behaviors, rebelliousness is one that has been identified as its own construct, or risk factor, in the final iteration of the Social Development Model and Communities That Care Program (Hawkins et al., 2003). Substantial research has linked rebelliousness to substance abuse in adolescence (Bachman, Johnston, &
O’Malley, 1981; Hawkins et al., 1992) Youth who reject the prosocial values of their community, family, and schools are more inclined to adopt a more antisocial stance (Hawkins et al., 1992).

Favorable attitudes toward drug use. The more favorable an adolescent’s attitude toward the use of alcohol, tobacco, and other drugs, the more likely the adolescent is to initiate drug use (Krosnick & Judd, 1982; Hawkins et al., 1992; Hawkins et al., 1985). One construct often linked to individual attitudes of adolescents is perception of harm. The more harmful or risky and adolescent perceives drug use to be, the less likely they are to engage in drug using behavior (Substance Abuse and Mental Health Services Administration, 2013).

Early initiation of drug use. The earlier that youth engage in drug using behavior, the more likely they are to suffer drug related problems later in life (Hogan et al., 2003). Adolescents who engage in regular alcohol use by the age of 15 are five times more likely to suffer alcohol related issues as an adult (U.S. Department of Health and Human Services, 2007). Furthermore, a relationship exists between early initiation of drug use and later use of harder drugs (Kandel, 1982).

Constitutional factors. Constitutional factors are biological or physiological factors that increase the risk of adolescent substance abuse (Hogan et al., 2003). Youth who possess a more sensation seeking personality are at increased risk for initiating drug use (Hawkins et al., 1985). Another characteristic is low harm avoidance. As discussed in relation to favorable attitudes toward use, adolescents who have a lower expectation of being harmed through drug use are more likely to engage in use (Substance Abuse and Mental Health Services Administration, 2013).
**Gang involvement.** Gang involvement has been identified as an adolescent risk factor for drug use (Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Hawkins et al., 2002). While drug using peers have been shown to increase adolescent substance abuse (Akers, 1977; Hawkins et al., 1985; Jalali et al., 1981; Monahan et al., 2009), the influence of gang involvement on adolescent drug use is greater (Battin-Pearson, Hawkins, Thornberry, & Krohn, 1998; Hawkins et al., 2002). Possessing a culture that is counter to the community’s legal system, as well as the gang’s possible involvement in the drug distribution market, may be possible explanations for the greater influence.

**Friends who engage in drug use.** The influence of drug using peers on adolescent drug use has been well documented (Akers, 1977; Dishion & Owen, 2002; Ennett et al., 2008; Fergusson, Swain-Campbell, & Horwood, 2002; Hawkins et al., 1985; Jalali et al., 1981; Levine & Singer, 1988; Scheier & Botvin, 1997; Spooner, 1999). Although one of the strongest predictors of adolescent drug use, it is unknown whether the association is due to drug using adolescents seeking out similar peers or whether the direct influence of drug using peers is the issue. There is little argument that adolescents having drug using peers and the use of drugs by adolescents are linked (Fergusson et al., 2002; Monahan et al., 2009). Furthermore, Elliott et al. (1982) postulated that the bond to peers may be the only bond that has a direct influence on adolescent substance abuse, with bonds to school and family having only indirect effects. Hawkins et al. (1985) discussed this as being due to a time ordering of bonding associations. Bonds to family and school, both of which usually predate adolescence, influence the behavior of adolescents indirectly by influencing the selection of peers during adolescence who become the primary influencing agents (Hawkins & Weis, 1985; Patterson, DeBaryshe,
& Ramsey, 1989). The importance of peer influence in relation to an adolescent's use of alcohol, tobacco, or illicit substances cannot be overstated and should be considered a primary risk factor (Levine & Singer, 1988). Peer drug use, drug-related peer attitudes, perception of peer drug use, and perception of peer support of drug use are identified peer factors that influence adolescent drug use (Spooner, 1999). Prinstein and Wang (2005) found that adolescents’ perceptions of their peer use may be more predictive of their own substance use than actual peer reported usage.

**Review of the Social Development Model as it Relates to this Work.**

The Social Development Model is the predominant theory driving the field of substance abuse prevention in an effort to understand and disrupt adolescent drug use (Hogan et al., 2003). At the core of the theory is that adolescents adopt the beliefs and standards of the socializing units with whom they bond. Following the developmental pattern of the model, it can be seen that, by middle/junior high school, an adolescent’s peers become the primary socializing unit. The mechanism by which adolescents bond to peers is the same as the other identified socializing agents, in that adolescents bonding to their peers is guided by (1) the perceived opportunity to be involved and interact with a peer group, (2) the extent of involvement and interaction with peers, (3) possessing or developing the necessary skills to be involved or to interact with peers, and (4) receiving reinforcement from their peers based on their performance in their involvement or interaction (Catalano et al., 1996; Hawkins et al., 2002). Furthermore, the behavior of the adolescents, whether prosocial or antisocial, will reflect the norms, values, and behaviors of those to whom they have bonded. The Social Development Model has integrated a broad range of research that identifies drug using peers as one of the most
influential of risk factors for adolescent drug use (Akers, 1977; Dishion & Owen, 2002; Ennett et al., 2008; Fergusson et al., 2002; Hawkins et al., 1985; Jalali et al., 1981; Levine & Singer, 1988; Scheier & Botvin, 1997; Spooner, 1999). Having established the mechanism by which adolescents assimilate either prosocial or antisocial beliefs and standards through bonding with their peers and establishing peers as one of the primary influences on adolescent substance abuse, it is important to further investigate research related to shifts in the mechanisms by which adolescents interact and bond. More specifically, the influence of modern cell technology, including texting, should be discussed.

Adolescent Interaction With Peers Through Modern Cellular Technology

The Internet, and more specifically, mobile cellular technology has changed the way the modern world communicates. By 2002, the number of global cell phone subscribers surpassed that of fixed line subscribers (Srivastava, 2005). While there have been moderate amounts of research attempting to better understand how the Internet affects youth, research seeking to understand the impact of mobile communication technology is still relatively new. Modern mobile cellular (cell) phone technology now provides youth with 24-hour access to information and communication through traditional voice usage, textual messaging (texting), as well as Internet website and Internet-based applications. Recently, the Pew Internet and American Life Research Project revealed that 75% of 12 to 17 year olds now own cell phones (Lenhart et al., 2010). Cell technology, through the instant access of information and communication is changing the way adolescents learn and interact. As long as adolescents have access to their cell technology, they have access to an entire virtual world of information and
communication options. Educational sessions are no longer limited to didactic classroom settings, as limitless online media and information can be accessed virtually through Internet-based sources. Likewise, the interaction of adolescents with their peers is no longer limited to traditional face-to-face opportunities such as lunch time, recess, the trip home from school, or on weekends, but can occur at any and all hours of the day.

Prior to cell technology, the largest evolution in adolescent communication developed as a result of the Internet. By the turn of the 21st century, a large portion of adolescents was using Internet technology to communicate (Roberts et al., 1999). Internet-based communication technology began with email and progressed through the development of chat rooms, online forums, and instant messaging evolving into semi-permanent online presences that incorporate all of these forms of communication through websites such as MySpace and Facebook. While limited, some research has related to understanding the quality of the relationships developed through online technology (Lea & Spears, 1995; Turkle, 1995; Wolak et al., 2003). Not only has it been established that the majority of adolescents use online forms of communication (Roberts et al., 1999; Rosenbaum et al., 2000), research indicates that adolescents use online sources to communicate with individuals they do not know on a face-to-face basis (Wolak et al., 2002). Although a relatively new form of peer interaction, online relationships have already been firmly integrated into the adolescent culture (Wolak et al., 2003).

As cell phone technology has developed, the ability to engage in and sustain online relationships and communication has become a portable phenomenon. Adolescents are no longer required to sit at a desktop computer in order to use the Internet. Online communication among youth now primarily occurs through
individualized online presences such as Facebook, as well as new online instant messaging applications such as Twitter. However, the newest form of instant messaging, Short Message Service (SMS) text messaging (texting) is based on cell technology and bypasses the need for the Internet. Not only are cell phones creating an evolution in communication technology, the way adolescents communicate continues to change as well. The Pew Internet and American Life Research Project further revealed that of the 75% of 12 to 17 year olds who own cell phones, 88% utilize text messaging capability. Furthermore, 67% of all youth who were surveyed reported that they would rather send a text message to a friend than call them. As a result of new technology, face-to-face interaction is no longer the most frequent form of interaction for adolescents with their peers (Lenhart et al., 2010; Srivastava, 2005).

Based on the definition of bonding as ascribed by the Social Development Model, text messaging may provide a virtual landscape for adolescents to bond with their peers. The constant connectivity provided by text messaging allows increased opportunities for adolescents to interact with other adolescents for durations and timeframes no longer limited by the need for face-to-face contact. Reinforcement for involvement with their peers through text messaging may be two-fold - the traditional reinforcement and personal acceptance received from peers based on the interaction and the potential that the novelty of interacting through cell technology may also be inherently rewarding (Wallis et al., 2006). It appears that the mechanisms identified by the Social Development Model for bonding are well suited to the adoption of text messaging as another vehicle for adolescents bonding to their peers. Based on the expanded opportunities for interaction, the idea must be entertained that cell technology may
increase either the speed at which bonding occurs or possibly may result in a more powerful bond to peers. Increasing the speed of the bonding process may lead adolescents to more quickly assimilate the belief system of the peers to whom they are bonding. Increasing the power of the bond may lead to a more firm attachment to the belief systems of their peers. Mobile communication not only reduces some of the social inhibitions related to face-to-face contact, it reduces geographical limitations of social interaction, allowing youth to develop relationships outside of their immediate socializing units of families, schools, and communities (Womack et al., 2003).

While expanding an adolescent’s ability to communicate, cell technology also brings new facets to the social interaction between peers. Boyd (2008) discussed four properties of social network-based communication not commonly found in traditional face-to-face interactions. Boyd argued that these four properties - persistence, searchability, replicability, and invisible audiences - alter social dynamics at the fundamental level, increasing the complications related to the way in which individuals interact. Persistence relates to online communications being semi-permanent, allowing for both a conversation to occur in an exchange that takes place over a longer period of time, such as in the case of email or message board posts, as well as for past communications to be saved and recalled at a later time. Searchability relates to the ability for someone to search out individuals or their ideas online due to the semi-permanence of textual communication. Replicability relates to the ability to copy, word for word, one’s textual communication and post it in any other location on the Internet. Finally, the idea of an invisible audience expresses the ability of anyone to see a communication with others. Whereas one can monitor others in the environment who
could potentially overhear a face-to-face conversation, the audience for online
communication is very difficult to regulate. While the effects of these principles on peer
bonding through cell technology are yet to be explored in depth, it does demonstrate the
complexity of cell-based communication between peers.

Research Limitations Related to Modern Cellular Technology
and Adolescent Substance Abuse

While studies exist that relate to the relationship between Internet use for
communication and increased levels of social problems in youth (Jackson et al., 2008),
the concept of adolescent communication through cell phone and Internet technology as
related to maladaptive adolescent drug use behavior is relatively unexplored in the
research community. Recently, one study has been introduced that linked hyper-texting
behavior (120 or more texts per day) to adolescent alcohol, tobacco, and illicit drug use.
Hyper-texting teens were reported to be 40% more likely to have tried cigarettes, two
times more likely to have tried alcohol, 43% more likely to be binge drinkers, and 41%
more likely to have used illicit drugs (Frank et al., 2010). While the study exposed
relationships between hyper-texting behavior and substance use among adolescents, the
researchers did not suggest a causal relationship. Furthermore, in interviews, the lead
researcher Scott Frank indicated that the most important factor related to hyper-texting
and drug use may be with whom the adolescent is communicating (Huget, 2010).
However, the research of Frank et al. (2010) defined hyper-texting based on the number
of texts sent. An investigation of the potential for influence from drug using peers
through virtual bonding would require some measure of the number of texts received
from peers, as well as the perceived drug using behavior of the peers of the individual.
Finally, it may be prudent to also investigate whether adolescents have been involved in conversations through text messaging where drug use was the topic.

As text messaging has become the preferred form of communication for adolescents with their peers, the mechanism for peer influence from drug using peers may be changing as well. The next logical step is to investigate whether the hyper-texting behavior or virtual influence from drug using peers is more highly related to adolescent alcohol and other drug use. Furthermore, it is important to understand how the changing mechanism of peer influence relates to current drug prevention models.

**Conclusion**

The Social Development Theory has provided Substance Abuse Prevention practitioners with a solid theoretical foundation to guide planning and implementation since the mid 1980s. A key component of the Social Development Theory, the influence of an adolescents’ peers on their substance using behavior has been identified through research as one of the most powerful predictors of adolescent use. However, the culture surrounding the means by which adolescents communicate is rapidly shifting due to technological advances, most specifically through advancements in mobile technology. As recent studies have indicated that adolescents now prefer to engage their peers through text messaging rather than voice or face-to-face communication, the dynamics of peer interaction, and therefore peer influence, may be facing an evolution in influence. As current prevention programming focuses heavily on peer related interaction, it is important that the field of Prevention gain a better understanding of how these shifts in peer interaction may, or may not, change the influence of peers on adolescent substance use.
CHAPTER III: METHOD

The problem addressed in this study is that, despite research showing a strong relationship between adolescent drug use and associating with drug using peers, very little has been conducted to determine whether or how much these associations have been affected by changes in the way adolescents interact. It is believed that adolescents adopt the attitudes of other adolescents with whom they have bonded. This bond is a result of the perceived opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peers or sets of peers. Cellular technology, or more specifically texting, has become the primary means by which adolescents interact with their peers, creating a virtual world of peer interaction that did not exist when the Social Development Model was created. It is important to determine whether the preexisting model remains salient for adolescents and their virtual peers.

This study is significant, in that it seeks to expand the limited reach of available research in relation to the interaction of adolescents with peers through cell-based technology and its potential impact on adolescent substance abuse. If the peer influence construct has dynamically changed due to adolescent changes in communication through mobile technology, then a shift is needed in the prevention planning paradigm. However, if mobile technology is found to simply be an extended opportunity for peer interaction, current prevention theories remain salient and the need for a drastic overhaul in current practice could be unnecessary.

This chapter provides information regarding the research methods used to investigate whether peer influence on adolescent substance use, as defined by the Social
Development Theory, remains a salient factor with the shift of preferred contact between adolescents and their peers from face-to-face communication to communication through text messaging. These research methods will be explained in the context of answering the following research questions:

**Research Question 1:** Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?

**Research Question 2:** Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?

**Research Question 3:** Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use?

**Research Question 4:** Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?

Data for this study will be utilized from a secondary data source. A description of the participants, as well as the method of participant selection and survey implementation, will be included. Demographic information of the participants, as well as relevant descriptive information of the participants’ community, will be included. Finally, the procedures for the testing and analysis of data as they relate to the research questions will be included.
Participants

Student subjects included students in grades 7, 8, 9, 10, 11, and 12 from two school systems in the southeastern United States. Four middle schools and four high schools were associated with a county-based public school system. The county’s demographics include a population of 113,792, with 85.7% of the population identified as White, 9.3% as Black, 4.7% as Hispanic or Latino, and 2.9% as Asian (U.S. Census Bureau, 2010). One middle school and one high school associated with an independent city public school system located within the aforementioned county were also associated. The city’s demographics include a population of 58,067, with 75.8% of the population identified as White, 13.9% as Black, 6.5% as Hispanic or Latino, and 4.2% as Asian (U.S. Census Bureau, 2010).

In the spring of 2012, both school systems implemented the Save Our Kids Survey, a drug survey that serves as the data source for the current research project. Implemented as a census survey, the school survey yielded 4,261 eligible respondents across the six included grades after being screened through exaggeration and alcohol inconsistency filters. As this research is interested in the use of cell technology by adolescents, respondents were further screened for cell phone ownership with texting capability and for students who reported sending and receiving text messages. Of the remaining 2359 respondents, 80.9% were county school system attendees and 51.4% were female. The sample consisted of 609 7th (25.8%), 538 8th (22.8%), 370 9th (15.7%), 345 10th (14.6%), 283 11th (12.0%), and 214 12th grade students (9.1%). Demographics related to race were not collected.
As the data source for this research were from a secondary source, a full review by the university’s Institutional Review Board was unnecessary. For the use of secondary data, a copy of the survey and related survey documentation and letters of permission from each school system were included for the review. Furthermore, information related to the way in which the local school systems and survey company addressed anticipated discomfort and risks, confidentiality, and refusal or withdrawal from the survey was included. In relation to the current research project, an explanation of the purpose and procedures of this study were included. A copy of the approval from the Institutional Review Board can be found in Appendix A.

**Measures**

Independent variables included (a) Peer Use -- the perception by the youth respondent that they have best friends (peers) who used alcohol within the past twelve months, (b) Cell-Based Alcohol Use Discussion -- discussing the use of alcohol with their friends (peers) through their cell phone, and (c) Textversation -- the average number of text messages sent to peers (friends) and received from peers (friends) in a day.

The link between the influence of drug using peers and adolescent substance abuse has already been established through references to research (Akers, 1977; Dishion & Owen, 2002; Ennett et al., 2008; Fergusson et al., 2002; Hawkins et al., 1985; Jalali et al., 1981; Levine & Singer, 1988; Scheier & Botvin, 1997; Spooner, 1999). However, it has also been established that an adolescent's perception of the use of substances by their peers may hold more predictive value than the actual reported use by peers (Prinstein & Wang, 2005). In order to determine the perception of peer use, the Save Our Kids Survey requested adolescents to "Think about the people about your age who you consider to be
your best friends. Over the past 12 months, how many of them used . . . alcohol?” As the response set for this item was categorical in nature, responses were recoded into a dichotomous variable indicating that the respondent reported perceiving that they had no friends that used alcohol (0) or one or more friends who used alcohol (1).

Data related to the independent variable of Cell-Based Alcohol Use Discussion were collected through an item on the Save Our Kids Survey that asked respondents, "Have you ever discussed drinking alcohol with friends through your cell phone?” As the response set to this item included only "yes" and "no,” no additional recoding was necessary for the analysis.

The final independent variable of "textversation" measure was created by combining two questions. The first asked students, "About how many texts do you send to your friends in a day?" The second question asked students, "About how many texts do you receive from your friends in a day?" Previous research linking texting behavior to adolescent substance use only investigated the number of texts sent (Frank et al., 2010). As communication with peers is most often a didactic interaction, whether through voice or texting, the textversation variable included both the sending and receiving of text messages. Both items followed an open response format in which the respondents entered their approximation of the number of texts sent and received, resulting in a continuous data return. A Pearson product-moment correlation coefficient was computed to assess the relationship between the number of text messages sent to and received from peers. A significant positive correlation was noted between the two variables, $r = .755, n = 2359, p < .001$. 
As this study investigated the ability of peer use, discussion of alcohol use through cell technology, and the number of text messages sent to and received from peers to predict the use of alcohol by adolescents, alcohol use by the respondents over the past 12 months was the lone dependent variable. This was assessed through the Save Our Kids Survey through the item, "Think back over the past 12 months. How often did you use . . . Alcohol?" As the original response set was categorical based on six possible responses, a new dichotomous dependent variable was created based on whether the adolescent respondents reported any or no use of alcohol within the past 12 months.

**Research Design**

This study should be considered as causal-comparative research, as it was designed to explore the possible relationships between the number of daily text messages sent and received with peers, having peers who use alcohol, and adolescents who discuss alcohol use with their peers through cell phones and how these factors may change the likelihood that adolescents engage in alcohol use. The research was conducted through an examination of a pre-existing data source; therefore, the researcher did not introduce any treatment or interventions to the sample.

Based on new research that found a relationship between the number of text messages sent and adolescent alcohol use (Frank et al., 2010), one purpose of this study was to explore whether the likelihood of an adolescent using alcohol changed based on the number of text messages sent and received from his/her peers. As adolescent peer interaction is rarely a one-way phenomenon, creating a measure that encompassed both messages sent and received was proposed to better represent conversational exchanges between peers. The researcher was interested in determining whether a relationship
existed between a measure that better reflected the conversational manner of peer interaction through texting and adolescent alcohol use. If a relationship is determined to exist, then the potential for adolescents to bond through cellular phone-based technology becomes a reality, allowing new communication technology to be discussed within the established theoretical framework of the Social Development Model.

Another purpose of this study was to determine whether the discussion of alcohol use through their cell phones changes the likelihood that adolescents engage in alcohol use. This analysis is the next logical step from the first questions. Beyond the number of texts exchanged, the content of the conversation may have more influence on the probability of use. This step is important, in that it explores the content of the conversations beyond the volume of communication.

Determining whether the interaction between the number of text messages sent to and received from peers and having peers who use alcohol changes the likelihood of adolescents engaging in alcohol use was the next purpose of the current research project. Much like having discussions with peers about alcohol use, having text message discussions with peers who the adolescent believes are using alcohol may also be a strong peer factor. While research indicates that the perception of peer use is a known predictor of adolescent use (Prinstein & Wang, 2005), the current study sought to determine whether this carries through the adolescent shift in preferred communication media. If the interaction of the two variables changes the probability of adolescent alcohol use, it will further the discussion of the transference of peer influence through modern cellular technology. This may be the first step in a paradigm shift in planning and intervention for drug prevention professionals, as these findings would require new strategies to
counter peer influence at times and places generally outside the supervision of parents or other caregivers.

The final purpose of this research project involved determining whether the interaction between the number of text messages sent to and received from peers, the discussion of alcohol use through cellular technology, and the perception by adolescents that their peers are using alcohol changes the likelihood of adolescent alcohol use. This is an important step in gaining a more comprehensive picture of how the previously mentioned factors work, either in isolation or in concert, to affect adolescent alcohol use. If the interaction significantly affects the likelihood of adolescent alcohol use, prevention professionals may need to adopt a more comprehensive approach to addressing peer influence through cell technology. If the interaction is not a significant contributor, then prevention professionals may need to take a more targeted approach in intervention.

**Procedures**

This project includes the analysis of a secondary data source. The Save Our Kids Survey for Middle and High School Students is a two-page student drug survey consisting of 139 items administered to students in the grades 6 through 12. The survey is intended to assess usage rates and risk factors related to the use of alcohol, tobacco, and other drugs by adolescents, as well as data related to bullying and the use of cell phone technology. A copy of the survey can be found in Appendix B.

The Save Our Kids Survey is administered as a census survey, in that efforts are made by local schools to survey every student in attendance. Questionnaires are distributed at a pre-determined scheduled testing time at the classroom level. Surveys and instruction sheets are distributed to each student by the classroom teacher. After
distribution of the survey, the classroom teacher, serving as the proctor, verbally reads the instructions to the students. Special emphasis is placed on informing the students of their right to refuse or stop taking the survey at any time. They are further instructed to place no identifying marks on the surveys. Upon completion of the survey, students deposit them into an envelope that is stationed across the room from the proctor. Upon completion by every student, the proctor then seals the envelope, returning the collected surveys to the school administrators. The surveys are then collected and processed by the Save Our Kids organization using Remark Office OMR Software and a Fujistu fi-6130 scanner. Upon completion of scanning, the data are exported into a Microsoft Excel file and transferred into SPSS.

In relation to establishing the validity of data collected through questionnaires, it is vital to be able to “draw meaningful and useful inferences from scores on the instruments” (Creswell, 2009, p. 149). While several types of validity evidence are related to instrumentation, the most relevant for the questionnaire used in this study is related to content validity.

Popham (2000) defined content-related evidence of validity as “the degree to which the sample of items, tasks, or questions on a test are representative of some defined universe or domain of content” (p. 96). Establishing content-related validity is relatively straightforward for the Save Our Kids Survey for two distinct reasons. First, the purpose of each item is to collect one specific point of data, as opposed to being a part of the creation of a complex construct. Second, the construction of the Save Our Kids Survey is based on adaptations from established drug surveys, more specifically the Communities That Care Survey (Appendix C), which was developed specifically for the Social
Development Theory and has been tested extensively in the literature (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005; also see Johnston et al., 2012).

The Save Our Kids Survey has also adapted a variety of the validity control variables used in the Communities That Care Survey (see Substance Abuse and Mental Health Services Administration, 2007). The first validity control variable is an exaggeration filter related to the use of illicit drugs. Youth who report usage of cocaine, heroin, ecstasy, inhalants, hallucinogens, methamphetamine, or prescription drugs with high frequency are filtered out of the sample. This filter, through the removal of respondents who meet the exaggeration criteria, is intended to reduce the effects of respondent dishonesty on the collected data. The Save Our Kids Survey also processes an inconsistency filter for each substance. Each inconsistency filter cross-checks each youth’s responses related to reported use across four separate items. Respondents who exhibit inconsistency are filtered out of the final data set.

Data Analysis

Concerning Research Question 1: Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?, logistic regression was chosen to determine the influence of the number of daily text messages sent to and received from peers on adolescent alcohol use. Determining whether a relationship exists between a measure that better reflects the conversational manner of peer interaction through texting and adolescent alcohol use allows the concept of bonding to peers and peer influence on adolescent alcohol use to be discussed within the context of new communication technology. This will begin to establish a link
between the new way that adolescent peers communicate and the foundational, prevention theoretical framework of the Social Development Theory.

Concerning Research Question 2: Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?, logistic regression was chosen to determine the influence of discussing the use of alcohol through cell phones on adolescent alcohol use. As an extension of the previous question, this will provide insight into whether the subject content of text-based conversations influences adolescent alcohol use.

Concerning Research Question 3: Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use?, through logistic regression analysis, the interaction between the number of text messages sent to and received from peers and the perception of having peers who use alcohol were investigated. According to the Social Development Theory, the mechanism by which adolescents bond to peers is guided by: (1) the perceived opportunity to be involved and interact with a peer group, (2) the extent of involvement and interaction with peers, (3) possessing or developing the necessary skills to be involved or to interact with peers, and (4) receiving reinforcement from their peers based on their performance in their involvement or interaction (Catalano et al., 1996; Hawkins et al., 2002). Furthermore, the behavior of the adolescents, whether prosocial or antisocial, will reflect the norms, values, and behaviors of those to whom they have bonded. This question combines the vehicle and volume of interaction (text messaging) with the adolescents' peer reference group. This question explores the
modernization of the concept of bonding within the framework of the Social Development Theory.

Concerning Research Question 4: Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?, logistic regression was used to determine whether the interaction of all three independent variables changes the likelihood of adolescent alcohol use. Investigating the interaction will work in concert with the other questions providing insight into the dynamics of the means by which each factor influences adolescent alcohol use independently or through the blending of influence.

**Conclusion**

The Social Development Theory has provided Substance Abuse Prevention practitioners with a solid theoretical foundation to guide planning and implementation since the mid 1980s. A key component of the Social Development Theory, the influence of adolescents’ peers on their substance using behavior, has been identified through research as one of the most powerful predictors of adolescent use. However, the culture surrounding the method that adolescents use to communicate is rapidly shifting due to technological advances, most specifically through advancements in mobile technology. As recent studies have indicated that adolescents now prefer to engage their peers through text messaging rather than voice or face-to-face communication, the dynamics of peer interaction, and therefore peer influence, may be facing an evolution in influence. Despite this evolution, very little research investigates the shift in the manner in which adolescents prefer to communicate with their peers and how this may affect how peers
influence adolescent use of alcohol and other substances. As current prevention programming focuses heavily on peer-related interaction, it is important that the field of prevention gain a better understanding of how these shifts in peer interaction may, or may not, change the influence of peers on adolescent substance use.
CHAPTER IV: RESULTS

The problem addressed in this study is that, despite research showing a strong relationship between adolescent drug use and associating with drug using peers, very little has been conducted to determine whether or how much these associations have been affected by changes in the way adolescents interact. It is believed that adolescents adopt the attitudes of other adolescents to whom they have bonded. This bond is a result of the perceived opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peers or sets of peers. Cellular technology, or more specifically texting, has become the primary means by which adolescents interact with their peers, creating a virtual world of peer interaction that did not exist when the Social Development Model was created. It is important to determine whether the preexisting model remains salient for adolescents and their virtual peers.

This study is significant, in that it seeks to expand the limited reach of available research in relation to the interaction of adolescents with peers through cell-based technology and its potential impact on adolescent substance abuse. If the peer influence construct has dynamically changed due to adolescent changes in communication through mobile technology, then a shift is needed in the prevention planning paradigm. However, if mobile technology is found to simply be an extended opportunity for peer interaction, current prevention theories remain salient, and the need for a drastic overhaul in current practice may be unnecessary. The results of this study that identifies relationships between adolescent texting behavior with peers, discussing alcohol use through texting, having peers who use alcohol, and adolescent alcohol use will provide the prevention
field with insight into the means by which new cellular technology has influenced how peers influence adolescent alcohol use. In addition, information that links conversational texting behavior with adolescent alcohol use can be used to help guide the modernization of prevention strategies designed to intervene with adolescents in relation to maladaptive peers. Research Question 1 is designed to identify a link between adolescent texting behavior and adolescent alcohol use:

Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?

Subsequent to establishing that there is some relationship between an adolescent’s texting behavior with peers and adolescent alcohol use, it is important to expand the understanding of how alcohol related peer interaction through texting is related to adolescent alcohol use. Research Question 2 is designed to determine whether the discussion of alcohol use with peers changes the likelihood of adolescent alcohol use:

Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?

Beyond the content of the interaction, adolescent perceptions of the behaviors of the peers with whom they interact is an important part of peer influence on use. As text messaging becomes the predominant form of adolescent communication with peers, it is important for prevention practitioners to understand how the interaction of peer texting behavior and having peers who use alcohol influences adolescent alcohol use. Research Question 3 is designed to investigate this interaction:
Does the interaction between the number of daily text messages sent and received with peers and having peers who use alcohol change the likelihood that adolescents engage in alcohol use?

The various components of peer influence do not occur in a vacuum. While it is important to establish relationships between the various components of peer influence on adolescent alcohol use within the context of adolescent text messaging behavior, it is just as vital to look at the concept of peer influence as an interactive process of multiple factors. Research Question 4 investigates the interaction of multiple peer influence related factors as it affects adolescent alcohol use within the context of adolescent texting behavior:

Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?

**Logistic Regression Analysis**

Based on the exploratory nature of the research, the logistic regression analysis was conducted using a backward selection (likelihood ratio) method where appropriate. Logistic regression was chosen based on the dichotomous dependent variable of annual alcohol use. A backward selection method was chosen to minimize any potential suppressor effects, therefore reducing the potential to discard viable predictor variables (Field, 2009). Results of the logistic regression analysis for annual alcohol use can be found in Table 1.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Research Question 1(^1)</th>
<th>Research Question 2(^2)</th>
<th>Research Question 3(^3)</th>
<th>Research Question 4(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wald</td>
<td>Sig.</td>
<td>OR</td>
<td>Wald</td>
</tr>
<tr>
<td>Constant</td>
<td>406.511</td>
<td>.000</td>
<td>.221</td>
<td>776.798</td>
</tr>
<tr>
<td>Textversion</td>
<td>54.313</td>
<td>.000</td>
<td>1.002</td>
<td></td>
</tr>
<tr>
<td>Discussed Alcohol Through Cell</td>
<td></td>
<td>678.165</td>
<td>.000</td>
<td>24.753</td>
</tr>
<tr>
<td>Peer Use</td>
<td></td>
<td></td>
<td>169.472</td>
<td>.000</td>
</tr>
<tr>
<td>Textversion*Peer Use</td>
<td></td>
<td></td>
<td>4.418</td>
<td>.036</td>
</tr>
<tr>
<td>Textversion<em>Peer Use</em>Discussed Alcohol Through Cell</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) \(R^2 = .033\) (Nagelkerke), Model \(\chi^2 = 53.45, p < .001\)

\(^2\) \(R^2 = .447\) (Nagelkerke), Model \(\chi^2 = 842.51, p < .001\)

\(^3\) \(R^2 = .451\) (Nagelkerke), Model \(\chi^2 = 850.95, p < .001\)

\(^4\) \(R^2 = .603\) (Nagelkerke), Model \(\chi^2 = 1221.58, p < .001\)
Findings Related to Research Question 1

Research Question 1 asks: Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers? Logistic regression analysis yielded a significant Wald score for the independent variable textversation ($\chi^2 (1, 2359) = 54.31, p < .001$). However, the odds ratio for textversation was minimal (OR = 1.002). Similarly, the Hosmer and Lemeshow Test was conducted to test the overall fit of the model. While textversation was determined to be a significant variable in the model, the overall fit of the model using only textversation was determined to be poor ($\chi^2 (8, 2359) = 38.91, p < .001$). This is further reflected in a relatively low estimated $R^2$ (Nagelkerke) of .033. Adolescent alcohol use is a complex concept that is manifested through a variety of independent factors. Therefore, it is not surprising that a model using only one factor, especially a possible new factor, results in a poorly fitted model. This appears to be an occasion that, while a variable may be statistically significant, its relevance may be limited. This leads to the additional research questions that will consider more closely the textversation variable within the context of additional variables previously established in the research.

Findings Related to Research Question 2

Research Question 2 asks: Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use? Logistic regression analysis yielded a significant Wald score for alcohol use discussion by cell ($\chi^2 (1, 2359) = 678.17, p < .001$). Furthermore, the variable of alcohol use discussion by cell yielded a strong odds ratio (OR = 24.753). This result suggests that the odds of adolescents who reported discussing alcohol use through their cell phones using...
alcohol within the past year are 24.753 times higher than for those students who did not discuss alcohol through their cell phones. As the current comparison contains less than six possible cells in the Hosmer and Lemeshow Test classification table (annual alcohol use (Y/N), alcohol use discussion by cell (Y/N), a Hosmer and Lemeshow Test was not conducted to test the overall fit of the model (see Peng & So, 2002). However, the classification table of predicted versus observed outcomes when the data were applied to the model yielded an overall percentage correct of 86.0% (See Table 2). Furthermore, SPSS produced an estimated $R^2$ (Nagelkerke) of .447. This measure is relatively strong considering the inclusion of only one predictive variable.

Table 2

*Classification Table of Predicted vs. Observed Outcomes of the Logistic Regression Model for Annual Alcohol Use*

<table>
<thead>
<tr>
<th>Predicted Outcome</th>
<th>Observed Outcome</th>
<th>No</th>
<th>Yes</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>1610</td>
<td>163</td>
<td>90.8</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>166</td>
<td>416</td>
<td>71.5</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td>86.0</td>
</tr>
</tbody>
</table>

**Findings Related to Research Question 3**

Research Question 3 asks: Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the
likelihood that adolescents engage in alcohol use? Logistic regression analysis yielded a significant Wald score for the independent variable textversation ($\chi^2 (1, 2359) = 12.19, p < .001$). However, as in Research Question 1, the odds ratio for textversation was minimal (OR = 1.005). The variable peer use also yielded a significant Wald score ($\chi^2 (1, 2359) = 169.47, p < .001$). Just as research has indicated a strong link between peer use and adolescent alcohol use, the analysis yielded a large odds ratio for peer use (OR = 65.234). The odds of an adolescent who reported having peers who use alcohol reporting annual alcohol were 65.234 time higher than those students who did not report having peers who use alcohol. Logistic regression analysis yielded a significant Wald score for the interaction of textversation and peer use ($\chi^2 (1, 2359) = 4.418, p < .05$). However, the odds ratio for the interaction was negligible (OR = .998). The Hosmer and Lemeshow Test suggests that the model containing textversation, peer use, and the interaction term fit well with the data ($\chi^2 (7, 2359) = 5.132, p = .644$). Similarly, SPSS produced a relatively strong estimated $R^2$ (Nagelkerke) of .451. As the contributions of textversation and the interaction were minimal, it should be reiterated that the peer use variable accounted for the largest portion of the model’s efficacy.

**Findings Related to Research Question 4**

Research Question 4 asks: Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use? Logistic regression analysis yielded significant Wald scores for peer use ($\chi^2 (1, 2359) = 229.137, p < .001$) and alcohol use discussion by cell
The resulting odds ratios were strong for peer use (OR = 22.709) and alcohol discussion by cell (OR = 12.772). The Wald scores for the variables textversion ($\chi^2 (1, 2359) = .616, p = .432$) and the interaction of alcohol use discussion by cell, peer use, and textversion ($\chi^2 (1, 2359) = .173, p = .677$) were not significant, and the variables were removed from the final model. The Hosmer and Lemeshow Test suggests that the final model fit the data well ($\chi^2 (2, 2359) = .102, p = .950$). Similarly, SPSS produced a relatively strong estimated $R^2$ (Nagelkerke) of .603.

Conclusion

This chapter presented the quantitative results of four exploratory logistic regression analyses to determine the effect of the number of text messages sent to and received from peers, having peers who use alcohol, the discussion of alcohol use with their peers, as well as associated interactions of these concepts on the likelihood that an adolescent would engage in alcohol use. The results of these analyses were used to address the four research questions in the study and have been presented both in print and in Table 1. The data from this study can be used to clarify the role of texting behavior in relation to adolescent substance abuse, as well as its possible interaction with peer use and alcohol based interaction. The data can also support the ongoing efficacy of the Social Development Model and the underlying theory for prevention work, despite changes in adolescent communication patterns through modern cellular technology. Furthermore, the data can further the conversation within the prevention research field as to the implications of the use of modern cell technology and shifting youth culture on future programmatic and policy initiatives.
CHAPTER V: DISCUSSION

The focus of this study concerned the means by which shifting patterns of adolescent communication with their peers through modern cellular technology has affected peer influence on adolescent alcohol use. Peer use of alcohol has been and continues to be one of the primary risk factors in adolescent use of alcohol. The predominant form of adolescents’ communication with their peers has transitioned from voice-based communication, whether by telephone or face-to-face, to communication through cellular phone-based texting services. While the influence of alcohol using peers is well established in the literature, the prevention field is unaware of whether these changes in communication patterns have affected the peer influence construct.

Despite research showing a strong relationship between adolescent drug use and associating with drug using peers, very little has been conducted to determine whether or how much these associations have been affected by changes in the way adolescents interact. It is believed that adolescents adopt the attitudes of other adolescents with whom they have bonded. This bond is a result of the perceived opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peers or sets of peers. Cellular technology, or more specifically texting, has become the primary means by which adolescents interact with their peers, creating a virtual world of peer interaction that did not exist when the Social Development Model was created. The results of this study that outlines the effects of texting with peers and discussing alcohol with peers through cell-based technology, as well as reported peer use of alcohol and related interaction effects, provides some perspective that should benefit future drug prevention
planning and research. This information should support the continued efficacy of the Social Development Model as the underlying theory for substance abuse prevention planning, as well as guide practitioners in modernizing prevention interventions to better reach adolescents through their newly preferred communication medium.

The research questions guiding this study were:

**Research Question 1**: Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers?

**Research Question 2**: Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use?

**Research Question 3**: Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use?

**Research Question 4**: Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use?

**Discussion of Findings**

Although the logistic regression analysis of the influence of adolescent texting behavior related to adolescent annual alcohol use yielded a statistically significant result, the practical influence of adolescent texting on their choosing to use alcohol appears to be limited. The Social Development Model postulates that adolescents adopt the attitudes of other adolescents with whom they have bonded. This bond is a result of the perceived
opportunity of involvement, the length or extent of the involvement, possessing the necessary skills to be involved, and being rewarded for their involvement with particular peer or set of peers. The relatively new communication standard of text messaging through cellular technology provides adolescents an almost perfect medium for increased involvement and, therefore, increased bonding with peers. It appears, however, that text messaging for adolescents is not necessarily a construct that influences adolescent use of alcohol; but rather, it is simply the way adolescents communicate. The increased opportunities of communicating with text messaging, as opposed to the limited times of face-to-face or even voice-based cellular communication, may possess its own implications as to the strength of the bonding relationships. Although beyond the scope of the current study, the possibility exists that text messaging, due to its lack of inherent limitations on adolescent communication, may result in adolescent bonds to maladaptive peers occurring at a deeper level and/or at a faster interval due to increased dosage of peer influence.

Although the act of text messaging had minimal effect on increasing the likelihood of adolescent alcohol use, the discussion of alcohol use through their cell phones had a strong effect. Within the Social Development Model’s concept of bonding, adolescents are more likely to believe the message delivered from sources with whom they have bonded. This reinforces the idea that, in relation to adolescent alcohol use, the media that adolescents use to communicate is less important than the subject matter communicated. It is important to note, that while a strong relationship exists between the discussion of alcohol use through modern cellular technology and adolescent alcohol use, one should be hesitant to suggest a causal pathway without further investigation. The
question remains as to whether the discussion of alcohol with peers leads to increased incidences of alcohol use or whether youth who use alcohol discuss alcohol more often through their cell phones. The most important aspect within the scope of this study is that a link, whether determined to be causal, has been established through the more modern form of adolescent communication.

Comparable to what has been determined through previous research, peer use was determined to be a strong, significant factor in predicting the likelihood of adolescent alcohol use. As in the previous model from Research Question 1, the act of texting their peers was determined to have a significant, although minimal, effect on adolescent use. Similarly, the interaction of peer use and texting peers had a significant, but minimal effect. Once again, this suggests that the chosen communication media of an adolescent is less important than the individual beliefs of an adolescent’s peers in determining the likelihood of alcohol use. When the discussion of alcohol was included in the model with textversation and peer use, the variable textversation was excluded from the model due to its lack of a significant contribution to the model. This further builds on the premise that the means by which adolescents communicate with their peers is less important than the belief systems of those peers and the active transference of those beliefs through the chosen communication channel.

Conclusions

Research Question 1 asked: Does the likelihood of an adolescent engaging in alcohol use change based on the number of daily text messages sent and received with peers? While the logistic regression analysis yielded a significant result, the odds ratio contributed little to an adolescent’s likelihood of using alcohol. This, in itself, is an
important discovery as the act of texting does not appear to be a construct unto itself that requires special attention from the prevention community. Texting is simply the means by which current adolescents communicate. This finding does not necessarily refute early research, although it clarifies it. As the field of prevention continues to apply principles of the Social Development Model to prevention planning and intervention, the model must be continually tested as new social and cultural changes occur. It is imperative that any new, profound social phenomenon, such as texting behavior among adolescents, be investigated in order that foundational theories are either maintained or modified to meet the current state of the target population.

The implications of the first set of findings for prevention professionals most likely will be related to the modernization of educational and intervention techniques to include modern cellular technology in order to communicate effectively with their targeted audience. Historically, drug education curricula had evolved into classroom-based, didactic instruction generally facilitated by school or community-based counselors. While efforts have been made within the field to include a broader scope of multimedia presentation methods within educational programming, a need is apparent for a paradigm shift in communication strategies when attempting to reach and convey positive messages to adolescents. The efficacy of traditionally packaged drug curricula implemented in a classroom setting may be waning. It appears that the future of drug curricula will be based on the transition to using cellular-based technology as the delivery medium.

Research Question 2 asked: Does the discussion of alcohol use with their peers through cell phones increase the likelihood that adolescents engage in alcohol use? In a
similar vein, Research Question 3 asked: Does the interaction between the number of daily text messages sent and received with peers, and having peers who use alcohol, change the likelihood that adolescents engage in alcohol use? Finally, Research Question 4 asked: Does the interaction between the number of daily text messages sent and received with peers, having peers who use alcohol, and the discussion of alcohol use with their peers through cell phones change the likelihood that adolescents engage in alcohol use? Logistic regression analyses conducted in this study support that having peers who use alcohol and discussing alcohol with their peers significantly increases the likelihood that adolescents will use alcohol. When the variable textversation was included in the model, its contribution was not found to be statistically significant, supporting the suggestion that texting was simply the selected form of communication for adolescents and not a separate construct contributing to adolescent use of alcohol.

Within the Social Development Model’s concept of bonding, adolescents are more likely to believe the message delivered from sources with whom they have bonded. Communication through modern cellular technology is primed for adolescents bonding to their peers, with the possibility for increased contact with peers both in frequency and duration. Upon the establishment of this bonding, the discussion content then becomes one of the key components in influencing adolescent alcohol use. This raises another important implication for prevention scientists, as well as for parents or other caregivers.

Prior to cellular technology, prevention strategies related to peers revolved around helping youth to either choose positive peer influences or intervening to ensure separation of adolescents from maladaptive peers. While bonding to prosocial parents can influence an adolescent to avoid bonding to maladaptive peers, this stage tends to occur
prior to adolescence and the use of cellular technology. Past interventions centered around sound family management practices, such as increased parental supervision, and creating limitations on an adolescent’s proximal exposure to maladaptive peers. However, as cellular technology has become the primary form of an adolescent’s communication with peers, being in proximity to one’s peers is no longer required. Adolescents can now be virtually proximal to their peers without the previous limitations of physical proximity. On the surface, it would appear that removing cell-based technology from the adolescent would be an easy solution. However, two points should be further examined. First, doing so would limit an adolescent’s exposure to prosocial peers. Second, if cellular based communication, or more specifically texting, has become the predominant form of communication among adolescents, the psychological implications on the adolescent become the important unknown factor. However, the psychological effects of extreme virtual social isolation, compared to extreme physical isolation from peers, is beyond the scope of this study.

The implications to prevention scientists are multifaceted. Developmentally, a youth’s primary socializing agent during childhood is generally parents or primary caregivers. This period predates two important transition for adolescents, the transitions to peers as the primary socializing agent and the use of cellular technology as the preferred method of communication. Therefore, the Social Development Model’s tenets on bonding to prosocial caregivers should remain salient as they relate to parental bonds influencing later choices in peers. Prevention programming that targets parents of elementary aged youth should continue to focus on the importance of building strong relationships with their children and conveying prosocial messages related to drug use.
These relationships are important in building the foundation of peer selection during the
transition to adolescence (Elliott et al., 1982).

Future peer related interventions should be grounded in the development of
appropriate parental monitoring of cell activity. While current technology exists to assist
parents in monitoring activity, adolescents continue to develop methods to avoid
supervision. However, parents should seek active engagement with their adolescents
through both traditional face-to-face and cell-based interaction. It is important that
parents continue to foster a positive relationship whether through physical or virtual
proximity. In the end, the basic tenets of the Social Development Model remain salient.
However, the implementation may need modification to account for the new
communication standards of modern adolescence.

Limitations

The limitations of this study were related to the ex post facto nature of the
research design and the generalizability of the results due to limitations within the
sample. The data were obtained from a preexisting database of student responses to a
school-based survey implemented across two school systems. As is the case, neither
random assignment to treatment conditions nor experimental control of treatment
conditions by the researcher was possible. The focus should be on the relationships
among the included variables without inference of causality.

While the sample size for this study was substantial ($n = 2359$), the sample was
drawn from two school systems within the same county in a southeastern state. The
sample was also limited to only those adolescents who reported owning a cell phone that
was capable of text messaging. Furthermore, only those adolescents who reported
sending and receiving text messages were included. Consequently, generalizations to the population as a whole should be guarded.

**Recommendations for Future Research**

Text messaging through cellular technology has become the primary form of communication for adolescents. Research attempting to understand this shift in preferred communication method, as well as its affect on adolescent behavior, is in its infant stages. The intent of this study was simply to begin, or at the least to facilitate the acceleration of the conversation within the research community. Many questions remain on the effect of modern cellular technology on adolescents.

The first recommendation for future study is to expand the subject pool by including those adolescents who do not possess cellular technology or the capability to send text messages. As this study was intended to determine whether the act of texting was a potential new construct related to adolescent substance use, the subject field was restricted. However, as the results suggest that the most important factors include the choice of peers and the topics of discussion, it is important to determine whether differences exist in the likelihood of adolescent alcohol use based on the chosen communication medium.

Another recommendation for future research is related to the psychological ramifications of virtually isolating adolescents from their peers. Past parental interventions related to peer influence included methods for placing physical limitations on an adolescent to reduce the influence of maladaptive peers. However, as cellular technology has become the primary form of communication, it is much more difficult to virtually isolate adolescents from the same maladaptive peers. The often proposed
intervention of limiting all access to cellular activity, not only isolates adolescents from maladaptive peers, but also from prosocial peers. This vacuum of social interaction may create more serious socialization issues than are currently understood.

As the period of parental bonding with adolescents generally predates both the shift to peers as the primary socializing agent and the adolescents’ introduction into cellular-based communication, research is needed to determine whether parental influence has more impact for technologically savvy parents. If the preferred form of communication for adolescents is through text messaging, does more prosocial parental impact occur when parents seek out communication with their adolescents through the same technology? Furthermore, are there differences in parental influence based on the ratio of technology versus traditional methods of parent/child interaction?

The final recommendation for research involves technological advances to assist parents with the monitoring of adolescent peer interaction. While the basic tenets of the Social Development Model related to adolescent bonding to parents and peers remain salient, a need exists to update the tools available to adults, whether parents, teachers, or other influential adults, to appropriately monitor adolescent interaction. The challenge will arise from developing a balance in the technology in which parents feel that the ability to monitor adolescents is adequate, while adolescents retain enough of a sense of privacy that they do not seek to run from or circumvent the technology. While framed within the technological advances of the 21st century, this challenge represents the same delicate balance of parental/adolescent interaction that has existed for generations.
REFERENCES


*Understanding Statistics, 1*, 31-70.


APPENDIX A

Institutional Review Board Approval

DATE: December 15, 2014

TO: Eric Gregory
FROM: Western Kentucky University (WKU) IRB

PROJECT TITLE: [695439-1] Texting and the influence of virtual peers on adolescent alcohol use
REFERENCE #: IRB 15-252
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: December 15, 2014

REVIEW TYPE: Exempt from Full Board Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission regarding de-identified data. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt from Full Board Review based on the applicable federal regulation. Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@WKU.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Western Kentucky University (WKU) IRB's records.
## Appendix B

### Save Our Kids School Survey

<table>
<thead>
<tr>
<th>SOK Student Survey for 6th – 12th Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender?</strong> Male</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td><strong>Age?</strong> 10 or less</td>
</tr>
</tbody>
</table>

Think back over the past 12 months. How often did you use... (Choose One Response Per Substance)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Never used</th>
<th>Daily in the past two weeks</th>
<th>A few times a week</th>
<th>At least once a month</th>
<th>At least once a year</th>
<th>Some more than a year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five or more alcoholic drinks within a few hours?</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Smoke Tobacco</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Cigarettes/Cigars)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Smokeless Tobacco</td>
<td></td>
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<td></td>
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<tr>
<td>Marijuana?</td>
<td></td>
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<td></td>
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<tr>
<td>Herbal Incense/Synthetic Marijuana?</td>
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</tr>
<tr>
<td>Prescription Drugs to get high?</td>
<td></td>
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</tr>
<tr>
<td>Cocaine?</td>
<td></td>
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<tr>
<td>Methamphetamine?</td>
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<tr>
<td>Over-the-Counter Drugs to get high?</td>
<td></td>
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<tr>
<td>Inhalants (Sniff/Wuff/Inhale)?</td>
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<td></td>
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<tr>
<td>Heroin?</td>
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<tr>
<td>Performance Enhancing Drugs?</td>
<td></td>
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<td></td>
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<tr>
<td>Ecstasy/Molly?</td>
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<tr>
<td>A drug to get high that you didn’t know what it was?</td>
<td></td>
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</tr>
</tbody>
</table>

How much do you think people risk harming themselves physically or in other ways if they...

<table>
<thead>
<tr>
<th>Substance</th>
<th>Never used</th>
<th>Daily in the past two weeks</th>
<th>A few times a week</th>
<th>At least once a month</th>
<th>At least once a year</th>
<th>Some more than a year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have five or more drinks of an alcoholic beverage once or twice a week?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Smoke one or more packs of cigarettes per day?</td>
<td></td>
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<tr>
<td>Smoke marijuana once or twice a week?</td>
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<tr>
<td>Use prescription drugs that are not prescribed to them?</td>
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<td></td>
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<tr>
<td>Use Over-the-Counter Drugs to get high?</td>
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<td></td>
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<tr>
<td>Synthetic Marijuana? Heroin once or twice a week?</td>
<td></td>
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<tr>
<td>Take one or two drinks of an alcoholic beverage every day?</td>
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<td></td>
</tr>
</tbody>
</table>

Think about the people your age who you consider to be your best friends. Over the past 12 months, how many of them used...

<table>
<thead>
<tr>
<th>Substance</th>
<th>Never used</th>
<th>Daily in the past two weeks</th>
<th>A few times a week</th>
<th>At least once a month</th>
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<tr>
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<tr>
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<td>Cocaine?</td>
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<td>Methamphetamine?</td>
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</tbody>
</table>

During the past 30 days, did you...

<table>
<thead>
<tr>
<th>Substance</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink one or more drinks of an alcoholic beverage?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke part or all of a cigarette?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use marijuana or hashish?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use prescription drugs not prescribed to you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive a car after drinking alcohol?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More questions about Cell Phones

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you own a cell phone?</td>
<td></td>
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<tr>
<td>Can you send and receive texts with your cell phone?</td>
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<tr>
<td>Can you surf the internet with your cell phone?</td>
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<tr>
<td>Do you use Facebook with your cell phone?</td>
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<tr>
<td>Do you use Twitter with your cell phone?</td>
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<tr>
<td>Do you believe having a cell phone makes your friendships stronger?</td>
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</tr>
</tbody>
</table>

Would you rather text someone than call them? |     |    |
| Have you ever discussed drinking alcohol with friends through your cell phone? |     |    |
| Have you ever discussed using any other drug with friends through your cell phone? |     |    |
| Do your parents monitor your cell phone?                               |     |    |
| About how many texts do you send to your friends in a day?             |     |    |
| About how many texts do you receive from your friends in a day?        |     |    |

82
If you wanted to get any of the following, how easy would it be for you to get...

<table>
<thead>
<tr>
<th>Substance</th>
<th>Very Hard</th>
<th>Slightly Hard</th>
<th>Slightly Easy</th>
<th>Very Easy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Alcoholic Drink?</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Any Tobacco?</td>
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</tr>
<tr>
<td>Marijuana?</td>
<td></td>
<td></td>
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<tr>
<td>Prescription Drugs/Pills?</td>
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<tr>
<td>Over-the-Counter Drugs?</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Synthetic Marijuana/Herbal Incense*</td>
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</tr>
<tr>
<td>Inhalants</td>
<td></td>
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</tr>
<tr>
<td>Harder Drugs like Cocaine, Meth, Heroin, Ecstasy, etc.?</td>
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</tr>
</tbody>
</table>

When do you most often use the following?

<table>
<thead>
<tr>
<th>Substance</th>
<th>Do Not Use</th>
<th>Use Before School</th>
<th>Use During School</th>
<th>Use After School</th>
<th>Use Week Nights</th>
<th>Use Weekends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Alcoholic Drink?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Tobacco?</td>
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<td></td>
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<tr>
<td>Marijuana?</td>
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<td></td>
</tr>
</tbody>
</table>

How wrong would your parents feel it would be for you to...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Not Wrong At All</th>
<th>Almost Wrong</th>
<th>Very Wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink any alcohol?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have one or two drinks of an alcoholic beverage nearly every day?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have five or more alcoholic drinks within a few hours?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sniff tobacco?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke marijuana?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use non-prescription drugs that are not prescribed to you?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Over-the-Counter Drugs to get high?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Synthetic Marijuana/Herbal Incense*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How wrong would your friends feel it would be for you to...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Not Wrong At All</th>
<th>Almost Wrong</th>
<th>Very Wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink any alcohol?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have one or two drinks of an alcoholic beverage nearly every day?</td>
<td></td>
<td></td>
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<tr>
<td>Have five or more alcoholic drinks within a few hours?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sniff tobacco?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke marijuana?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use non-prescription drugs that are not prescribed to you?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Over-the-Counter Drugs to get high?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Synthetic Marijuana/Herbal Incense*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How do you feel about someone your age...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Not Agree</th>
<th>Agree</th>
<th>Starkly Disagree</th>
<th>Don't Know or Can't Say</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking any alcohol?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having one or two drinks of an alcoholic beverage nearly every day?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having five or more alcoholic drinks within a few hours?</td>
<td></td>
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</tr>
<tr>
<td>Sniffing tobacco?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Smoking marijuana?</td>
<td></td>
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<tr>
<td>Using non-prescription drugs that are not prescribed to them?</td>
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<td>Using Over-the-Counter Drugs to get high?</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Using Synthetic Marijuana/Herbal Incense*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Think back over the past 12 months. During that time...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were you bullied or threatened face-to-face?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were you bullied or threatened over the internet?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were you bullied or threatened through texting?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you bully or threaten someone face-to-face?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you bully or threaten someone over the internet?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you bully or threaten someone through texting?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions about people in your community...

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do your teachers encourage you to not use drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do your parents encourage you to not use drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you ever been to a party where people your age were drinking alcohol?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you or a close friend ever been to a party where alcohol was made available to youth by adults?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

83
Appendix C
Communities That Care Survey

Communities That Care® Youth Survey

This survey is voluntary. That means you do not have to take it. If you choose to take it, you may skip any question you don’t want to answer.

Thank you for agreeing to participate in this survey. The survey asks your opinion about a number of things in your life, including your friends, your family, your neighborhood and your community. Your answers to these questions will be confidential. That means no one will know your answers. To help us keep your answers secret, please do not write your name on this survey form.

Instructions

1. This is not a test. There are no right or wrong answers.
2. If you don’t find an answer that fits exactly, use one that comes closest. If any question does not apply to you, or you are not sure what it means, just leave it blank.
3. Mark your answers clearly:
   • It is best to use a pencil, but you also may use a blue or black pen.
   • Completely fill in the circles.
   • Completely erase any answer you want to change.
   • Make no other markings or comments on the answer pages.
4. Some of the questions have the following format:
   Please fill in the circle for the word that best describes how you feel.
   EXAMPLE: Pepperoni pizza is one of my favorite foods.

Mark the Big ‘NO!’ if you think the statement is definitely not true for you.
Mark the little ‘no’ if you think the statement is mostly not true for you.
Mark the little ‘yes’ if you think the statement is mostly true for you.
Mark the Big ‘YES!’ if you think the statement is definitely true for you.
These questions ask for some general information about you. Please mark the response that best describes you.

**How old are you?**
- [ ] 10
- [ ] 11
- [ ] 12
- [ ] 13
- [ ] 14
- [ ] 15
- [ ] 16
- [ ] 17
- [ ] 18
- [ ] 19 or older

**What grade are you in?**
- [ ] 6th
- [ ] 7th
- [ ] 8th
- [ ] 9th
- [ ] 10th
- [ ] 11th
- [ ] 12th

**Are you:**
- [ ] Female
- [ ] Male

**What do you consider yourself to be?**
(choose all that apply)
- [ ] White
- [ ] Black or African American
- [ ] American Indian/Native American, Eskimo or Aleut
- [ ] Spanish/Hispanic/Latino
- [ ] Asian or Pacific Islander
- [ ] Other (Please specify: ______________________)

**What is the language you use most often at home?**
- [ ] English
- [ ] Spanish
- [ ] Another language (Please specify: ______________________)

This section asks about your experiences at school.

**Putting them all together, what were your grades like last year?**
- [ ] Mostly F's
- [ ] Mostly D's
- [ ] Mostly C's
- [ ] Mostly B's
- [ ] Mostly A's

**During the LAST FOUR WEEKS, how many whole days have you missed because you skipped or “cut”?**
- [ ] None
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4-5
- [ ] 6-10
- [ ] 11 or more

**How often do you feel that the schoolwork you are assigned is meaningful and important?**
- [ ] Almost always
- [ ] Often
- [ ] Sometimes
- [ ] Seldom
- [ ] Never

**How interesting are most of your courses to you?**
- [ ] Very interesting and stimulating
- [ ] Quite interesting
- [ ] Fairly interesting
- [ ] Slightly dull
- [ ] Very dull

**How important do you think the things you are learning in school are going to be for your later life?**
- [ ] Very important
- [ ] Quite important
- [ ] Fairly important
- [ ] Slightly important
- [ ] Not at all important

**PLEASE DO NOT WRITE IN THIS AREA**
The next section asks about your experience with tobacco, alcohol, and other drugs. It also asks some other personal questions. Remember, your answers are confidential. This means your answers will stay secret.

Have you ever used smokeless tobacco (chew, snuff, plug, dipping tobacco, chewing tobacco)?
- Never
- Once or twice
- Once in a while but not regularly
- Regularly in the past
- Regularly now

How frequently have you used smokeless tobacco during the past 30 days?
- Never
- Once or twice
- Once or twice per week
- About once a day
- More than once a day

Have you ever smoked cigarettes?
- Never
- Once or twice
- Once in a while but not regularly
- Regularly in the past
- Regularly now

How frequently have you smoked cigarettes during the past 30 days?
- Not at all
- Less than one cigarette per day
- One to five cigarettes per day
- About one-half pack per day
- About one pack per day
- About one and one-half packs per day
- Two packs or more per day

On how many occasions (if any) have you:

- Had alcoholic beverages (beer, wine or hard liquor) to drink—more than just a few sips—in your lifetime?
- Had alcoholic beverages (beer, wine or hard liquor) to drink—more than just a few sips—during the past 30 days?
- Smoked glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays in order to get high in your lifetime?
- Smoked glue, breathed the contents of an aerosol spray can, or inhaled other gases or sprays in order to get high during the past 30 days?
- Used cocaine in your lifetime?
- Used cocaine during the past 30 days?
- Used marijuana (weed, pot) or hashish (hash, hash oil) in your lifetime?
- Used marijuana (weed, pot) or hashish (hash, hash oil) during the past 30 days?
- Used heroin in your lifetime?
- Used heroin during the past 30 days?
### On how many occasions (if any) have you:

- Used LSD (acid) or other psychedelics (peyote, PCP) in your lifetime?
- Used LSD (acid) or other psychedelics (peyote, PCP) during the past 30 days?
- Used Ecstasy in your lifetime?
- Used Ecstasy during the past 30 days?
- Used methamphetamine (meth, crystal meth, crank) in your lifetime?
- Used methamphetamine (meth, crystal meth, crank) during the past 30 days?
- Used prescription pain relievers, such as Vicodin®, OxyContin® or Tylox®, without a doctor’s orders, in your lifetime?
- Used prescription pain relievers, such as Vicodin®, OxyContin® or Tylox®, without a doctor’s orders, during the past 30 days?
- Used prescription tranquilizers, such as Xanax®, Valium® or Ambien®, without a doctor’s orders, in your lifetime?
- Used prescription tranquilizers, such as Xanax®, Valium® or Ambien®, without a doctor’s orders, during the past 30 days?
- Used prescription stimulants, such as Ritalin® or Adderall®, without a doctor’s orders, in your lifetime?
- Used prescription stimulants, such as Ritalin® or Adderall®, without a doctor’s orders, during the past 30 days?

### How many times in the past year (12 months) have you:

- Been suspended from school?
- Carried a handgun?
- Sold illegal drugs?
- Stolen or tried to steal a motor vehicle such as a car or motorcycle?
- Been arrested?
- Attacked someone with the idea of seriously hurting them?
- Been drunk or high at school?
- Taken a handgun to school?

### Have you ever belonged to a gang?

- **No**
- **Yes**

If you have ever belonged to a gang, did that gang have a name?

- **No**
- **Yes**
- I have never belonged to a gang.

**Think back over the last two weeks. How many times have you had five or more alcoholic drinks in a row?**

- **None**
- **Once**
- **Twice**
- **3-5 times**
- **6-9 times**
- **10 or more times**
I ignore rules that get in my way.
- Very false
- Somewhat false
- Somewhat true
- Very true

I do the opposite of what people tell me, just to get them mad.
- Very false
- Somewhat false
- Somewhat true
- Very true

These questions ask about how you would act in certain situations. They also ask your opinion about certain things.

You’re looking at CDs in a music store with a friend. You look up and see her slip a CD under her coat. She smiles and says, “Which one do you want? Go ahead, take it while nobody’s around.” There is nobody in sight, no employees and no other customers. What would you do now?
- Ignore her.
- Grab a CD and leave the store.
- Tell her to put the CD back.
- Act like it’s a joke, and ask her to put the CD back.

It’s 8:00 on a weeknight and you are about to go over to a friend’s home when your mother asks you where you are going. You say, “Oh, just going to go hang out with some friends.” She says, “No, you’ll just get into trouble if you go out. Stay home tonight.” What would you do now?
- Leave the house anyway.
- Explain what you are going to do with your friends, tell her when you’d get home, and ask if you can go out.
- Not say anything and start watching TV.
- Get into an argument with her.

You are visiting another part of town, and you don’t know any of the people your age there. You are walking down the street, and some teenager you don’t know is walking toward you. He is about your size, and as he is about to pass you, he deliberately bumps into you and you almost lose your balance. What would you say or do?
- Push the person back.
- Say “Excuse me” and keep on walking.
- Say “Watch where you’re going” and keep on walking.
- Swear at the person and walk away.

You are at a party at someone’s house, and one of your friends offers you a drink containing alcohol. What would you say or do?
- Drink it.
- Tell your friend “No thanks, I don’t drink” and suggest that you and your friend go and do something else.
- Just say “No, thanks” and walk away.
- Make up a good excuse, tell your friend you had something else to do, and leave.

Sometimes we don’t know what we will do as adults, but we may have an idea. Please tell me how true these statements may be for you.

When I am an adult:
- I will smoke cigarettes.
- I will drink beer, wine, or liquor.
- I will smoke marijuana.

YES!  no

PAUSE
### These questions ask about the neighborhood and community where you live.

<table>
<thead>
<tr>
<th>How wrong do you think it is for someone your age to:</th>
<th>Not wrong at all</th>
<th>A little bit wrong</th>
<th>Wrong</th>
<th>Very wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take a handgun to school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steal anything worth more than $5?</td>
<td></td>
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</tr>
<tr>
<td>Pick a fight with someone?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attack someone with the idea of seriously hurting them?</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stay away from school all day when their parents think they are at school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink beer, wine or hard liquor (for example, vodka, whiskey, or gin) regularly?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke cigarettes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke marijuana?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use LSD, cocaine, amphetamines or another illegal drug?</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Risk Levels

- Great risk
- Moderate risk
- Slight risk
- No risk

How much do you think people risk harming themselves (physically or in other ways) if they:

- Smoke one or more packs of cigarettes per day?
- Try marijuana once or twice?
- Smoke marijuana regularly?
- Take one or two drinks of an alcoholic beverage (beer, wine, liquor) nearly every day?

### Difficulty Levels

- Very easy
- Sort of easy
- Sort of hard
- Very hard

If you wanted to get some beer, wine or hard liquor (for example, vodka, whiskey, or gin), how easy would it be for you to get some?

If you wanted to get some cigarettes, how easy would it be for you to get some?

If you wanted to get a drug like cocaine, LSD, or amphetamines, how easy would it be for you to get some?

If you wanted to get some marijuana, how easy would it be for you to get some?

If you wanted to get a handgun, how easy would it be for you to get one?

If a kid smoked marijuana in your neighborhood, would he or she be caught by the police?

If a kid drank some beer, wine or hard liquor (for example, vodka, whiskey, or gin) in your neighborhood, would he or she be caught by the police?

If a kid carried a handgun in your neighborhood, would he or she be caught by the police?
How wrong would most adults (over 21) in your neighborhood think it was for kids your age:

<table>
<thead>
<tr>
<th>Not wrong at all</th>
<th>A little bit wrong</th>
<th>Wrong</th>
<th>Very wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

To use marijuana?

To drink alcohol?

To smoke cigarettes?

About how many adults (over 21) have you known personally who in the past year have:

<table>
<thead>
<tr>
<th>5 or more adults</th>
<th>3 or 4 adults</th>
<th>2 adults</th>
<th>1 adult</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Used marijuana, crack, cocaine, or other drugs?

Sold or dealt drugs?

Done other things that could get them in trouble with the police, like stealing, selling stolen goods, mugging or assaulting others, etc.?

Gotten drunk or high?

If I had to move, I would miss the neighborhood I now live in.

My neighbors notice when I am doing a good job and let me know.

I like my neighborhood.

There are lots of adults in my neighborhood I could talk to about something important.

There are people in my neighborhood who are proud of me when I do something well.

I feel safe in my neighborhood.

I’d like to get out of my neighborhood.

There are people in my neighborhood who encourage me to do my best.

Which of the following activities for people your age are available in your community?

- Sports teams
- Scouting
- Boys and girls clubs
- 4-H clubs
- Service clubs

How much do each of the following statements describe your neighborhood:

- Crime and/or drug selling
- Fights
- Lots of empty or abandoned buildings
- Lots of graffiti
The next few questions ask about your family.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>How wrong do your parents feel it would be for you to:</td>
<td>Not wrong at all, a little bit wrong, wrong, very wrong</td>
<td></td>
</tr>
<tr>
<td>Drink beer, wine or hard liquor (for example, vodka, whiskey or gin) regularly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke cigarettes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke marijuana?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steal anything worth more than $5?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draw graffiti, write things or draw pictures on buildings or other property (without the owner’s permission)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick a fight with someone?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have you changed homes in the past year?
- No
- Yes

How many times have you changed homes since kindergarten?
- Never
- 1 or 2 times
- 3 or 4 times
- 5 or 6 times
- 7 or more times

Have you changed schools (including changing from elementary to middle and middle to high school) in the past year?
- No
- Yes

How many times have you changed schools (including changing from elementary to middle and middle to high school) since kindergarten?
- Never
- 1 or 2 times
- 3 or 4 times
- 5 or 6 times
- 7 or more times

Has anyone in your family ever had a severe alcohol or drug problem?
- No
- Yes

I don't have any brothers or sisters
- Yes
- No

Have any of your brothers or sisters ever:
- Drunk beer, wine or hard liquor (for example, vodka, whiskey or gin)?
- Smoked marijuana?
- Smoked cigarettes?
- Taken a handgun to school?
- Been suspended or expelled from school?

The rules in my family are clear.
People in my family often insult or yell at each other.

When I am not at home, one of my parents knows where I am and who I am with.

We argue about the same things in my family over and over.

If you drank some beer or wine or liquor (for example, vodka, whiskey, or gin) without your parents' permission, would you be caught by your parents?

My family has clear rules about alcohol and drug use.

If you carried a handgun without your parents' permission, would you be caught by your parents?

If you skipped school, would you be caught by your parents?
### These questions ask for more information about your friends.

Think about your **four best friends** (the friends you feel closest to). In the past year (12 months), how many of your best friends have:

<table>
<thead>
<tr>
<th>Activity</th>
<th>4 of my friends</th>
<th>3 of my friends</th>
<th>2 of my friends</th>
<th>1 of my friends</th>
<th>None of my friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participated in clubs, organizations or activities at school?</td>
<td></td>
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<tr>
<td>Made a commitment to stay drug-free?</td>
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<tr>
<td>Liked school?</td>
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<td></td>
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<tr>
<td>Regularly attended religious services?</td>
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<td></td>
</tr>
<tr>
<td>Tried to do well in school?</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>My parents notice when I am doing a good job and let me know about it.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do your parents tell you they’re proud of you for something you’ve done?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel very close to your mother?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you share your thoughts and feelings with your mother?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My parents ask me what I think before most family decisions affecting me are made.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you share your thoughts and feelings with your father?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you enjoy spending time with your mother?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you enjoy spending time with your father?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I had a personal problem, I could ask my mom or dad for help.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel very close to your father?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My parents give me lots of chances to do fun things with them.</td>
<td></td>
<td></td>
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<tr>
<td>My parents ask if I’ve gotten my homework done.</td>
<td></td>
<td></td>
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<tr>
<td>People in my family have serious arguments.</td>
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<td></td>
</tr>
<tr>
<td>Would your parents know if you did not come home on time?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PLEASE DO NOT WRITE IN THIS AREA**
You may be asked to answer some additional questions. If so, those questions will be handed to you on a sheet of paper or written where everyone taking the survey can see them. In the spaces that follow, record your answer to each additional question.

1. A B C D E F G
2. A B C D E F G
3. A B C D E F G
4. A B C D E F G
5. A B C D E F G
6. A B C D E F G
7. A B C D E F G
8. A B C D E F G
9. A B C D E F G
10. A B C D E F G